So, Is It Working?
An Assessment of the American Recovery and Reinvestment Act at the Five-Month Mark

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A couple of weeks ago, we hit the five-month anniversary of the American Recovery and Reinvestment Act. The Recovery Act provided $787 billion of tax cuts and government spending, or roughly 5 percent of GDP, making it the boldest countercyclical fiscal stimulus in American history. It was a central piece of the Administration's wide-ranging program to rescue the American economy from the worst recession since the Great Depression, and to build a foundation for a stronger, more durable prosperity.

Over the spring and summer, there has been a lot of chatter about what the Recovery Act was doing and how well it was working. I would like to spend some time this morning presenting a clear-eyed assessment of what it has accomplished and what we can expect going forward. This week is a natural time for such an assessment, coming on the heels of the last Friday's GDP report. This report gave us our first look at overall economic performance in the second quarter of this year, and a clearer sense of the depth of the recession over the previous five quarters.

In an unusually whimsical moment, I sent in as the title of my talk, "So, Is It Working?" Though it may destroy some of the suspense, I thought that given the provocative title, I should probably get straight to the answer: Absolutely. The Recovery Act, together with the actions taken by the Treasury and the Federal Reserve to stabilize financial markets and the housing

sector, is helping to slow the decline and change the trajectory of the economy. It is providing a crucial lift to aggregate demand at a time when the economy needs it most. And, we anticipate that the effects will build through the end of this year and the beginning of the next.

WHAT WE DID AND WHY WE DID IT

Let me begin by discussing the motivation for the fiscal stimulus and the logic behind its design.

History of the Crisis. The U.S. economy slipped into a recession in December 2007. The initial downturn was relatively mild. Real GDP declined at an annual rate of just 0.7 percent in the first quarter of 2008, and job loss was about 100,000 per month. Indeed, a well-timed temporary tax rebate that began going out in late April 2008 contributed to positive GDP growth in the second quarter of last year.

Unfortunately, worsening declines in house and stock prices late last summer led to a fall in consumer spending and sent shock waves through our financial system. The collapse of Lehman Brothers last September set off a genuine financial panic, and led to a devastating freezing up of our financial system and a collapse of lending. By the time President Obama announced his economic team just before Thanksgiving, it was clear that the economy was deteriorating rapidly.

Just how sick the economy would prove to be and how fast it would fall were still unclear. New data on U.S. and world economic conditions were coming in each day. But, there was no question in our minds that the economy was in its most precarious position since the Great Depression. At a meeting in Chicago in mid-December, we urged the President-Elect to hit the financial crisis and the burgeoning recession with as much force as possible.

Motivation for Fiscal Stimulus. The cornerstone of our suggested response was a bold fiscal stimulus. Our reasoning was simple. The Federal Reserve had done a great deal to stimulate demand and help ease the credit crisis following Lehman's collapse. But, by mid-December the Fed was running low on ammunition: the federal funds rate was near zero, and the Fed had created a multitude of special lending facilities. With the dramatic fall in household wealth and the rapid spread of the downturn to our key trading partners, there was no realistic prospect that the private sector would generate a turnaround in demand any time soon. Thus, although stabilizing the financial system and helping distressed homeowners was essential, it would not be enough. We needed to bring in the other main tool that a government has to counteract a cataclysmic decline in aggregate demand: fiscal stimulus.

In the past few months, some have tried to portray fiscal stimulus as an exotic tool with a questionable pedigree. In fact, it is a tried and true remedy widely supported by economists across the political spectrum. To use a medical analogy, fiscal stimulus is a well-tested antibiotic, not some new-fangled gene therapy. The economic theory of how tax cuts and increases in government spending can help counteract a recession is almost as widely accepted as any in economics – practically up there with supply and demand or the quantity theory of money. It is standard fare in both introductory textbooks and more sophisticated modern theoretical models.

Fiscal stimulus has been used to help weak economies by presidents of both parties. Franklin Roosevelt increased public works spending greatly as part of the New Deal. Dwight Eisenhower expanded the interstate highway program and accelerated other types of spending to try to counteract the 1958 recession. And both Gerald Ford (in 1975) and George W. Bush (in 2001) used tax cuts to help end recessions.

There is also ample evidence that fiscal stimulus works. Many studies have been done over the years to try to measure the effects of stimulus.[1] These studies show strong impacts of both tax cuts and changes in government spending. A study that David Romer and I completed just shortly before my nomination looked specifically at the tax side of stimulus.[2] We found that fiscal expansions have an even larger positive effect on output in the short and medium run than previously believed.

This sense that fiscal stimulus is the obvious step to take when the economy is in decline and conventional monetary policy has been exhausted is borne out by the actions of other countries. This figure shows the size of fiscal expansions in a number of countries in 2009.[3]

2009 Discretionary Fiscal Stimulus around the Globe

Country	Percent of GDP	Country	Percent of GDP
Argentina	1.4	Korea	3.7
Australia	2.2	Mexico	1.4
Brazil	0.5	New Zealand	2.0
Canada	1.7	Norway	1.2
China	2.6	Poland	0.8
Czech Republic	1.6	Russia	2.9
France	0.6	South Africa	2.2
Germany	1.5	Sweden	1.4
India	0.6	Switzerland	0.6
Indonesia	1.4	United Kingdom	1.5
Italy	0.1	United States	2.0
Japan	2.4		

Virtually every major country has enacted fiscal expansions during the current crisis. They have done so … because it works.

American Recovery and Reinvestment Act. The fiscal stimulus that the Administration worked with Congress to create was not only bold, but well-conceived. The President aimed for a package that was large and got good employment bang for the fiscal buck. It was designed to provide lift for at least two years, because we knew the economy was likely to be facing an extended period of weakness. And, the President insisted that the spending be genuinely useful.

At a time when the budget deficit was already large, we could not afford to create jobs by digging ditches and filling them in. Government spending had to satisfy genuine needs and leave us with useful public investments.

The final legislation was very well-diversified. Many of our critics seem to have missed the fact that roughly a third of the $787 billion took the form of tax cuts for American families and businesses. Another third was aid to state governments to help them keep workers employed and not raise taxes, and aid to people directly hurt by the recession through programs such as extended unemployment insurance. As state budgets have swung into extreme deficit and unemployment rates have risen sharply, both of these types of spending look even more crucial than they did back in December and January. Finally, roughly one-third of the stimulus package was for public investments. Much of this spending was for conventional infrastructure – roads, bridges, and water projects. But some was more uniquely twenty-first century: investments in R and D, health information technology, and a smarter electrical grid.

IMPLEMENTATION OF THE RECOVERY ACT

So far, I have reminded you of why we took the actions that we did – why we worked so hard to pass the Recovery Act. Let me turn to the question I started with: So, is it working?

Spend-out Rates. The first thing to say is that the money is absolutely going out the door quickly. As of the end of June, more than $100 billion had been spent.[4] Those numbers are rising each week, and we are on track to have spent 70 percent of the total by the end of the next fiscal year.

Accountability and Transparency. I know that some believe that the government can never do things well. But this program really is a model of efficiency and transparency. The

recovery.gov website provides an honest and thorough accounting of what is getting done. The biggest problem so far occurred when a blogger misinterpreted an entry and reported that we had spent a million dollars for two pounds of ham. It turns out it was for 760,000 pounds of ham (in two-pound packages) that went to food banks and soup kitchens – a pretty good value at about $1.50 a pound. I can tell you that the Vice President is a man on a mission and is determined that every dollar will go out quickly and to the high-value projects it was designed for.

And, the program is working. Millions of unemployed workers have seen an extra $25 a week in their unemployment insurance checks. 95 percent of American households saw a tax cut in their paychecks starting April 1st. My father (and other Social Security recipients and veterans) got a $250 stimulus check in May. State and local government employees, including teachers, firefighters, and police officers who were scheduled to be laid off, are still working because of the increase in Federal payments to the states. 2500 road construction projects are underway. Soon, the Recovery Act signs we see popping up will be as ubiquitous as NRA blue eagles once were in the 1930s.

TIME-SERIES EVIDENCE ON THE MACROECONOMIC EFFECTS

Even if the Recovery Act is clearly working in the concrete, on-the-ground sense, there is still the question of whether we can see it in the overall performance of the economy.

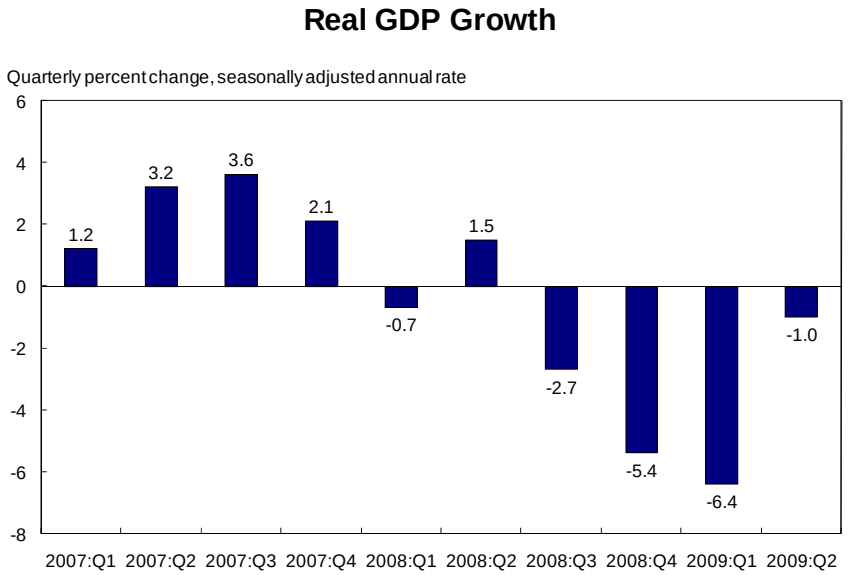
Common Critique. Here, I can't resist pointing out the fallacy in a common critique. Throughout the spring, I frequently heard people say: "The unemployment rate is even higher than you all predicted without stimulus. That means the policy isn't working and may actually be making things worse." Even leaving aside the fact that we were always very clear that there was tremendous uncertainty about what would happen to the economy, that argument is – to

quote a recent *New York Times* editorial – just plain "silly."[5] To understand why, let me give you an analogy. Suppose you go to your doctor for a strep throat and he or she prescribes an antibiotic. Sometime after you get the prescription, and maybe even after you take the first pill, your fever spikes. Do you decide that the medicine is useless? Do you conclude the antibiotic caused the infection to get worse? Surely not. You probably conclude that the illness was more serious than you and the doctor thought, and are very glad you saw the doctor and started taking the medicine when you did.

That was exactly the situation with the economy. It is true that the U.S. and world economies went down much faster last fall and winter than we, and almost all other forecasters, expected. The revised GDP statistics show that the actual decline in GDP growth in the third and fourth quarters of last year was about twice as large as the preliminary estimates we had at the time indicated.[6] And, the rise in the unemployment rate has been exceptionally large, even given the large fall in GDP that we now know occurred.[7] The fact that the economy deteriorated between January when we were doing our forecast and the end of March simply reinforces how crucial it was that we took action when we did.

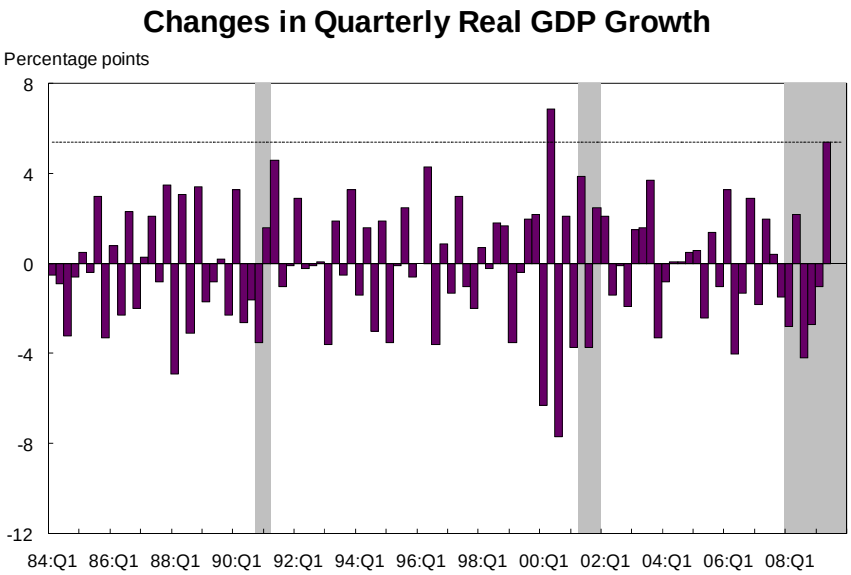
Behavior of GDP and Employment. Now, having gotten that off my chest, let me return to my question: A little more than five months after the recovery act was passed, can we see the effects on the macroeconomy? Again, the answer is almost surely yes. The only reason that I say "almost surely" is because the Recovery Act has only been in effect for about five months. That means we really only have about one quarter of data on economic outcomes. And, if there is one thing I have learned in the past six months, it is not to read too much into any one number.

With that disclaimer in mind, here is a graph of the growth rate of real GDP.[8]



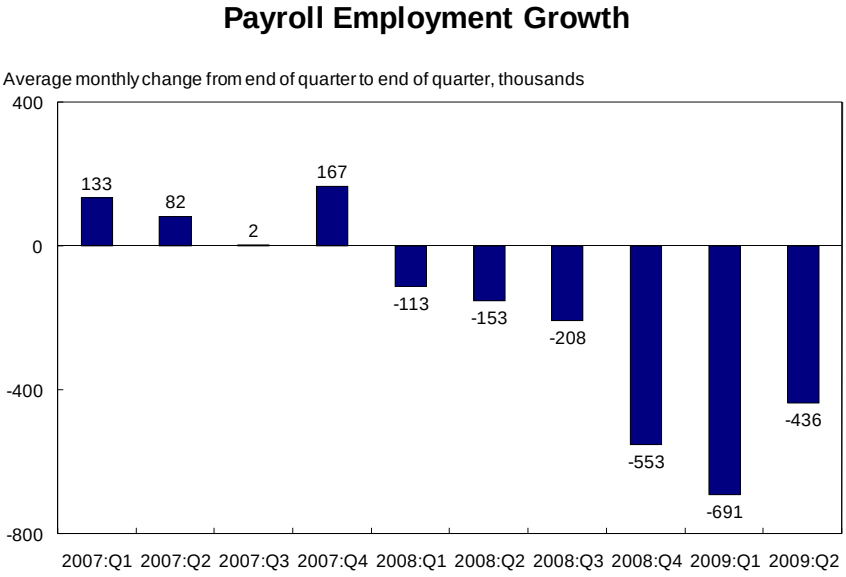
After falling considerably and, indeed, progressively more deeply in each of the three quarters before the most recent one, the fall in GDP moderated substantially. After declining at an annual rate of 6.4% in the first quarter of 2009, it fell at a rate of 1% in the second quarter.

To be sure, the economy is far from healthy, and we obviously have a tremendous distance to go. Real GDP, after all, is still declining. But economies don't switch from rapid decline to robust growth all at once. Given what we now know about the frightening momentum of economic decline in the first quarter, it would have been hard for the economy to stabilize much faster than it has. This graph shows the change in the growth rate of real GDP for the last 25 years.[9]



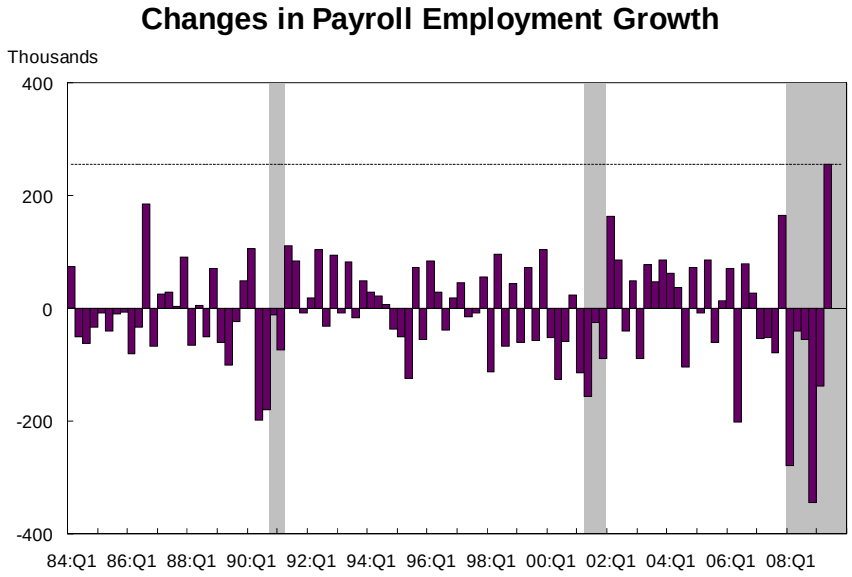
The rise in GDP growth from the first quarter to the second was the largest in almost a decade, and the second largest in the past quarter century.

This picture shows the change in payroll employment over the recession.[10]



A key indicator of just how brutal this recession has been is the fact that in the first quarter of this year, we lost nearly 700,000 jobs per month. In the second quarter, we lost an average of 436,000 jobs per month. This rate of job loss is horrendous. But the change does suggest that

we are on the right trajectory. This figure shows the change in the change in employment.[11]



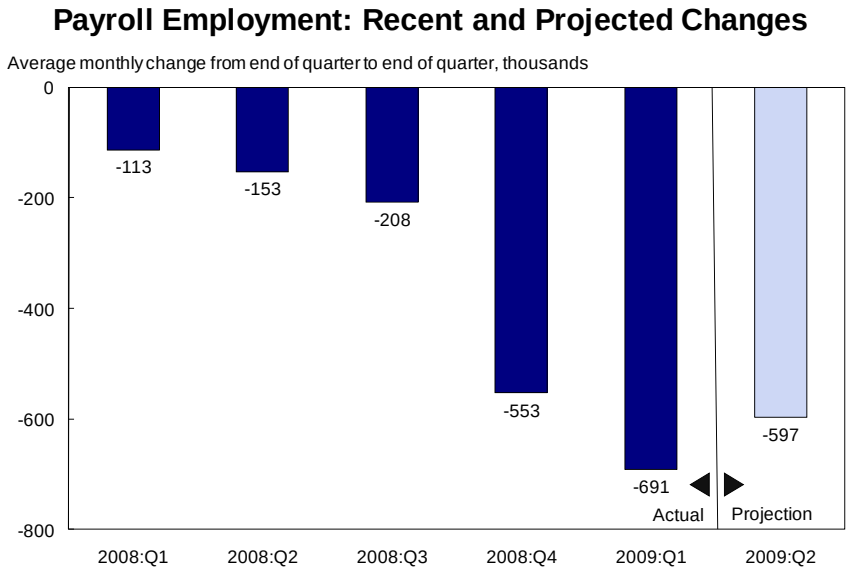
The movement in job loss from the first quarter to the second was the largest in almost 30 years.

In other words, after we administered the medicine, an economy that was in free fall has stabilized substantially, and now looks as though it could begin to recover in the second half of the year. The timing and strength of this change is highly suggestive that the stimulus has been important.

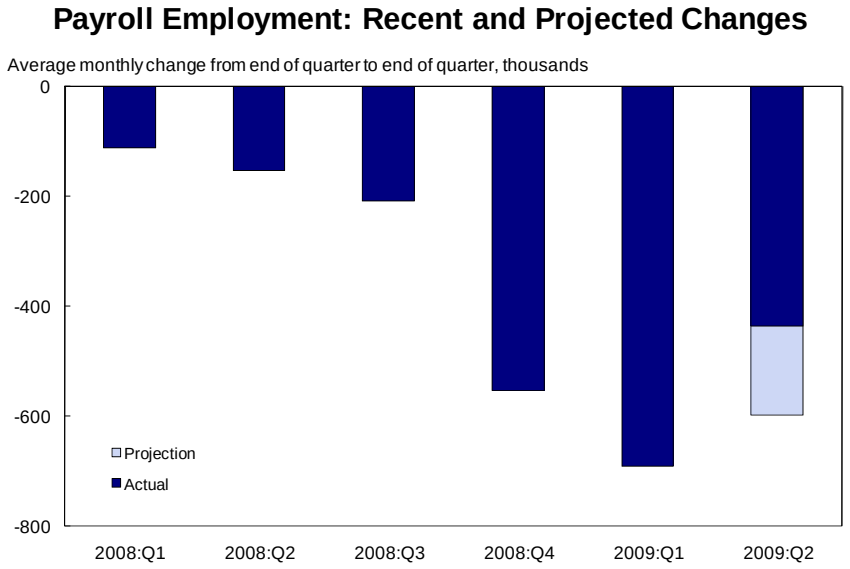
Comparison to Baseline Forecasts. Of course, identifying the effects of the Recovery Act from the behavior of just a few data points is inherently difficult. We don't observe what would have happened in the absence of the fiscal stimulus. One way to try to add rigor to the analysis of the behavior of key indicators is to do a more formal econometric forecasting exercise.

There are various ways to do such an exercise, but let me discuss the results of a typical one. We forecast the usual behavior of GDP and employment jointly, using data from 1990 to 2007. We then forecast GDP growth and average job loss in the second quarter of 2009 using actual data up through the first quarter of the year.[12]

This figure shows the forecast of employment change using this procedure.



The baseline forecast implies further substantial job loss in the second quarter. Indeed, the implied average monthly decline is nearly 600,000 jobs. What you see is that actual job loss (the dark blue bar) came in substantially lower.

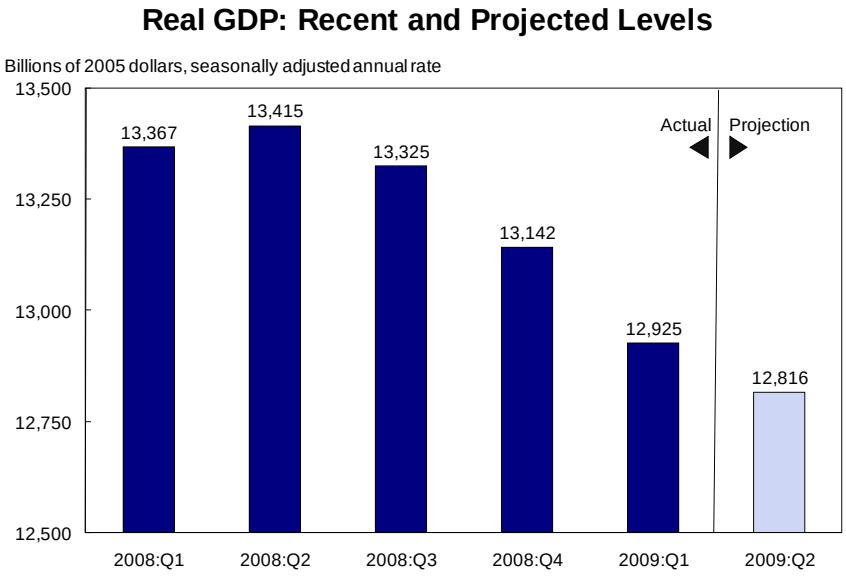


These calculations imply that employment is now about 485,000 jobs above what it otherwise would have been during the second quarter of 2009. This number is very similar to

Mark Zandi's estimate that stimulus added roughly half a million jobs over the second quarter, relative to what otherwise would have occurred.[13]

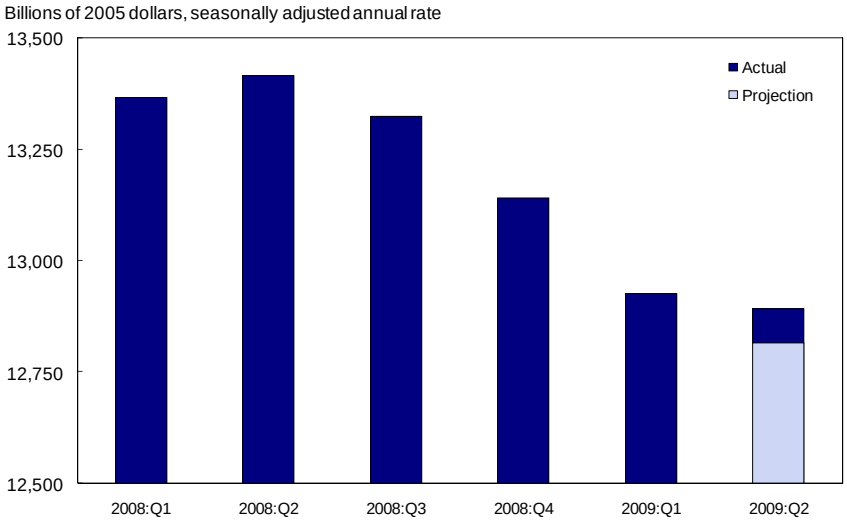
I do, however, want to be very cautious. The approach we used is one of a number of sensible ways of predicting what would have happened in the absence of stimulus. Other methods could lead to somewhat different estimates of the jobs impact of the program in its first full quarter of operation. But the clear implication is, the program is working.

The results of this forecasting exercise for real GDP are shown in this figure.



Past history predicts that real GDP would continue to decline at a substantial rate in the second quarter. The projected decline (at an annual rate) is 3.3%, substantially worse than the actual decline of 1%.

Real GDP: Recent and Projected Levels



This way of specifying the baseline confirms that something unusual happened in the second quarter: GDP growth was 2.3 percentage points higher than the usual time-series behavior of GDP would lead one to expect.

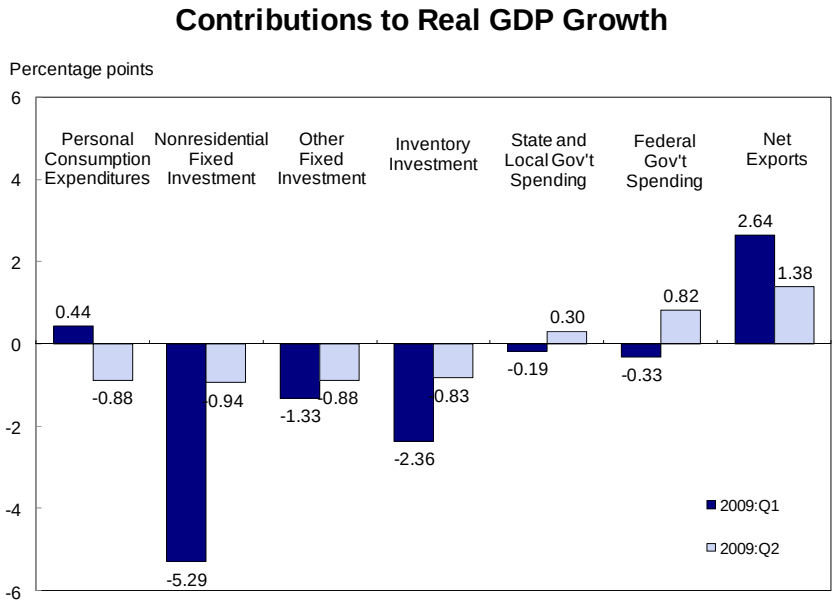
Private forecasters across the political and methodological spectrum attribute much of the unusual behavior of real GDP to the Recovery Act. This table shows that analysts estimate that fiscal stimulus added between 2 and 3 percentage points to real GDP growth in the second quarter.[14]

Contribution of the ARRA to GDP Growth in 2009:Q2

Forecaster	Estimate (percentage points)
Goldman Sachs	2.2
Economy.com	3
Macroeconomic Advisers	2

Components of GDP and ARRA. If you look at the different pieces of GDP, you see telltale signs of the Recovery Act's role in stabilizing the economy. This figure shows the

contributions of each of the main components of GDP to overall growth in the first and second quarters of this year.[15]



The role of the Recovery Act is clearest in state and local spending. Sharp falls in revenues and balanced budget requirements have been forcing state and local governments to tighten their belts significantly. But, state and local government spending actually rose at a healthy 2.4% annual rate in the second quarter of 2009. This followed two consecutive quarters of decline, and was the highest growth rate in two years. No one can doubt that the $33 billion of state fiscal relief that has already gone out thanks to the Recovery Act is a key source of this increase.

Another area where the role of the Recovery Act seems clear is in business fixed investment – firms' purchases of everything from machines to software to structures. A key source of the more modest decline in GDP is that this type of investment, which fell at a mind-boggling 39% annual rate in the first quarter, fell at a much more moderate 9% rate in the second quarter. One important component of the Recovery Act was investment incentives, such as

bonus depreciation. Businesses received about $14 billion of tax relief in the second quarter, and this may have contributed to slower investment decline.

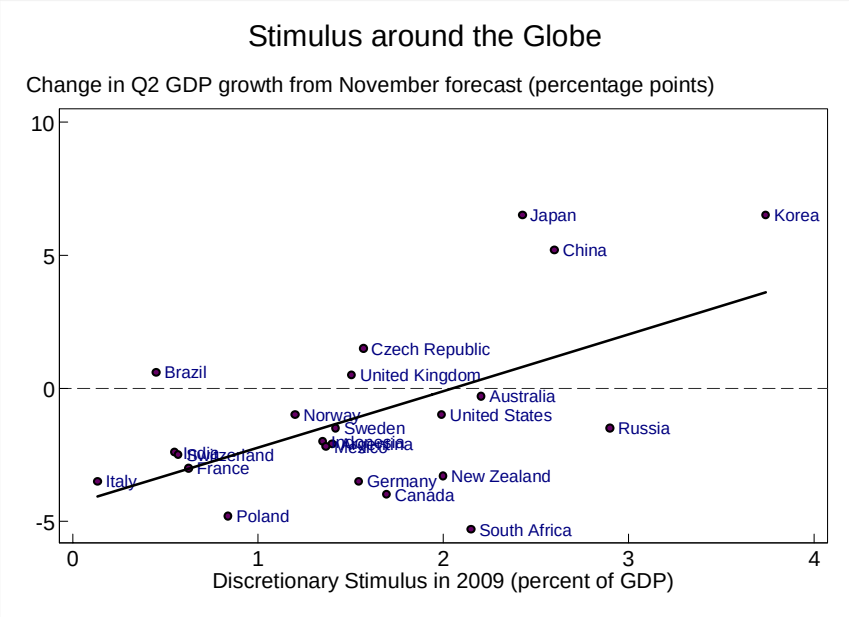
For the personal consumption component of GDP, the picture is more nuanced. Consumption fell sharply in the second half of last year, but has largely stabilized despite rising unemployment and falling GDP. The Making Work Pay tax cut and the improvements in confidence as a result of the Recovery Act and the Administration's other actions surely contributed to that stabilization.[16] At the same time, the fact that consumption fell slightly in the second quarter after rising slightly in the first quarter could be a sign that households are initially using the tax cut mainly to increase their saving and pay off debt. We will obviously be monitoring the behavior of consumers closely as we move forward.

CROSS-SECTION EVIDENCE OF MACROECONOMIC EFFECTS

Because the evidence from the path of the economy over time can't settle the issue of what the effects of the Recovery Act have been, it's helpful to also look at other types of data. In particular, I want to mention two types of comparative evidence.

Comparisons across Countries. The first involves comparisons across countries. Countries' responses to the crisis have varied substantially. One can therefore ask whether countries that have responded more aggressively seem to be recovering more quickly. To get evidence about this, we started with a set of forecasts of growth in the second quarter of this year that were made last November – after the crisis had hit, but before countries had formulated their policy response. We then collected analysts' recent best guesses for what second-quarter growth will be in those countries.[17] This figure shows the relationship between how countries' second-quarter growth prospects have changed from what was expected back in November, and the

countries' discretionary fiscal stimulus in 2009.

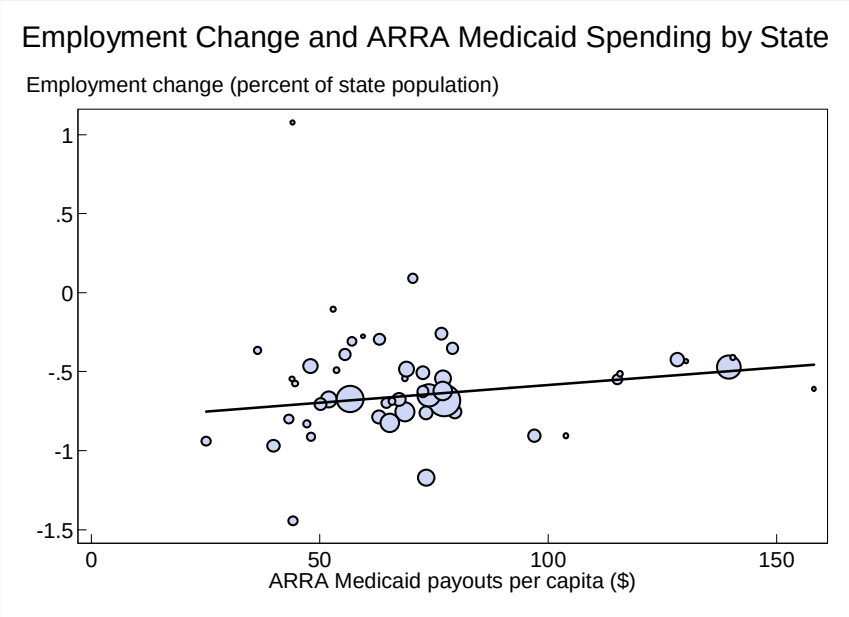


The fact that the observations lie along an upward-sloping line shows that, on average, things have improved more in countries that adopted bigger stimulus packages. And, the relationship is sizable: on average, a country with stimulus that's larger by 1% of GDP has expected real GDP growth in the second quarter that's about 2 percentage points higher relative to the November forecast.

This correlation is in some ways surprising, because there's an obvious element of reverse causation that's pushing it the other way: countries that got worse news around the turn of the year probably adopted more aggressive stimulus packages. Also, to the extent that analysts back in November could foresee countries' likely actions and take them into account in making their forecasts, this would cause the relationship to understate the effect of stimulus. But despite these factors tending to bias the estimates down, the relationship is highly statistically significant, large, and robust to changes in the sample and in the measure of forecasted growth.[18]

Comparisons across States. The second comparison we examine involves individual

states in the U.S. The largest portion of aid to the states under the Recovery Act so far has taken the form of additional matching funds for state Medicaid spending. This figure shows the correlation between employment growth from February to June in a state and the size of those extra matching funds (per capita).[19] What you see is that, on average, states that received more funds lost fewer jobs.



Again, there's an obvious element of reverse causation that's pushing this relationship the other way: states whose economies are weaker tend to get more of these funds. Preliminary analysis by my staff addresses this issue by focusing on a subset of the spending that isn't a response to states' economic conditions. They also check that other things aren't driving the correlation. They find that the results hold up well. More spending is associated with less job loss.

Obviously, this is a very preliminary analysis of the data across countries and states, and it does not account for all of the factors that may be at work. But, our first look at these numbers provides further evidence that stimulus spurs recovery.

WHAT CAN WE EXPECT GOING FORWARD?

So much of what I have discussed has focused on the role of the Recovery Act in moderating the GDP decline and saving jobs in the second quarter of 2009. The obvious next question is, what can we expect going forward?

Effects will Increase over Time. First, the impact of the Recovery Act will almost certainly increase over the next several quarters. We expect the fiscal stimulus to be roughly $100 billion in each of the next five quarters. The impact of this steady stimulus, however, will increase over time because the multiplier effect tends to rise for a substantial period before beginning to wane. Also, the composition of the stimulus will be changing toward components with larger short-run effects. The early stimulus was weighted more heavily toward tax changes and state fiscal relief, whereas going forward there will be more direct government investments. These direct investments have short-run effects roughly 60 percent larger than tax cuts.

Forecasts. Second, because of the Recovery Act, other rescue measures we have taken, and the economy's natural resilience, most forecasters are now predicting that GDP growth is likely to turn positive by the end of the year.[20] Federal Reserve Chairman Ben Bernanke seconded this opinion in recent Congressional testimony.[21] This view is supported by the fact that a number of leading indicators, including initial claims for unemployment insurance, building permits, and consumer confidence, have improved substantially over the past few months. However, as is always the case, especially around a turning point, there is substantial uncertainty to this forecast. There is even greater uncertainty about how strong the recovery is likely to be. The strength will depend on a range of factors, including how fast the economies of our trading partners recover; whether American consumers decide to increase their savings rate

even more than they already have; and how quickly financial markets and business confidence return to normal levels.

Continued Job Loss. Third, it is important to realize that job growth will almost certainly lag the turnaround in real GDP growth. The consensus forecast is for the employment statistics we get tomorrow to show that the U.S. economy continued to lose hundreds of thousands of jobs in July. Given that GDP growth was still negative in the second quarter, this is all but inevitable. And, it is unacceptable. Unfortunately, even once GDP begins to grow, it will likely take still longer for employment to stop falling and begin to rise.

Recovery Will Take Time. Fourth, and crucially, given how far the economy has declined, recovery will be a long, hard process. Even if GDP growth is relatively robust going forward, it will take a substantial time to restore employment to normal and bring the unemployment rate back down to usual levels. But, the President is committed to job creation, and that is and has been a focal part of our efforts.

The bottom line is that we are no doubt in for more turbulent times. The actions we have taken, particularly the American Recovery and Reinvestment Act, have clearly changed the trajectory we are on. They are doing what the President always said needed to be our top priority – rescuing an economy on the edge of a second Great Depression. And, I firmly believe that when the history of this period is written, the Recovery Act will be seen as the beginning of the end of this terrible economic crisis.

Rebuilding. The focus of my talk this morning has been on the Recovery Act as a lifesaver. It is a central part of our strategy to rescue the economy – complementing our efforts to stabilize the financial system, restart lending, and help homeowners in distress. But, the President has always made clear that rescue is not enough. The U.S. economy had problems

even before the current crisis. For this reason, the Administration is working with Congress to help rebuild the economy better. It is as if, when you went to the doctor for that strep throat, he discovered you had high blood pressure as well. The antibiotic was great for the infection, but he prescribed other medicine, a better diet, and a good dose of exercise for the blood pressure.

That is what the President is trying to do for the economy. He is urging health care reform to slow the growth rate of spending, tame the budget deficit, and provide all Americans with the secure health insurance coverage. We are working with Congress to pass financial regulatory reform to make sure that we never again walk as close to the edge of a cliff as we did last September. And we are committed to comprehensive energy and climate legislation to stimulate the move to renewable energy and combat climate change. In short, we are urging serious medicine for serious economic problems. If we can accomplish these important changes, we will not only come through the current crisis, we will emerge even stronger and healthier than before.

ENDNOTES

[1] See, for example, Valerie A. Ramey and Matthew D. Shapiro, "Costly Capital Reallocation and the Effects of Government Spending," *Carnegie-Rochester Conference Series on Public Policy* 48 (June 1998): 145-194; Olivier Blanchard and Roberto Perotti, "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output," *Quarterly Journal of Economics* 117 (November 2002): 1329-1368; Craig Burnside, Martin Eichenbaum, and Jonas D.M. Fisher, "Fiscal Shocks and Their Consequences," *Journal of Economic Theory* 115 (March 2004): 89-117; and Valerie A. Ramey, "Identifying Government Spending Shocks: It's All in the Timing," University of California, San Diego working paper, June 2008.

[2] Christina D. Romer and David H. Romer, "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks," *American Economic Review*, forthcoming.

[3] The stimulus numbers are taken as an average of three reported measures of stimulus. The three sources are: International Monetary Fund, "Global Economic Prospects and Effectiveness of Policy Response," prepared for meeting of G-20 deputies, June 27, 2009, Table 2, p. 27, http://www.imf.org/external/np/g20/pdf/070809.pdf; Organization for Economic Co-operation and Development, OECD Economic Outlook No. 85, June 2009, Table 1.7, p. 63, http://www.oecd.org/dataoecd/36/57/43117724.pdf; Brookings Institution, "Assessing the G-20 Economic Stimulus Plans: A Deeper Look," prepared by Eswar Prasad and Isaac Sorkin, http://www.brookings.edu/articles/2009/~/media/Files/rc/articles/2009/03_g20_stimulus_prasad/03_g20_stimulus_prasad.pdf.

[4] These numbers reflect outlays through July 3, 2009 from Recovery.gov website and internal calculations from the Department of Treasury through June 24, 2009.

[5] "Trying to Recover," *New York Times*, August 1, 2009.

[6] The January 29, 2009 GDP release reported that real GDP declined at an annual rate of 0.5% in 2008:Q3 and 3.8% in 2008:Q4. The recently revised estimates show that the declines were 2.7% and 5.4%, respectively.

[7] We estimate that the unemployment rate has increased about 1½ percentage points more than one would have predicted based on the usual relationship between unemployment and real GDP. We derive this estimate as follows. Standard estimates of the Okun's Law relationship suggest that for every percent that real GDP falls relative to its normal trend, the unemployment rate will rise about four-tenths of a percentage point. Our estimates suggest that real GDP growth has fallen 7.5 percent relative its normal trend since the business cycle peak in 2007:Q4 (where the gap is measured using the difference in logarithms). Therefore, unemployment would be predicted to have increased 3.0 percentage points so far during the recession. This is roughly 1½ percentage points below its actual 4.6 percentage point increase from December 2007 to June 2009.

[8] These data are from the Bureau of Economic Analysis, National Income Product Accounts, Table 1.1.1.

[9] NBER recession quarters are shown in grey.

[10] These data are from the U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics survey, "Employment, Hours, and Earnings - National."

[11] These figures are for the change from the previous quarter in the average monthly change in employment. NBER recession quarters are shown in grey.

[12] These forecasts are based on a vector autoregression using the logarithms of real GDP (in billions of chained 2005 dollars) and employment (in thousands, in the final month of the quarter) estimated over the period 1990:Q1-2007:Q4. There are four lags, and the estimates are used to make projections beginning in 2009:Q2. Changes in the specification, such as using fewer lags and extending the sample through 2009:Q1, generally lead to projections of even slower recoveries of GDP and employment growth.

[13] Moody's Economy.com. Précis: U.S. Macro, July 2009, p. 6.

[14] The estimate from Macroeconomic Advisers is from their Outlook Commentary, April 2, 2009, p. 6. The estimate from Economy.com is from Précis: U.S. Macro, July 2009, p. 6. The estimate from Goldman Sachs is from US Daily: Fiscal Stimulus: A Little Less in Q2, A Little More Later, August 4, 2009, p. 2.

[15] These data are from the Bureau of Economic Analysis, National Income Product Accounts, Table 1.1.2.

[16] The University of Michigan consumer survey shows a sharp increase in approval of government economic policy. See Reuters/University of Michigan Surveys of Consumers, Press Release for April 2009, "Obama's Policies Prompt Increase in Economic Confidence," https://customers.reuters.com/community/university/default.aspx

[17] These recent forecasts are based on a substantial amount of second quarter data. In three cases, preliminary estimates are available for second quarter GDP growth. They are quite close to the forecasts made in July. Using the preliminary estimates for these three countries does not change the results. The November 2008 and current forecasts are from J.P. Morgan, Global Data Watch, "Global Economic Outlook Summary," November 7, 2008, p. 5; and Global Data Watch, "Global Economic Outlook Summary," July 17, 2009, p. 5. The sample was determined by data availability for G-20 and other large OECD countries. Discretionary stimulus is measured as the average of estimates from the OECD, the IMF, and the Brookings Institution of discretionary fiscal stimulus in 2009 as a percent of GDP (see note 3 for details).

[18] The estimated regression is:

> 2009:Q2 GDP growth expected as of July minus the expectation as of November = -4.4 + 2.1*discretionary stimulus.

The t-statistic on the stimulus variable is 2.9. Excluding non-OECD countries increases the magnitude and statistical significance of the coefficient. Replacing the JP Morgan forecast with forecasts from an autoregression for each country using four lags of quarterly GDP growth estimated over the period 1990-2008 has little effect on the results. These findings are consistent with earlier work finding that fiscal expansions have mitigated the effects of past banking and financial crises (see International Monetary Fund, *World Economic Outlook 2009*, Chapter 3, http://www.imf.org/external/pubs/ft/weo/2009/01/pdf/text.pdf).

[19] The state employment data come from the U.S. Department of Labor, Bureau of Labor Statistics, Current Employment Statistics survey, "Employment, Hours, and Earnings - State and Metro Area." The statistics on government spending on Medicaid reflect outlays through July 3, 2009 from Recovery.gov website. Note: sizes of circles are proportional to 2008 state populations.

[20] See, for example, the Blue Chip Economic Indicators, July 10, 2009.

[21] Ben S. Bernanke, "Semiannual Monetary Policy Report to the Congress," Before the Committee on Financial Services, U.S. House of Representatives, July 21, 2009, http://www.federalreserve.gov/newsevents/testimony/bernanke20090721a.htm.