

# **WHAT DO WE KNOW ABOUT THE EFFECTS OF FISCAL POLICY? SEPARATING EVIDENCE FROM IDEOLOGY**

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## **I. INTRODUCTION**

Tonight I want to talk about fiscal policy—those decisions the government makes about spending and taxes.

The very first meeting I ever had with the President-Elect was on exactly this topic. I was in Chicago in mid-November 2008 for my job interview. The President-Elect began the discussion by saying that the economy was very sick and there was not much more the Fed could do—so we needed to use fiscal policy.

Now I had written a paper about the Great Depression, arguing that even though interest rates were already very low in 1933, as they were in November 2008, monetary expansion was very effective. So I started talking excitedly about what more the Federal Reserve could do. Only afterward did my husband point out that the very first thing I did upon meeting the President-Elect was to contradict him. I feel very fortunate that he hired me anyway.

Importantly, President Obama was completely right. Though there was, and still is, much more the Fed could do, the recession developing the fall of 2008 was already terrible, and getting worse by the minute. We needed to hit it with every tool we had, especially fiscal policy.

And just one month after his inauguration, President Obama signed the American Recovery and Reinvestment Act of 2009. At \$787 billion, it was the largest

countercyclical fiscal stimulus in American history.

These days, the Recovery Act isn't very popular. A lot of politicians and pundits assert with great confidence that the Recovery Act was useless. If you are a Republican candidate for President, you probably describe it as \$787 billion of pork that did nothing.

If you press people for why they think this they will probably say something like, "It's not rocket science—all you need are two good eyes to look around you. We spent all of this money and the economy is still terrible. It obviously didn't work."

Well, the theme of my talk this evening is that it is not that easy. Estimating the effects of fiscal policy may not be rocket science, but it is incredibly hard. The reason that it is hard is that fiscal actions are often taken in response to other things happening in the economy. Separating the impact of those other factors from the impact of the tax changes or spending decisions is very difficult. It requires many of the sophisticated techniques in the economist's tool kit—along with a big dose of creativity, and plenty of plain old-fashioned hard work.

Measuring the impact of fiscal policy is an area where I have spent much of my energy over the past several years, both as a researcher and a policymaker. It is also an area where there has been an incredible blossoming of research interest. There have probably been more studies on the effects of fiscal policy over the last three years than in the whole quarter century before that.

In my talk this evening, I thought I would discuss some of this new research. What do we really know about the effects of fiscal policy? What do we still need to figure out?

This topic is incredibly important not only for thinking about where we have

been, but what we should do in the future. Fiscal policy is at the center of many current economic policy debates. Should we have a second big round of fiscal stimulus to deal with our high unemployment rate? How quickly should the United States and other countries move to tame their looming budget deficits?

To know which policy prescriptions make sense, we need to know what fiscal policy actually does. We need the best evidence to make the best policy.

## **II. THE ISSUE**

To illustrate why estimating the effects of fiscal policy is hard, let me start with an example. In February 2008, the Bush Administration and Congress came together to pass a tax cut—the Economic Stimulus Act of 2008. This was before the collapse of Lehman Brothers, but just after what we now date as the start of the recession in December 2007. The total budgetary cost of the bill was about \$130 billion. Most of it came in the form of tax rebate checks mailed between April and July of 2008.

John Taylor, one of the economists saying loudly that fiscal stimulus doesn't work, has a short paper saying this tax rebate wasn't effective.<sup>1</sup> Almost his entire case is summed up by this figure. [FIGURE 1] It shows personal consumption expenditures and household disposable income (that is, income net of taxes).

Household income took a noticeable step up when the rebate checks came. Families had more money in their pockets. And yet, consumption did not rise at all. In fact, it fell a tiny bit. Clearly, Taylor says, the tax rebate had no effect.

The trouble with this analysis is, Professor Taylor wasn't thinking about what else was going on at the time. Democrats and Republicans didn't come together to pass the tax rebate for no reason. This was the heart of the subprime mortgage crisis. House

prices were tumbling. Mortgage lenders like Countrywide Financial were in deep trouble.

Economists were worried that consumption was about to plummet. For most families, their home is their main asset. When house prices fall, people are poorer, and so tend to cut back on their spending.

Against that background, the fact that consumption held steady around the time of the tax rebate may in fact be a sign of just how well it was working. It kept consumption up for a while, despite the strong downdraft of falling house prices.

Mark Zandi, a forecaster for Moody's Analytics, makes this point with a very nice graph.<sup>2</sup> [FIGURE 2] It shows the same two series Taylor had, disposable income and consumption, and adds household wealth. Notice that wealth was falling rapidly right at the time the rebate was happening. We would normally expect consumption to fall in response. Consumption, instead, held up while the rebate was occurring. But as wealth continued to slide down, eventually consumption went down with it.

The essential lesson from this example is that you can't deduce the effect of a tax rebate or some other policy by just looking at outcomes. You have to think hard about what else was going on, and where the economy was heading in the absence of policy.

Economists have a name for the problem so evident in Taylor's analysis: it's called omitted variable bias. Any time one is looking at the relationship between two variables, like consumer spending and the tax rebate, you need to worry that a third variable, like the fall in wealth, is influencing both of them.

Failing to take account of this omitted variable leads to a biased estimate of the relationship of interest. In the example I just described, it leads us to underestimate the beneficial impact of the tax rebate. Omitted variable bias is the central problem in most

empirical research in economics.

Let me give you an example closer to your own lives. Economists are interested in the effect of education on future wages. So you might think of collecting data on people's earnings later in life and years of schooling. But one of the key problems is that both variables may be influenced by many of the same factors. For example, maybe the same drive and focus that makes you successful in business also leads you to get your act together and go to college.

Labor economists have spent years of research and thousands of pages in academic journals trying to come up with creative ways of identifying the true impact of education on future earnings. And in case you are wondering about the results, the finding is that education matters even more than the simple estimates might suggest.<sup>3</sup> So, you should go back to studying right after my talk.

To do good empirical research anywhere in economics, we need to think hard about ways of dealing with omitted variable bias. That is especially true in macroeconomics, and in thinking about the effects of fiscal policy.

### **III. ROMER AND ROMER ON THE EFFECTS OF TAX CHANGES**

Before I went to Washington, I was working on just this issue of omitted variable bias in estimating the effect of fiscal policy—in particular, in estimating the effect of tax changes. It was joint work with my husband, David Romer, who is also an economics professor at Berkeley. I thought I would take a little time and describe this research.<sup>4</sup>

Let me start by taking a step back. The usual way that researchers had looked at the impact of tax changes was to estimate the relationship between output (real GDP) and the change in government tax revenues. In measuring tax revenues, they had tried

to control for the fact that revenues naturally tend to go up in good times and down in bad times. They used the change in something called cyclically-adjusted revenues.<sup>5</sup>

The finding was the expected negative relationship: lower taxes went with higher output. Tax cuts tend to cause the economy to grow, at least in the short run. But the estimated impact was not very large and the estimates were not very precise. The computer thought that tax cuts increased output, but it wasn't very sure.

But there was a problem of omitted variable bias in these studies. Some tax cuts—like the 2008 tax rebate we talked about earlier—were taken because output was tanking. In those cases, we wouldn't expect output to increase, even if the tax cuts were very effective. If such observations were common, the studies might go very far astray.

What David and I did was to bring in information on the motivation for tax changes. For every legislative tax change, up or down, there is a huge narrative record about why it was passed. This narrative record is contained in Congressional reports, presidential speeches, the Economic Report of the President put out by the Council of Economic Advisers each year, and other documents.

We read all of those documents and classified tax changes into those taken in response to other factors affecting output and those taken for more independent reasons. We identified a number of tax cuts taken because the economy was slipping into a recession. We also found a number of tax increases taken because government spending was rising; for example, policymakers raised taxes dramatically during the Korean War. This is important because spending increases will tend to increase output, while tax increases will tend to reduce it. So in cases where the tax increase is caused by the spending increase, there are systematically factors going in opposite directions.

At the same time, we also found a number of tax changes taken not in response

to current or forecasted economic conditions, but for more ideological or long-term reasons. For example, Ronald Reagan cut taxes in the early 1980s because he believed lower tax rates were good for long-term growth. Bill Clinton raised taxes in 1993 because he thought dealing with the deficit would be good for the long-term health of the economy.

We argued that to estimate the impact of tax changes, we should look at the behavior of output following these tax changes made for more ideological reasons. In other words, we dealt with some of the omitted variable bias problem by excluding from the empirical analysis the tax changes taken in response to economic conditions.

This analysis of the narrative record was incredibly time-consuming. We worked for more than a year before we did any statistical work. We didn't know if all of this care in dealing with omitted variable bias would actually matter.

The Saturday morning we sat down to run the first regressions was pretty stressful. But the result was that controlling for motivation mattered a lot. Our children still roll their eyes at the memory of two grown-ups jumping up and down in front of their computer screen yelling, "It worked! It worked!"

This picture illustrates the key empirical finding. [FIGURE 3] It shows two estimates of the impact of a tax cut of 1% of GDP on real output. The red line shows the result using the conventional measure of tax changes—the change in cyclically-adjusted revenues. The blue line shows the estimates based only on the relatively exogenous tax changes we identified from the narrative analysis. In both cases, the effect is positive—a tax cut raises output.<sup>6</sup>

But what you are supposed to see is that the effects are much larger using the more appropriate sample of tax changes. Limiting omitted variable bias results in larger

and more statistically significant estimated impacts of tax changes.<sup>7</sup>

When I was in the White House, I used to bristle when people would say I was a Keynesian economist. They acted as if I believed that fiscal stimulus mattered because of some theoretical book written in 1936, or because of what I was taught in graduate school. I used to say that I am not a Keynesian economist, I am an empirical economist. I believe what I do because of the empirical evidence.

Importantly, no one has done the same sort of a study of the impact of government spending, controlling for motivation. The closest is a study by Valerie Ramey.<sup>8</sup> She uses news about future military spending as her measure of spending shocks. The idea is that military spending is determined by wars and foreign policy developments, not by concerns about the state of the economy. Using this measure, Ramey finds a strong and significantly positive impact of changes in spending on output.

However, her measure of spending changes isn't perfect. It is likely to still be correlated with other developments affecting output, such as tax increases to pay for the wars, or some of the other disruptions, such as rationing, that go along with major military actions. For this reason, I worry there is still omitted variable bias in her estimates.<sup>9</sup> This may explain why her estimated impact of an increase in government spending on output is positive and highly significant, but smaller than what we find for tax changes.<sup>10</sup>

As a result, one of the questions we still don't have a good answer for is which fiscal policy tool, tax changes or spending changes, is more effective. Basic accounting predicts spending increases should have a larger impact. Some of a tax cut will likely be saved, whereas all of a spending increase gets into the system. So for the same budget



cost, the initial oomph of a spending increase should be larger. But we don't yet have the strong empirical evidence to back up or contradict this intuition. You will see in a minute, however, that some of the recent studies on the Recovery Act provide at least suggestive evidence that the conventional view is correct.

#### **IV. CROSS-SECTION STUDIES**

The work I've been describing uses historical or time-series evidence. These studies examine what happened to output following tax or spending changes in the past. They attempt to deal with omitted variable bias by focusing on fiscal changes that are relatively uncorrelated with other factors affecting output.

Another approach to estimating the effects of fiscal policy is to use cross-section evidence. These studies look for variation in fiscal changes across people or states, often at a single point in time, that are uncorrelated with other factors affecting these people or states.

Let me describe a cross-section study done by Jonathan Parker and a number of colleagues that looks at that same 2008 tax rebate we discussed earlier—the one that John Taylor said didn't work.<sup>11</sup>

What Parker and the others noticed was that people got their rebate checks at slightly different times. The Treasury Department just couldn't write the checks fast enough to give them to everybody at the same time. So they were spread out over a four-month period.

Now when you got your check was not determined by where you lived, or how old you were, or anything else likely to be correlated with how much you spend. It was determined by the last two digits of your Social Security number, which means that it

was effectively determined at random.

The Bureau of Labor Statistics conducts a detailed survey of the spending behavior of a large sample of households. The researchers worked with the BLS to add a question to the survey about when the family got its rebate check.

What they found is that there were big differences in the spending behavior of people who were otherwise similar in the months when the checks came out. Here is one of their key tables. [FIGURE 4] The empirical results highlighted in blue show that the spending of a family that got a check in a month was \$495 dollars higher than that of a family that didn't get a check. On average, families spent 50 to 90 percent of their rebate.

Interestingly, a large number went out and bought cars and other durable goods. The checks were only about \$600, so the people clearly spent more than the check. This resonates with me because that is exactly what my Dad did. I remember him counting the days until his check came, and then when it finally arrived he went straight to the Honda dealer.

So this cross-section evidence suggests that the tax rebate absolutely had an effect on people's behavior—even if the many other factors going on at the macro level make it hard to see it in overall consumer spending.

There is another excellent new cross-section study looking at government spending. It uses evidence both across states, but also over a number of years. Emi Nakamura and Jón Steinsson collected detailed data on defense procurement by state going back to 1966.<sup>12</sup> It turns out that we keep great data on this because members of Congress want to know how much defense spending is going to their state.

Nakamura and Steinsson point out that when national defense spending

increases, spending goes up more in states with a large defense sector for reasons that have nothing to do with the current economic conditions in the state. California is just more sensitive to increases in national defense spending than, say, Illinois.

They then look to see if these relatively exogenous increases in defense spending show up in higher output and employment at the state level. They find that they do. In fact, there is a very substantial and economically important impact.

One of the things that is so nice about Nakamura and Steinsson's paper is that it sketches down a framework to help us understand how these cross-section estimated effects translate into estimates of the aggregate impact of spending changes. They show that the translation is pretty complicated. It depends on things like the spillovers of spending in one state to neighboring states and on what monetary policy is doing. But they conclude that in the situation like the one we are facing now, where monetary policy is constrained by the fact that interest rates are already close to zero, the aggregate impact of an increase in government spending may be quite a bit larger than the cross-sectional effect.<sup>13</sup>

These two excellent studies are just the tip of the iceberg of a burgeoning literature exploiting cross-sectional variation in fiscal changes.<sup>14</sup> And vast majority are coming to a similar conclusion. Fiscal policy matters—big time.

## **V. IMPACT OF THE RECOVERY ACT**

The studies I have been describing suggest that if the government cuts tax or increases spending, output and employment will rise, relative to what otherwise would have happened. But what about the Recovery Act in particular? I started my talk this evening with the claim many make that the \$787 billion of fiscal stimulus in the

Recovery Act didn't do much. The fact that fiscal policy, in general, matters makes it likely that the Recovery Act mattered too. But can we go beyond that?

The first thing to say is that, as with any policy move, the right way to judge the Recovery Act is relative to what otherwise would have happened. The metaphor I find helpful is to a patient who has been in a terrible accident and has massive internal bleeding. After life-saving surgery to stop the bleeding, the patient is likely to still feel pretty awful and will have a long way to go before he is fully healed. But that doesn't mean the surgery didn't work. You have to judge the effect of the surgery relative to what otherwise would have happened. Without surgery, the patient would have died.

Well, the same is true of the Recovery Act. Just pointing out that the economy isn't doing very well doesn't tell you what its effects were. To judge its impact, you have to consider where the economy was headed before it was passed.

Unfortunately, estimating where the economy would have gone without the Recovery Act is hard. We don't observe what didn't happen.

One way we tried to estimate this counterfactual when I was at the Council of Economic Advisers was to construct a fairly simple statistical forecast.<sup>15</sup> It just used the past values of employment and output to project where the economy was going. Such a procedure can provide a reasonable forecast because output has some usual dynamics: when it starts to fall, it continues to fall for a while before eventually turning around. We used actual data only through the first quarter of 2009—before the Recovery Act kicked in.

Here is what the simple statistical procedure says would have happened to real GDP in the absence of the Recovery Act—based just on what had already happened.

[FIGURE 5] The light blue bars show the prediction for GDP. Output would continue to

fall for much of 2009, and then gradually start to grow again.

The overall height of the bars—the sum of the light blue and the dark blue pieces—is what actually happened. Instead of continuing to fall in the second quarter of 2009, output almost stabilized. Then real GDP started to grow in the third quarter of 2009. Relative to what a simple statistical procedure says would have happened, the economy did much better after the Recovery Act. By the first quarter of 2010, one year after passage, output was 3% higher than it otherwise would have been.

Now, I don't want to push this calculation too far. It is just a crude way to control for the fact that the Recovery Act was passed in response to the fact that the economy was plummeting. And it mixes together the effects of the Recovery Act and other actions to deal with the crisis, such as monetary policy.<sup>16</sup> But it certainly suggests that the Recovery Act was very helpful.

A much better study of the impact of the Recovery Act was conducted by four staff economists at the Council of Economic Advisers—Gabriel Chodorow-Reich, Laura Feiveson, Zachary Liscow, and Gui Woolston.<sup>17</sup> On their first day on the job, I asked them to think about a creative way to test whether the Recovery Act mattered.

The way that they came up with was to look at some of the variation in spending across states—to do a cross-section study like the ones I described a while ago.

Now, we can't just compare Recovery Act spending in a state and, say, state employment because there would be severe omitted variable bias. A state with higher unemployment and slower growth tended to get more money because many of the components of the Act, such as unemployment insurance and food stamps, were based on need. So if you just did the simple correlation, you might well find that states with more Recovery Act spending did worse. But, of course, causation would be running

from worse outcomes to more spending, not the other way around.

What these researchers did was to focus on a piece of the Recovery Act where the state variation was relatively exogenous—the state fiscal relief. Roughly \$130 billion of the Recovery Act (about one-sixth) took the form of transfers to state and local governments. It was mainly given as Medicaid matching money, just because that was the easiest way to transfer Federal money to the states quickly. But the law made it clear that states should view these funds as fungible: they could use the Federal money to pay more of their Medicaid bill, and spend state money on other pressing needs.

How much of this money states got was partly determined by how generous their Medicaid program was before the crisis. So there was some variation across states that wasn't driven by how bad the recession was in the state.

The four young researchers then looked at how employment growth varied in relation to how much of this relatively exogenous state fiscal relief the state got. This figure shows the relationship. [FIGURE 6] Each state is a data point. How much of this Medicaid funding based on a formula the state got is measured along the horizontal axis. Employment growth in the state is measured along the vertical axis. A state like New York, in the upper right-hand corner, got relatively more of this state fiscal relief and had higher employment growth.

What you see is a positive relationship. In general, states that got more of this kind of Recovery Act funding had much stronger employment growth. Indeed, the researchers estimate that the impact was substantially larger than we had assumed in the original projection of the likely impact of the Recovery Act.<sup>18</sup>

Daniel Wilson, a researcher at the Federal Reserve Bank of San Francisco, did a similar exercise looking at broader measures of Recovery Act spending across states.<sup>19</sup>

Like the paper I just described, Wilson uses the distribution of Recovery Act funds across states based on formulas that didn't involve need, to isolate the spending that was relatively independent of the initial conditions in the state. In addition to the Medicaid funding used in the previous study, Wilson also looks at things like highway spending, which was allocated mainly according to how many miles of highways a state had.

He concludes that overall, the Recovery Act created or saved about 3 million jobs by March 2010—almost exactly what the Administration predicted the act would do, based on a more historical, time-series methodology. He also finds spending on infrastructure and general fiscal aid to states had a particularly large positive impact.<sup>20</sup>

A third study looks at the impact of the main individual income tax cut contained in the act, the Making Work Pay tax credit. This tax credit gave a typical family about \$800 extra dollars in both 2009 and 2010. Claudia Sahm and her coauthors worked with the Michigan Survey of Consumer Sentiment to ask respondents if they knew about the tax cut and if they planned to spend it.<sup>21</sup>

The results are not very encouraging. They find that as of July 2009, a majority of respondents said that their tax withholding had not gone down or they didn't know if it had been reduced. They also find that only 13% of respondents planned to spend their tax cut. Most thought they would save it or use it to pay down debt. These results could suggest that the Making Work Pay tax credit was less effective at raising spending than other portions of the Recovery Act.

However, these results are based on what consumers said they would do. More complete studies looking at what consumers actually did have not yet been done. It is certainly possible that the tax cut had more impact over time, as people realized it had happened.<sup>22</sup>

While much research remains to be done on the Recovery Act, what has been done so far is consistent with the other research on the effects of fiscal policy more generally. Fiscal changes matter greatly, and the Recovery Act mattered substantially in 2009 and 2010.

Some pieces, such as the state fiscal relief, appear to have been more effective than anticipated. Other pieces, such as the Making Work Pay tax credit, may have been less effective than anticipated. But overall, the act appears to have made a significant difference.

The biggest deficiency in the act was that it was too small relative to the problem we were facing. It is hard to imagine that nearly \$800 billion could ever be thought of as too small. It was, as I mentioned before, the largest countercyclical fiscal stimulus ever enacted.

But we were facing what turned out to be the worst recession since the Great Depression. At the time we were designing the Recovery Act, we knew the downturn was very bad and getting worse. But neither the Administration nor most other forecasters correctly predicted just how truly horrible it would become. As a result, the will to do the truly monumental fiscal stimulus that was needed did not exist.

That the Recovery Act was not large enough to completely solve the problem does not render it less significant. At the very least, the estimates suggest that about 3 million people were employed in 2010 who would not have been if it weren't for the Act. And the impact of the act at the macro level may have been even more significant. By helping to stabilize the economy at a time when it was still vulnerable to continued financial panic, the Recovery Act may have prevented an even more cataclysmic meltdown of the economy.



Secretary of the Treasury Timothy Geithner and I used to have a running back and forth on just this topic. He liked to say there is more fiscal stimulus in financial rescue than in the Recovery Act. By this he meant that healing the financial system could have a big impact on things like consumer spending and investment—the same things that fiscal stimulus was supposed to stimulate.

I used to come back with, there is more financial rescue in fiscal stimulus than in the Treasury's Financial Stability Plan. By this I meant that by stopping the freefall in the economy, the Recovery Act greatly helped to heal the financial system. Turning the economy around helped to raise the value of banks' capital and lower loan defaults—two things that greatly reduced the chance of further panics.

The truth is, both the Recovery Act and actions to stabilize the banks were important and helped to reinforce each other. But I think there is a good case to be made that the Recovery Act was even more important than fiscal stimulus usually is, because this time the financial system was in such a precarious state.

## **VI. EXPANSIONARY FISCAL CONTRACTIONS?**

Despite what I feel is overwhelming and compelling evidence that fiscal stimulus is expansionary, and fiscal contraction is, well, contractionary, many politicians claim the opposite is true. We have already discussed that many say the Recovery Act was useless or possibly even counterproductive.

But even more striking are the number who assert forcefully that fiscal austerity—getting the budget deficit down immediately—would be good for unemployment and growth. This was a major talking point of Republicans during the debt ceiling debate. At times even President Obama seemed to agree that reducing the

deficit could improve confidence enough that it might encourage growth.

This is practically the only view one hears in Europe. George Osborne, the Chancellor of the Exchequer in the United Kingdom, is a firm believer in expansionary fiscal contraction, and the U.K. is currently in the midst of a radical austerity program. German policymakers also believe this strongly.

Now economists have helped feed these notions.<sup>23</sup> A very influential paper by Alberto Alesina and Silvia Ardagna found that fiscal austerity was generally expansionary.<sup>24</sup> And everyone has been citing it.

What Alesina and Ardagna did was to get budget data for a large number of advanced countries over the past 35 years. They identified large fiscal consolidations by looking for times when the cyclically-adjusted budget deficit fell sharply. They then looked at what happened to output after these episodes. They find that output tended to rise on average after these consolidations, particularly those focused on reductions in government spending.

Unfortunately, there turns out to be a lot of omitted variable bias in Alesina and Ardagna's empirical analysis. Some of their fiscal consolidations weren't deliberate attempts to get the deficit down at all. Rather, they were times when the budget deficit fell because stock price booms were pushing up tax revenues. Stock prices were a big omitted variable. They were driving the deficit reduction and were likely correlated with rapid output growth. This omitted variable made it look as though deficit reduction was expansionary, when it really wasn't.<sup>25</sup>

Last year, researchers at the International Monetary Fund published a much more careful study of the impacts of deliberate fiscal austerity measures. They identified deliberate consolidation moves in 15 advanced countries over the last 30 years

using narrative analysis. They went through budget documents for each country and reports of international economic agencies to identify when governments were actually trying to reduce their budget deficits, (and were doing so for reasons unrelated to short-run macroeconomic developments). They dealt with omitted variable bias by identifying fiscal austerity measures from what policymakers said they were doing, not just what happened to the deficit.

This picture shows their key finding. [FIGURE 7] Unemployment typically rose and output fell following such austerity programs. Their answer to the question posed by the title of their paper, “Will It Hurt?” is a firm yes.<sup>26</sup>

Of course, this result shouldn't be surprising. It is consistent with all of the other evidence we have been discussing. This is yet another study that shows when researchers measure the impact of fiscal policy carefully—taking into account omitted variable bias—they find that it matters a lot, and in the expected direction.

The experience of a number of countries currently undergoing fiscal austerity is consistent with the IMF's findings. Here is a picture of what has happened to unemployment in Greece, Spain, and the United Kingdom since they started their austerity programs. [FIGURE 8] In each case, unemployment has risen—in some cases, dramatically. In Spain, the unemployment rate is now 22.6%.

The bottom line is that, as much as policymakers and even many economists want to believe that doing what seems like a noble thing—lowering the budget deficit—is good for growth in the near term, the evidence is firmly against this proposition. Fiscal austerity may be desirable for the long-run solvency and health of the economy. But it lowers growth and raises unemployment in the near term. That is an essential fact that needs to inform policy decisions.

## **VII. IMPLICATIONS FOR TODAY**

I hope I have convinced you that we know a great deal about the effects of fiscal policy. Indeed, we know more now than we have ever known before. There is a large and growing literature that shows that fiscal expansion helps an economy grow in the near term; that certain types of fiscal stimulus are particularly effective; and that fiscal contractions will tend to lower output and employment in the short run.

Perhaps even more important, we have learned a great deal about *how* to do better research on the impact of fiscal policy. We have learned that omitted variable bias is a central problem in this area. And economists have come up with sensible approaches, such as bringing in narrative evidence and doing careful cross-section analysis, to deal with this problem. So, I predict that we will be learning even more about the effects of fiscal policy in the years to come.

The obvious final question for my talk this evening is: What does all this evidence mean for what policymakers should be doing now? Now I don't want to get into detailed policy prescriptions. But there are some broad implications that I think are important.

One involves the budget deficit—both in the United States and in many other countries.

There is no question that we have a terrible long-run budget problem here at home. Our deficit is large today—almost 10% of a year's GDP—mainly because of the recession. When people are unemployed, they don't pay taxes and so the deficit rises. The U.S. deficit is expected to fall substantially as the economy recovers. So the immediate deficit is not the main concern.

What keeps experts up at night are the long-run deficit projections. The

retirement of the baby-boom generation and rising health care costs are conspiring to raise government spending dramatically over the next three decades. As a result, the deficit is expected to rise to astronomical levels. On the path we are currently on, the deficit is projected to hit nearly 16% of GDP by 2035, and be on its way to even higher levels.<sup>27</sup> No country has ever run deficits like that for a sustained period and remained solvent. So, the long-run deficit is a problem we absolutely have to solve.

The same is true of many other advanced economies. Germany, France, Japan, and Britain all have terrible long-run budget outlooks.<sup>28</sup> And the true problem children of Europe—Greece, Portugal, Spain, and Italy—have such unsustainable deficits that financial markets have already lost confidence in their ability to repay.

The research on the impact of fiscal contractions, however, suggests that we need to be smart about dealing with these deficits. Aggressive moves to immediately lower the deficit will cause unemployment to rise. Indeed, as I have described, we have already seen this happen in a number of countries that have either chosen or been forced by debt crises to shrink their deficits immediately.

The resulting high unemployment just makes the deficit problem even worse. Right now, countries like Greece and Spain are in a vicious circle, where fiscal austerity leads to higher unemployment which leads to higher deficits and more austerity.

A much more sensible way forward is to pass aggressive plans that will shrink deficits gradually over time. We should make the decisions right now about what spending to cut and whose taxes to raise. But then we should phase these measures in as the economy recovers. In the United States, such a forward-looking deficit reduction plan might include things like gradually raising the eligibility age for Medicare, or gradually phasing out some of the biggest deductions in the tax code.

Such gradual fixes will still be painful. There is just no way around the fact that we are going to need to pay more taxes or receive fewer benefits and government services. Indeed, we will probably need to do both. But by listening to the new research on fiscal policy, we can at least do the needed deficit reduction in way that minimizes the macroeconomic damage.

The other main implication of the new research on fiscal policy involves the current state of the economy.

Right now, unemployment is a terrible problem in the United States and elsewhere. Fourteen million Americans are looking for a job but can't find one. Six million of them have been out of work for more than six months.

Such high unemployment is not only ruining people's lives, it may be doing permanent damage to the economy. There is some evidence that the longer high unemployment lasts, the more likely it is to become permanent.<sup>29</sup> And studies show that workers who go through prolonged unemployment have lower wages and less stable employment for the rest of their careers.<sup>30</sup> It is imperative that we get this unemployment down quickly.

Many policymakers have been looking for innovative solutions. The Federal Reserve has taken some unconventional actions that may be somewhat helpful. And both President Obama and Republican presidential candidate Mitt Romney have been talking about measures to increase long-run growth, such as more trade agreements and less burdensome regulation.

But almost no one thinks that either what the Fed is doing or these long-run measures will do much to bring unemployment down quickly. This is why most forecasts call for the U.S. unemployment rate to still be over 8% at this time next year.

The research I have been discussing this evening suggests that more fiscal stimulus would be very helpful. Despite all of the claims and protestations, the evidence is that fiscal stimulus does raise output and employment significantly. Now, it would take another bold move—probably substantially larger than the \$450 billion program President Obama has proposed—to really create a lot of jobs. But the evidence says it would work.

We could do the near-term fiscal expansion in a more cost-effective way by listening to what studies say about the types of stimulus that work best. For example, larger temporary tax cuts may not be the best way to go. State fiscal relief and government infrastructure spending are two measures with particularly high bang for the buck.

And, if we coupled an aggressive second round of stimulus with a serious plan to reduce the deficit over time, we would get the best of both worlds. We could do what we need to heal the economy today. And we would reassure financial markets and ourselves that we would remain solvent over the long haul.

## **VIII. CONCLUSION**

People often ask me if my time in Washington left me disillusioned. For the most part, it didn't.

The policy process in the Obama White House was almost everything I hoped it would be. Of course, there were political realities we had to respect. But for the most part, we suggested policies based on what rigorous evidence showed would work best. One the things that the President would often say that I just loved was: "Tell me what's right, and I'll figure out how to sell it."

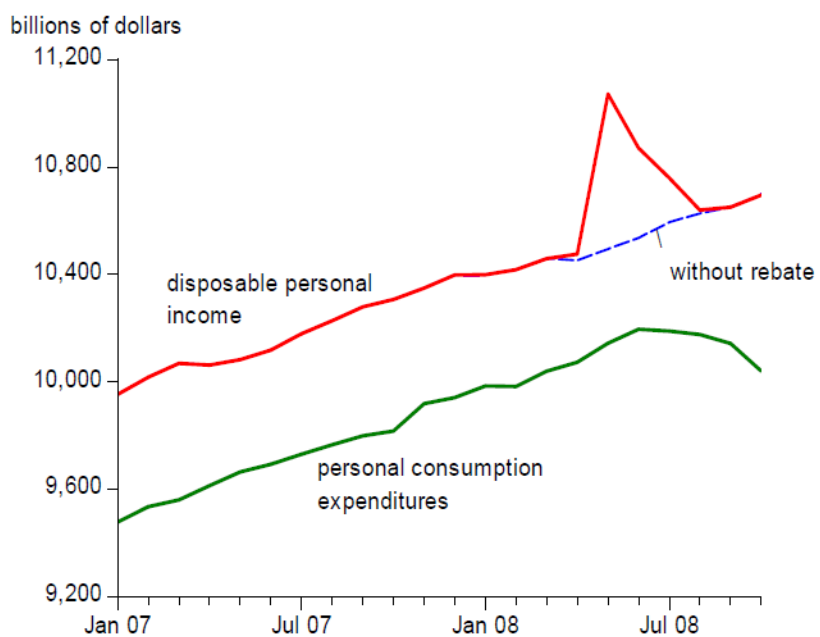
And he managed to sell many excellent policies. He signed a very effective fiscal stimulus at the moment when the economy needed it most desperately. Congress passed comprehensive health care reform that will provide insurance coverage to 30 million uninsured Americans and help to slow the growth of health care spending. And, the country now has a better financial regulatory system that will help to prevent another meltdown of our financial markets—so that we may never again have to suffer from the ravages of a financial crisis.

The one thing that has disillusioned me is the discussion of fiscal policy. Policymakers and far too many economists seem to be arguing from ideology rather than evidence. As I have described this evening, the evidence is stronger than it has ever been that fiscal policy matters—that fiscal stimulus helps the economy add jobs, and that reducing the budget deficit lowers growth at least in the near term. And yet, this evidence does not seem to be getting through to the legislative process.

That is unacceptable. We are never going to solve our problems if we can't agree at least on the facts. Evidence-based policymaking is essential if we are ever going to triumph over this recession and deal with our long-run budget problems.

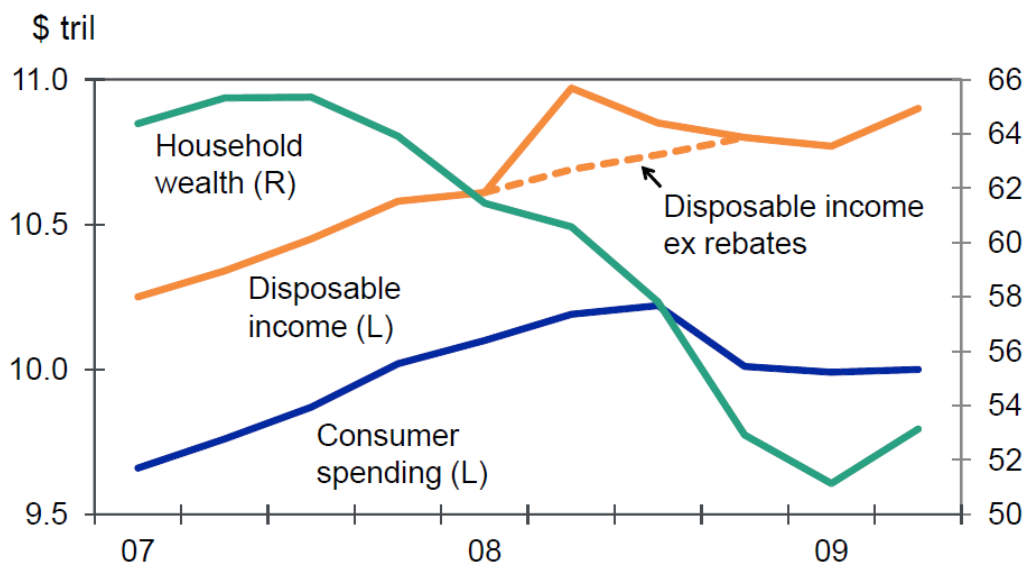


**FIGURE 1**  
**Taylor's Evidence that the**  
**Economic Stimulus Act of 2008 Didn't Work**



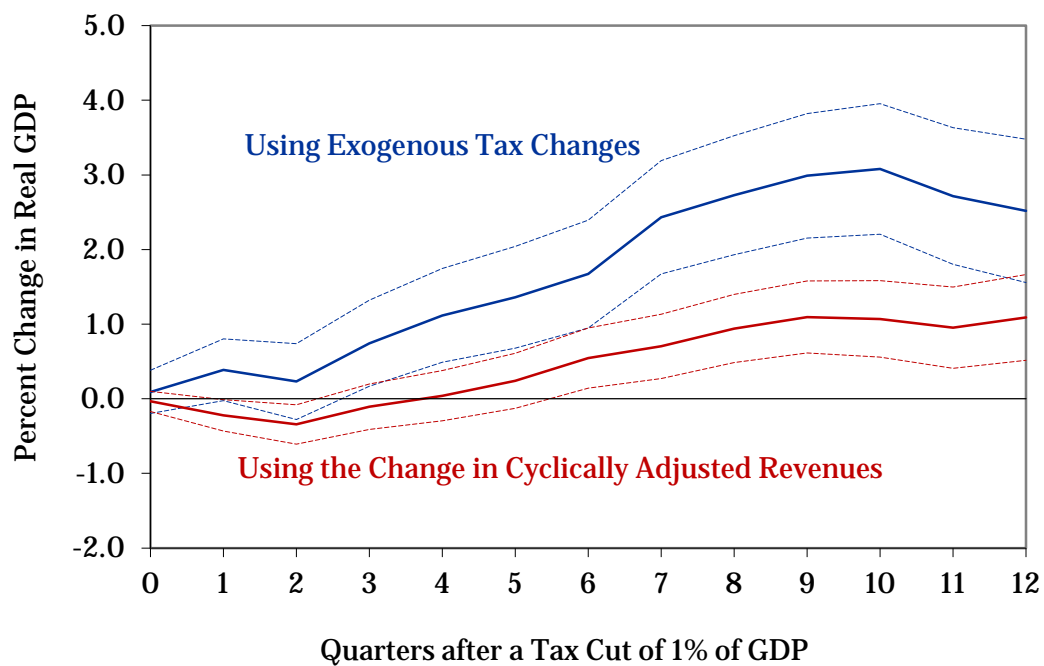
Source: Taylor (2009), Presentation Slides

FIGURE 2  
Zandi's Version of Taylor's Graph:  
Adding in Household Wealth



Source: Zandi (2010)

FIGURE 3  
Romer and Romer's Estimates of the  
Impact of a Tax Cut of 1% of GDP



Source: Romer and Romer (2010)

**FIGURE 4**  
**Parker, Souleles, Johnson, and McClelland's Cross-Section Evidence**  
**on the Impact of the Economic Stimulus Act of 2008**

Table 4: The contemporaneous response of expenditures to the ESPs among all households

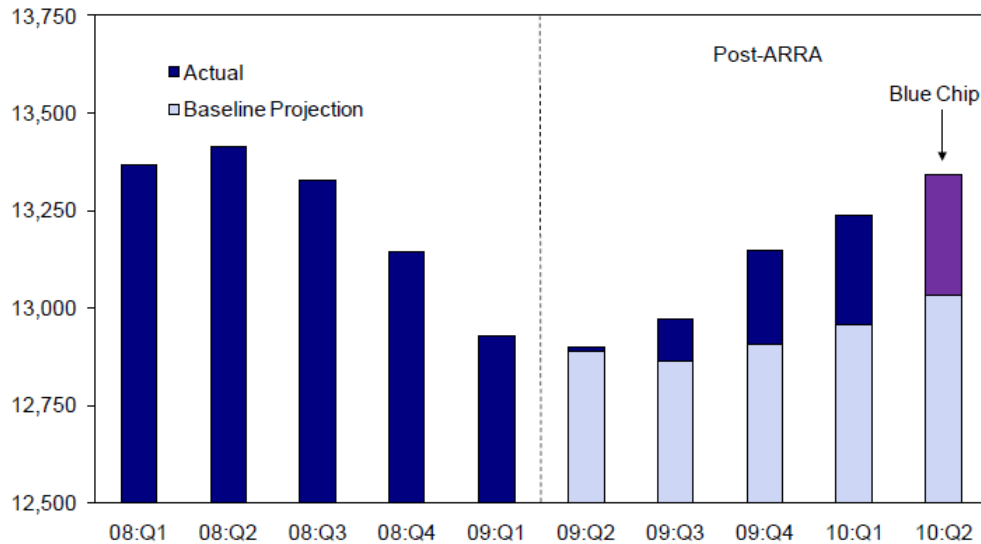
Dependent Variable:	Dollar change in				Dollar change in				Percent change in			
	Food	Strictly Non-durables	Non-durable spending	Total spending	Food	Strictly Non-durables	Non-durable spending	Total spending	Food	Strictly Non-durables	Non-durable spending	Total spending
Estimation method:	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
<i>ESP</i>	0.016 (0.027)	0.079 (0.046)	0.121 (0.055)	0.516 (0.179)								
<i>I(ESP)</i>					10.9 (31.7)	74.8 (56.6)	121.5 (67.2)	494.5 (207.2)	0.69 (1.27)	1.74 (0.96)	2.09 (0.94)	3.24 (1.17)
<i>Age</i>	0.72 (0.34)	-0.23 (0.65)	0.96 (0.81)	6.56 (2.25)	0.70 (0.34)	-0.35 (0.65)	0.77 (0.81)	5.77 (2.24)	0.048 -0.010	0.009 -0.010	0.029 -0.010	0.045 -0.010
<i>Change in # adults</i>	198 (55)	448 (106)	561 (118)	452 (375)	198 (55)	448 (106)	561 (118)	452 (375)	8.96 (1.77)	8.43 (1.34)	8.99 (1.32)	4.78 (1.63)
<i>Change in # children</i>	89 (48)	139 (96)	185 (111)	-254 (388)	89 (48)	139 (96)	186 (111)	-252 (388)	4.50 (2.02)	3.35 (1.53)	3.93 (1.50)	1.42 (2.10)
Num of obs	17,478	17,478	17,478	17,478	17,478	17,478	17,478	17,478	17,427	17,475	17,478	17,478

Source: Parker, Souleles, Johnson, and McClelland (2011)

**FIGURE 5**  
**Comparing Actual GDP Following the Recovery Act**  
**to a Statistical Baseline Forecast**

**Figure 3. Real GDP: Actual and Baseline Projected Levels**

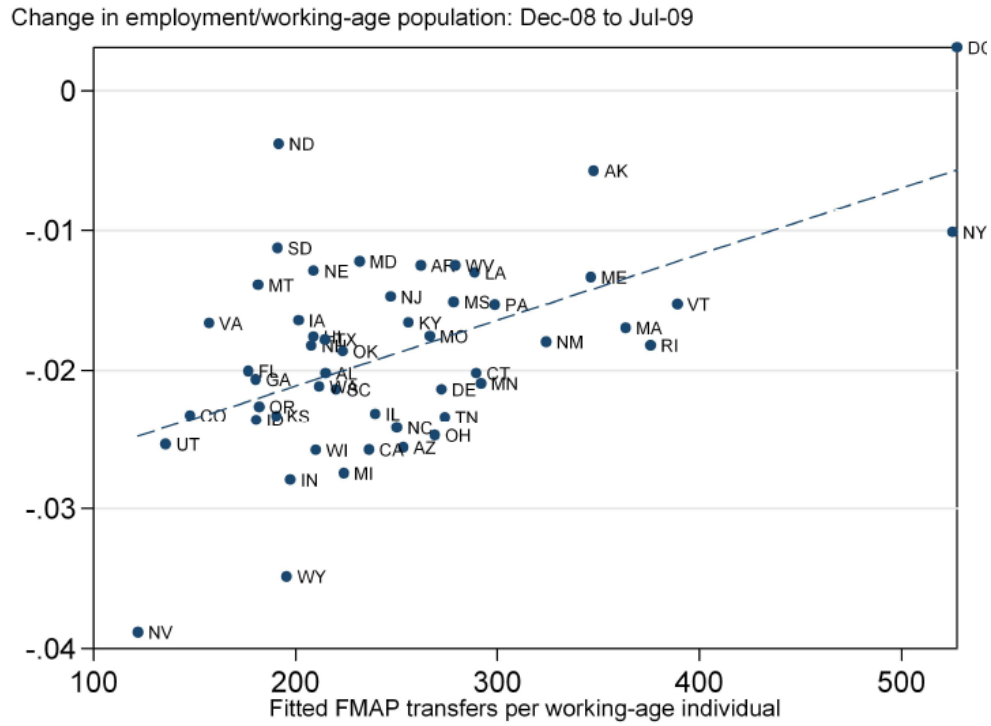
Billions of 2005 dollars, seasonally adjusted annual rate



Sources: U.S. Department of Commerce (Bureau of Economic Analysis); CEA calculations; Blue Chip consensus forecast.  
 Note: The 2010:Q2 number for "actual" is the Blue Chip consensus forecast from July 10, 2010.

Source: Council of Economic Advisers (2010)

**FIGURE 6**  
**Chodorow-Reich, Feiveson, Liscow, and Woolston's Evidence**  
**that State Fiscal Relief in the Recovery Act Was Effective**

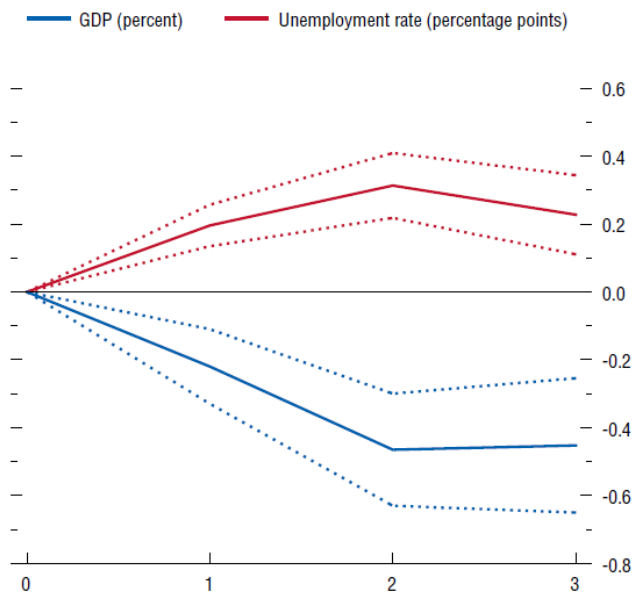


Source: Chodorow-Reich, Feiveson, Liscow, and Woolston (2011)

**FIGURE 7**  
**IMF's Evidence that Fiscal Consolidations Are Contractionary**

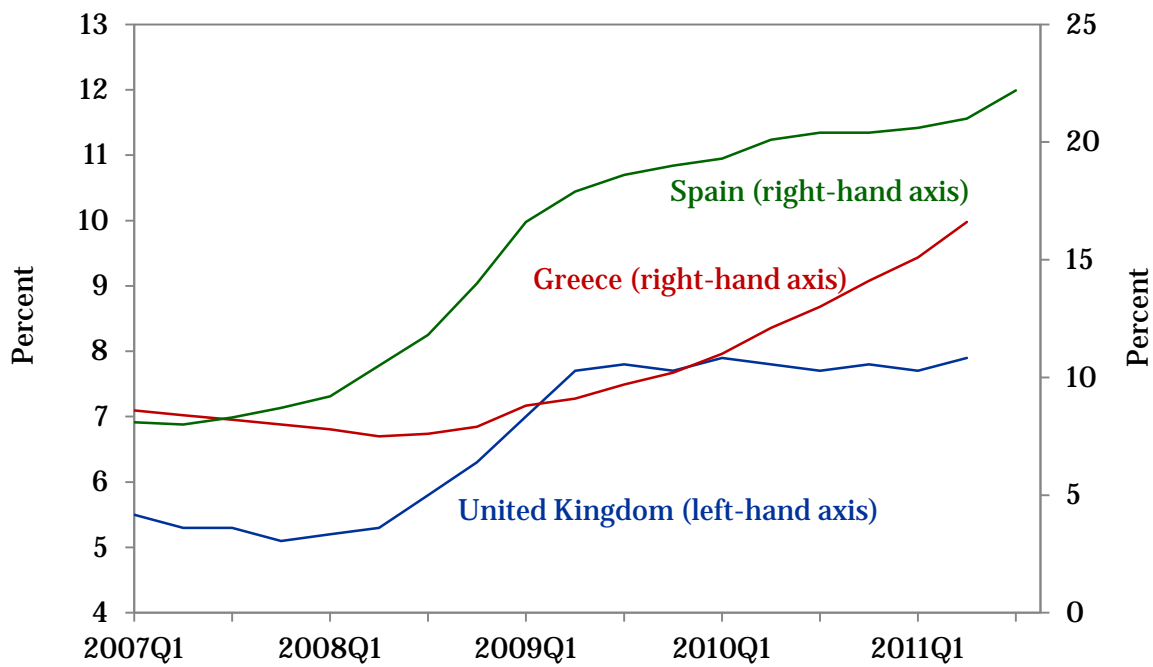
**Figure 3.2. Impact of a 1 Percent of GDP Fiscal Consolidation on GDP and Unemployment**

Fiscal consolidation is normally contractionary. A fiscal consolidation equal to 1 percent of GDP typically reduces real GDP by about 0.5 percent and raises the unemployment rate by about 0.3 percentage point.



Source: International Monetary Fund (2010)

FIGURE 8  
Unemployment in Countries Undergoing Fiscal Austerity



Source: Eurostat



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## ENDNOTES

<sup>1</sup> Taylor (2009).

<sup>2</sup> Zandi (2010).

<sup>3</sup> Card (1999) provides an excellent summary of the empirical research on this topic. He also discusses the fact that the finding that careful identification seems to raise the estimated importance of education is somewhat surprising, and suggests various explanations for this result.

<sup>4</sup> Romer and Romer (2010).

<sup>5</sup> See Blanchard and Perotti (2002) for a careful recent paper using this standard approach.

<sup>6</sup> In the conclusion of our paper, we discuss that the speed of the estimated impact we identify suggests that tax changes are affecting output by raising aggregate demand, rather than by increasing aggregate supply. The fact that inflation responds negatively to tax changes (inflation rises when taxes fall) is also consistent with tax changes primarily affecting aggregate demand. Romer and Romer (2011) look at the incentive (or aggregate-supply) effects of interwar tax changes. We find them to be positive, but small (and precisely estimated).

<sup>7</sup> Cloyne (2011) does the same sort of study of the motivation for tax changes for the United Kingdom. He finds remarkably similar estimates of the impact of relatively exogenous tax changes on output in the U.K. as Romer and Romer do for the United States.

<sup>8</sup> Ramey (2011).

<sup>9</sup> Barro and Redlick (2011) attempt to discern the importance of both spending changes and tax changes using annual data back to World War I. They use military spending as the measure of government spending and a new series they derive on the change in the average marginal tax rate as the tax variable. Though Barro and Redlick discuss identification extensively, they make relatively little progress in actually dealing with omitted variable bias. First, their empirical results are dominated by World War II and the Korean War, which were both times when rationing and price controls were used to limit the increase in output. So, it is likely that these omitted variables are having an important impact. Second, virtually all of their estimates of the effects of government purchases come from specifications that assume that taxes have no impact on the economy within the year. If this assumption is wrong (as both their own theoretical framework and the evidence in Romer and Romer (2010) suggest it is), the fact that wartime spending increases were often accompanied by tax increases would bias down their estimates of the impact of spending changes. And third, many of the tax increases that accompanied wars were excise tax increases, which are not reflected in their tax series. So they miss this omitted variable as well.

<sup>10</sup> In a study similar in spirit to Ramey's, Fisher and Peters (2010) identify news about future government spending from excess stock returns of large military contractors. They find multipliers somewhat larger than Ramey does. Like Ramey's estimates, those of Fisher and Peters may be biased downward because of tax increases and other factors that tend to offset the effects of increases in government military purchases.

<sup>11</sup> Parker, Souleles, Johnson, and McClelland (2011).

<sup>12</sup> Nakamura and Steinsson (2011).

<sup>13</sup> This section of Nakamura and Steinsson's study is part of an extensive theoretical literature that shows that the response of monetary policy is a key determinant of the impact of fiscal changes. Two other important papers in this literature are Woodford (2011) and Christiano, Eichenbaum, and Rebelo (2011). Woodford (2011) explains why Cogan, Cwik, Taylor, and Weiland (2010) reach a substantially different conclusion.

<sup>14</sup> For example, Shoag (2010) looks at the impact of windfalls to state pension funds on spending and state output and employment. Suárez Serrato and Wingender (2010) look at changes in federal spending at the state level caused by population adjustments due to new census data. Both these studies find important impacts of government spending on economic performance.

<sup>15</sup> See Council of Economic Advisers (2010, pp. 10-13) for a description of the vector autoregression used to form the statistical baseline forecast.

<sup>16</sup> Likewise, the forecast can't capture the features that may have made this recession particularly severe and long-lasting, such as the financial crisis and housing bust. So, if anything, it is likely to understate the negative trajectory we were on before the Recovery Act was passed.

<sup>17</sup> Chodorow-Reich, Feiveson, Liscow, and Woolston (2011).

<sup>18</sup> Chodorow-Reich, Feiveson, Liscow, and Woolston (2011) show that this relationship is robust to including a number of possible determinants of state employment trajectories or potentially confounding determinants of state spending as controls. They also check that states did in fact spend the state fiscal relief. They show that state rainy day funds did not rise in response to the state aid from the Recovery Act.

Cogan and Taylor (2011) present a different view. They show that states had been borrowing heavily before the Recovery Act, and then borrowed less after the receipt of the state fiscal relief. From this, they conclude that the state fiscal relief in the Recovery Act had no net benefit—it just replaced state spending financed by borrowing with state spending financed by Federal aid.

Cogan and Taylor's analysis shows the importance of specifying the counterfactual. Most states have balanced budget requirements. The requirements leave some room for deficit financing of current spending for a year or two, by running down rainy-day funds or the use of various accounting devices, especially if the deficit is the result of a downturn that was not expected when the budget was passed. But states didn't have the option of continuing the pace of borrowing they had done in the 2008 and 2009 fiscal years. Absent the Recovery Act, states would have been forced to contract spending greatly. Therefore, relative to the plausible baseline, state spending was substantially higher following the receipt of the Recovery Act funds.

<sup>19</sup> Wilson (2011).

<sup>20</sup> One study reaching a more negative conclusion on the effectiveness of the Recovery Act is Conley and Dupor (2011). They start with a very broad measure of Recovery Act spending by state (one that includes much need-based spending), and try to isolate an exogenous piece using several instruments. Judging from their reported t-statistics, it appears that their instruments do not isolate a large amount of independent variation in Recovery Act funding across states. As a result, they may have a weak instrument problem, which could be leading to biased results.

<sup>21</sup> Sahm, Shapiro, and Slemrod (2011)

<sup>22</sup> One intriguing finding from the Parker, Souleles, Johnson, and McClelland (2011) study of the 2008 rebate involves comparing consumers' actual behavior with what they said they did with their rebates. The authors find that consumers who reported using most of their rebate to increase saving or pay off debt in fact spent a large fraction of it. Thus, self-reports may also understate the impact of the Making Work Pay tax credit.

<sup>23</sup> Giavazzi and Pagano (1990) were among the first to raise the possibility of expansionary fiscal contractions. They showed that two countries, Denmark in the early 1980s and Ireland in the late 1980s, greatly reduced government spending and also had strong growth in private sector demand. Importantly, as Giavazzi and Pagano note, these two cases were exceptions, not the norm.

<sup>24</sup> Alesina and Ardagna (2010).

<sup>25</sup> IMF (2010) points out that there is another problem with using what actually happened to the deficit as the measure of fiscal austerity. Policymakers may tend to stop fiscal consolidations that are followed by output declines, but continue those followed by output increases. So the only consolidations that show up in the budget data are the ones followed by growth. This biases the estimates toward finding that consolidations lead to output expansions.

<sup>26</sup> The IMF study found that the contractionary effects of fiscal consolidation were often lessened by other policy actions taken at the same time. For example, they found that monetary policymakers typically reduced policy interest rates when the country was reducing its budget deficit. Likewise, exchange rates typically depreciated. These mitigating factors may explain why the negative impacts identified in this study are smaller than those found in some other studies of the impact of fiscal actions. Importantly, in the current situation, the ability of monetary policy to lessen the impact of fiscal consolidation is greatly reduced because nominal policy interest rates are already at or near zero in many countries. Likewise, because the exchange rate is a relative price, it isn't possible for many countries to depreciate at the same time. Therefore, consolidation would likely be more contractionary in the current environment.

<sup>27</sup> Congressional Budget Office (2011).

<sup>28</sup> See Cecchetti, Mohanty, and Zampolli (2010).

<sup>29</sup> See Ball (1998).

<sup>30</sup> See, for example, Von Wachter, Song and Manchester (2011).