

**EXECUTIVE OFFICE OF THE PRESIDENT  
COUNCIL OF ECONOMIC ADVISERS**



**THE ECONOMIC IMPACT OF THE  
AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009**

**SEVENTH QUARTERLY REPORT**

**JULY 1, 2011**

**THE ECONOMIC IMPACT OF THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009**  
**SEVENTH QUARTERLY REPORT**

**EXECUTIVE SUMMARY**

As part of the unprecedented accountability and transparency provisions included in the American Recovery and Reinvestment Act of 2009 (ARRA), the Council of Economic Advisers (CEA) is charged with providing to Congress quarterly reports on the effects of the Recovery Act on overall economic activity, and on employment in particular. This is the seventh report and it provides an assessment of the effects of the Act through the first quarter of 2011.

As discussed in previous quarterly reports, evaluating the impact of countercyclical macroeconomic policy is inherently difficult because we do not observe what would have happened to the economy in the absence of policy. Because of the challenges in the analysis, the report estimates the impact of the Recovery Act using independent approaches and supplements those estimates with those of numerous outside analysts.

Among the key findings of the study are the following:

- Following implementation of the ARRA, the trajectory of the economy changed significantly. Real GDP began to grow steadily starting in the third quarter of 2009 and private payroll employment increased on net by 1.7 million from the start of 2010 to the end of the first quarter of 2011. (From the employment trough in February 2010 to May 2011 private payroll employment increased by 2.1 million.)
- The two established CEA methods of estimating the impact of the fiscal stimulus suggest that the ARRA has raised the level of GDP as of the first quarter of 2011, relative to what it otherwise would have been, by between 2.3 and 3.2 percent. These estimates are very similar to those of a wide range of other analysts, including the non-partisan Congressional Budget Office.
- CEA estimates that as of the first quarter of 2011, the ARRA has raised employment relative to what it otherwise would have been by between 2.4 and 3.6 million.
- The Recovery Act was designed to be temporary. The amount of stimulus outlays and tax reductions has begun to decline and, as discussed in previous reports, as it does so the impact on the level of GDP and employment will lessen over time.

## CONTENTS

	PAGE
I. INTRODUCTION	1
II. THE PROGRESS OF SPENDING AND TAX REDUCTIONS UNDER THE RECOVERY ACT	2
III. EVIDENCE OF THE ECONOMIC IMPACT OF THE RECOVERY ACT	5
IV. CONCLUSION	13

## I. INTRODUCTION

The American Recovery and Reinvestment Act of 2009 (ARRA) was a countercyclical fiscal expansion enacted at a time when U.S. real gross domestic product (GDP) had been contracting at an annual rate of more than 6 percent and employment was falling by more than 750,000 jobs per month. The Act was designed to cushion the fall in demand caused by the financial crisis and the subsequent decline in consumer and business confidence, household wealth, and access to credit. Together with policies to stabilize the financial system, increase liquidity and credit, and address the bursting of the housing bubble, the ARRA was part of a comprehensive policy response to the economic turmoil that gripped the United States and the world economy in the fall of 2008 and early 2009.

As part of the unprecedented accountability and transparency provisions included in the Recovery Act, the Council of Economic Advisers (CEA) was charged with providing quarterly reports to Congress on the effects of the Recovery Act on overall economic activity and on employment. This seventh report provides an assessment of the effects of the Act through the first quarter of 2011.<sup>1</sup>

As discussed in previous reports, identifying the impact of policy actions is inherently difficult, and the estimates must be understood to be subject to large margins of error. For this reason, the CEA prepares estimates of the impact of the ARRA from two approaches, and reports estimates from a wide range of private analysts and from the Congressional Budget Office (CBO).

The analysis indicates that the Recovery Act has raised the level of GDP substantially relative to what it otherwise would have been and has saved or created between 2.4 and 3.6 million jobs as of the first quarter of 2011.

The report begins in Section II with a summary of the spending and tax reductions that have occurred under the ARRA to date. Section III contains the key analysis of the overall economic impact of the Recovery Act. Following previous reports, this report estimates the role of the Recovery Act in two ways. One uses estimates of the effects of fiscal policy from standard macroeconomic forecasting models. The second involves a comparison of the actual behavior of GDP and employment relative to a plausible, statistically-determined baseline. The two methods indicate that the ARRA has raised both GDP and employment substantially relative to what they otherwise would have been. A compilation of estimates from prominent private-sector and

---

<sup>1</sup> For a list of references used to prepare this report, see *The Economic Impact of the American Recovery and Reinvestment Act of 2009, Sixth Quarterly Report*. (<http://www.whitehouse.gov/sites/default/files/microsites/20110318-cea-arra-report.pdf>).

public-sector analysts across the ideological spectrum shows similar estimated impacts of ARRA. The available direct job creation data provided by a fraction of ARRA fund recipients further corroborate the estimates of the overall impact of the Act.

## **II. THE PROGRESS OF SPENDING AND TAX REDUCTIONS UNDER THE RECOVERY ACT**

The first step in evaluating the effects of the Recovery Act is to analyze the data on spending and tax reductions that have occurred under the Act.

### **A. Overall Budgetary Impact**

Data on the overall budgetary impact of the Recovery Act are available on the Recovery.gov website. The data are broken down into outlays, obligations, and tax reductions. The outlays and obligations by agency are available weekly and the tax reduction data are available quarterly.<sup>2</sup> Outlays represent payments made by the government. Those funds represent spending that has already occurred. Obligations represent funds that have been made available but not necessarily outlaid, such as for a highway project where the builder must complete the work properly to be fully reimbursed by the Federal government. In many instances, obligations can generate economic activity even before outlays occur because recipients may begin spending as soon as they are certain funds will be forthcoming.

Table 1 shows outlays, obligations, and tax reductions as of the end of each quarter since the Act's passage.<sup>3</sup> As of the end of the first quarter of 2011, the sum of outlays and tax cuts was \$666 billion, with an additional \$106 billion obligated but not yet outlaid. This is very similar to the amount projected to have been spent by this point by the Congressional Budget Office when the Recovery Act was passed.<sup>4</sup> Additionally, the sum of spending, obligations in excess of

---

<sup>2</sup> The outlays and obligations data are based on weekly reports by the relevant agencies. To ensure that it is as up-to-date as possible, the quarterly report uses the agency Financial and Activity Reports provided directly by the Office of Management and Budget. These reports are posted on Recovery.gov with a short lag. The tax reduction estimates are based on the Department of the Treasury Office of Tax Analysis (OTA) tax simulation model for the effect of the ARRA tax provisions. The OTA prepares new estimates semi-annually as part of the annual budget cycle and the mid-session review. The most recent data come from the FY 2012 Budget. To provide the most accurate quarterly estimates of the impact of the ARRA, this report uses the revised tax estimates for all quarters. Because of these revisions, the figures in Table 1 differ slightly from those reported in previous quarterly reports (CEA, 2009b, 2010a, 2010b, 2010c).

<sup>3</sup> For an explanation of the components of the Recovery Act, see the 6<sup>th</sup> quarterly report pp. 3-4.

<sup>4</sup> CBO (2009) projected that the spending and revenue effects in fiscal year 2009 (that is, through the third quarter) would be \$184.9 billion, and \$399.4 billion in fiscal 2010. CBO has since published a revised estimate of the direct effect on the deficit of the ARRA of \$814 billion (CBO 2010a). This number is not comparable to the estimated cost at passage of \$787 billion because it does not include adjustments for the effect of the ARRA on spending from regular appropriations or other authorizations, which CBO estimates reduced the effect on the deficit in 2009 and 2010. Most of the increase in CBO's estimate of the direct effect on the deficit comes from greater outlays on income-security programs.

spending, and tax cuts is \$772 billion. Of the remaining funds, a substantial amount represents tax cuts yet to be realized or mandatory programs that will be spent out over the next year (these funds are not considered “obligated” but have specific uses already determined). Little direct spending remains to be obligated.

Table 1. Outlays, Obligations, and Tax Reductions

	Through the end of <sup>a</sup>								
	2009:Q1 (March)	2009:Q2 (June)	2009:Q3 (September)	2009:Q4 (December)	2010:Q1 (March)	2010:Q2 (June)	2010:Q3 (September)	2010:Q4 (December)	2011:Q1 (March)
	Billions of Dollars								
Outlays	8.6	56.3	110.7	164.2	210.9	257.3	307.9	348.6	373.6
Obligations	30.5	157.8	256.3	313.9	362.1	403.8	452.4	473.2	479.4
Tax Reductions	2.4	35.7	65.5	94.4	157.8	234.3	251.2	259.9	292.7
Sum of Outlays and Tax Reductions <sup>b</sup>	11.0	92.1	176.3	258.6	368.7	491.6	559.1	608.5	666.3

Sources: Agency Financial and Activity Reports to the Office of Management and Budget; simulations from the Department of the Treasury (Office of Tax Analysis) based on the FY2011 Mid-Session Review.

Notes: a. Data on outlays and obligations are for the last day of each calendar quarter.

b. Items may not add to total due to rounding.

## B. Trends and Developments

Table 2 shows the breakdown of aggregate outlays and tax relief into these functional categories. For the impact on the economy, what matters is the amount spent each quarter. For this reason, Table 2 also reports the change in the total budgetary impact from the end of the previous quarter.

The table shows important changes over time in the magnitude and composition of the fiscal stimulus. After being stable at \$80 to \$85 billion per quarter over the last three quarters of 2009, total outlays plus tax cuts were \$110 billion in the first quarter of 2010, \$123 billion in the second quarter of 2010, \$67 billion in the third quarter of 2010, \$49 billion in the fourth quarter of 2010, and \$58 billion in the first quarter of 2011.<sup>5</sup> As noted in prior quarterly reports, the ARRA was intended to be temporary and the total outlays and the tax cuts were designed to decline over time.

<sup>5</sup> Much of the difference from the second to the third quarter can be attributed to the fact that AMT relief was booked in the second quarter. Looking at the amount of ARRA outlays plus tax cuts excluding the AMT shows a total of \$76 billion in the second quarter and \$61 billion in the third, so the shift in ARRA funding is not as large as it appears when including the AMT.

Table 2. Fiscal Stimulus by Functional Category

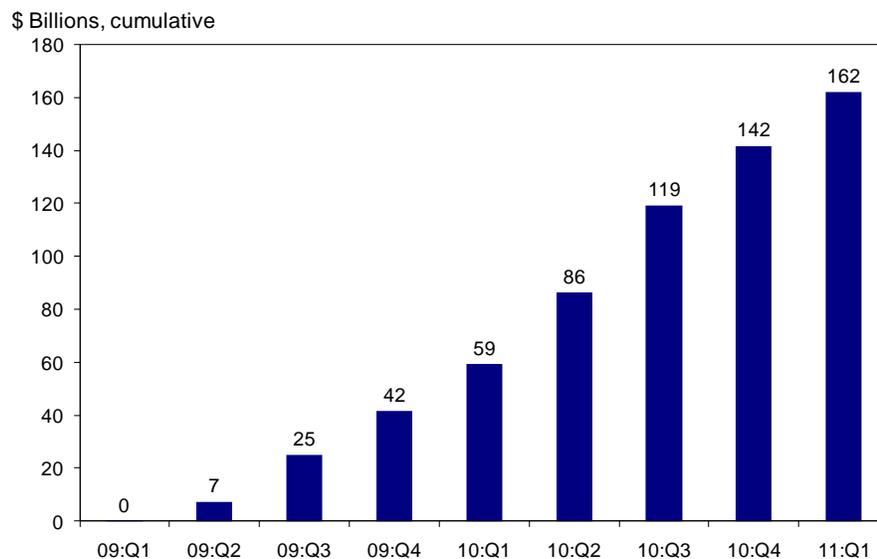
	Through the end of <sup>a</sup>								
	2009:Q1 (March)	2009:Q2 (June)	2009:Q3 (September)	2009:Q4 (December)	2010:Q1 (March)	2010:Q2 (June)	2010:Q3 (September)	2010:Q4 (December)	2011:Q1 (March)
	Billions of Dollars								
Individual Tax Cuts	2.3	28.6	42.8	58.5	101.4	123.9	133.7	142.4	168.3
AMT Relief	0.0	7.8	13.8	17.3	28.7	76.2	83.4	83.4	88.1
Business Tax Incentives	0.1	10.4	19.0	26.6	32.5	36.6	34.4	33.4	32.4
State Fiscal Relief	8.5	28.2	43.8	59.3	75.5	92.1	107.1	121.7	126.1
Aid to Directly Impacted Individuals	0.0	9.6	31.8	55.2	71.4	76.6	81.3	86.0	89.5
Public Investment Outlays	0.0	7.4	25.1	41.6	59.3	86.3	119.2	141.6	161.9
<b>Total<sup>b</sup></b>	<b>11.0</b>	<b>92.1</b>	<b>176.3</b>	<b>258.6</b>	<b>368.7</b>	<b>491.6</b>	<b>559.1</b>	<b>608.5</b>	<b>666.3</b>
<b>Change in Total (from End of Previous Quarter)</b>	<b>11.0</b>	<b>81.1</b>	<b>84.2</b>	<b>82.3</b>	<b>110.1</b>	<b>122.9</b>	<b>67.4</b>	<b>49.5</b>	<b>57.7</b>

Sources: Agency Financial and Activity Reports to the Office of Management and Budget; simulations from the Department of the Treasury (Office of Tax Analysis) based on the FY2011 Mid-Notes: a. Data on outlays and obligations are for the last day of each calendar quarter.  
b. Items may not add to total due to rounding.

The composition of the stimulus has evolved over time. As was anticipated at the time of passage, the individual tax cuts and the state fiscal relief were the first items that could be put into effect. For this reason, they comprised a large fraction of total spending in the second quarter of 2009. Aid to those directly impacted by the recession rose substantially in the third and fourth quarters of 2009, reflecting programs like emergency unemployment compensation that provided support to people laid off during the downturn.

Tax cuts, aid to directly impacted individuals, and aid to states have continued, but public investment outlays on items such as infrastructure and clean energy now account for a larger share of the stimulus. These outlays have increased from \$7 billion through the end of the second quarter of 2009 to \$162 billion through the end of the first quarter of 2011 (see figure 1).

Figure 1. Public Investment Outlays



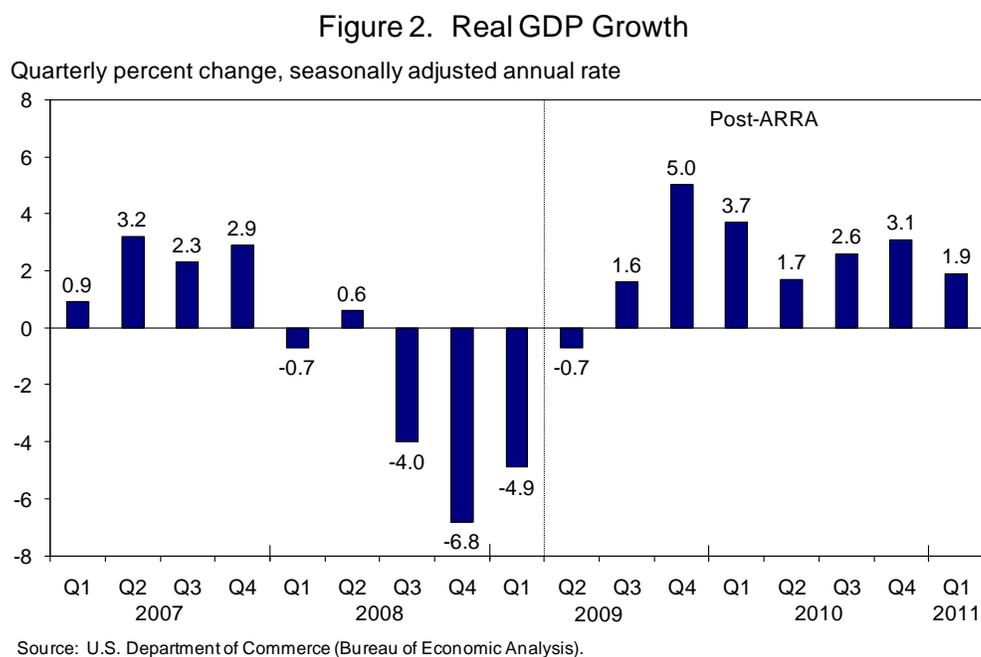
Source: Agency Financial and Activity Reports to the Office of Management and Budget.

### III. EVIDENCE OF THE ECONOMIC IMPACT OF THE RECOVERY ACT

This section considers a range of ways of estimating the overall impact of the Recovery Act, beginning with a straightforward examination of the behavior of GDP and employment, and then moving to analyses using an economic model, a statistical forecasting exercise, and then the direct reporting data.

#### A. The Change in the Economy's Trajectory

Figure 2 shows the growth rate of real GDP from the first quarter of 2007 to the first quarter of 2011. The dashed line between the first and second quarters of 2009 identifies the start of the period where the Recovery Act (which was signed February 17, 2009) could start having an impact on the economy. GDP was falling rapidly from the third quarter of 2008 to the first quarter of 2009, but then began to reverse course quickly after the passage of the Recovery Act. After declining at an annual rate of 4.9 percent in the first quarter of 2009, GDP fell at a rate of 0.7 percent in the second quarter, and then rose at a rate of 1.6 percent in the third quarter and 5.0 percent in the fourth. The improvement in growth of 9.9 percentage points from the first quarter to the fourth (that is, the swing from growth at a -4.9 percent rate to growth at a 5.0 percent rate) was the largest over any three quarters since 1983.

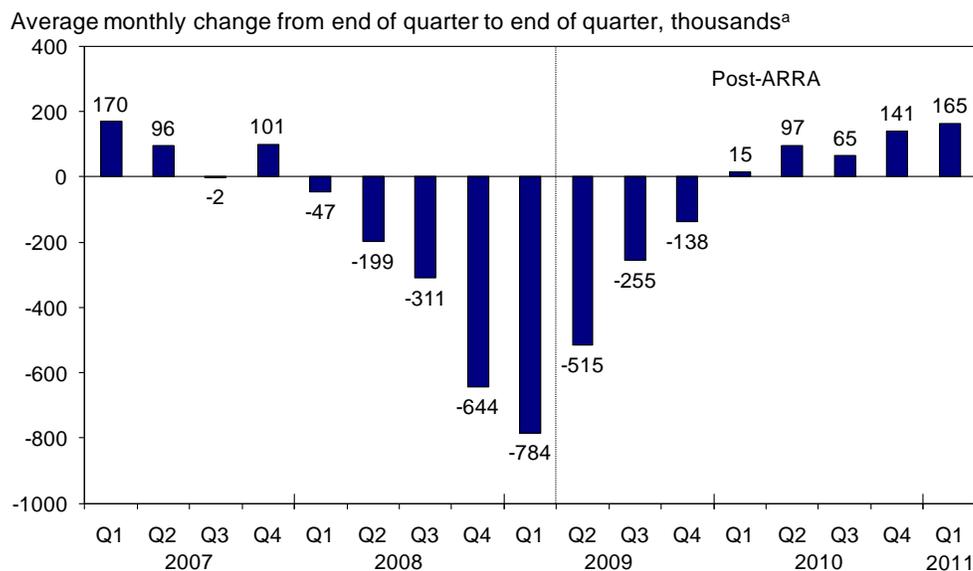


After the extremely rapid growth at the end of 2009, growth moderated to 3.7 percent (at an annual rate) in the first quarter of 2010, as the influence of changes in inventory investment

dropped. GDP growth moderated to 1.7 percent in the second quarter before increasing to 2.6 percent in the third quarter and 3.1 percent in the fourth quarter. GDP grew 2.7 percent over the four quarters of 2010 – the fastest fourth quarter to fourth quarter growth rate since 2005. In the first quarter of 2011 GDP growth moderated to 1.9 percent.

Figure 3 presents the behavior of the change in payroll employment. Employment shows the same pattern of an accelerating decline before the Recovery Act was passed followed by a significant improvement after. In the first quarter of 2009, the economy lost an average of 784,000 jobs per month. Job losses fell to 515,000 per month in the second quarter, 255,000 per month in the third, and 138,000 in the fourth. The economy began adding jobs in 2010, with average gains of 15,000 per month in the first quarter, 97,000 per month in the second quarter, 65,000 per month in the third quarter, and 141,000 per month in the fourth quarter.<sup>6</sup> Solid job gains continued into 2011 as an average of 165,000 jobs were added per month in the first quarter. The *reversal* in the average monthly change in employment over the past eight quarters was among the largest on record. Private sector job growth has been even better this year than overall employment, moving from deep losses in 2009 to increases averaging 27,000 in 2010:Q1, 114,000 in 2010:Q2, 104,000 in 2010:Q3, 146,000 in 2010:Q4, and 191,000 in 2011:Q1.

Figure 3. Payroll Employment Growth



The timing of the turnaround coincides quite closely with the Recovery Act, but the economy is still recovering. Real GDP is below its normal path, and, despite recent declines, the unemployment rate remains elevated. Monthly job growth averaged 117,000 for the twelve months ending March 2011, and while more robust growth is needed, this is movement in the

<sup>6</sup> These figures exclude temporary workers hired for the decennial Census.

right direction.

## B. Estimates of Effects from an Economic Model

**Methodology.** As explained in previous quarterly reports, one way to estimate the effects of the Recovery Act on GDP and employment is to use existing estimates of the macroeconomic effects of fiscal policy.<sup>7</sup>

**Results.** The results of this analysis are shown in Table 3. They show a sizable impact on production and employment. Specifically, they indicate that the Recovery Act raised the level of real GDP in the first quarter of 2011, relative to what it otherwise would have been, by 2.3 percent. This approach also indicates that the Act increased employment, relative to what it otherwise would have been, by 2.4 million as of 2011:Q1. These estimates from the model are consistent with a substantial impact on both the level of GDP and employment through 2011:Q1, but one that is phasing down as ARRA's outlays and tax cuts phase down.

Table 3. Estimates of the Effect of the ARRA Using CEA Multiplier Model

	2009:Q2	2009:Q3	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1
GDP Level (Percent)	+0.8	+1.7	+2.1	+2.5	+2.8	+2.7	+2.3	+2.3
Employment Level	+400,000	+1,122,000	+1,755,000	+2,227,000	+2,556,000	+2,680,000	+2,513,000	+2,392,000

Source: CEA calculations.

## C. Estimates of Effects from Comparison to a Statistical Baseline Forecast

**Methodology.** Following the methodology in previous ARRA reports, the second approach to estimating the effects of the Recovery Act is to compare the actual paths of GDP and employment with the predictions of a sensible statistical forecast of what they would have done.<sup>8</sup> Because this approach is purely statistical, it does not depend on estimates of multipliers as the model-based approach.

Of course, the estimates from a forecast approach have considerable margins of error. At any given time, the economy is subject to many influences that are not reflected in the past behavior of GDP and employment. These influences may be particularly large in a period as turbulent as the past two years. And, the longer the time that has passed, the larger the role of those disturbances is likely to be. As a result, the estimates from this approach are likely to be less precise as more time elapses. Additional support for the economy provided in the Tax

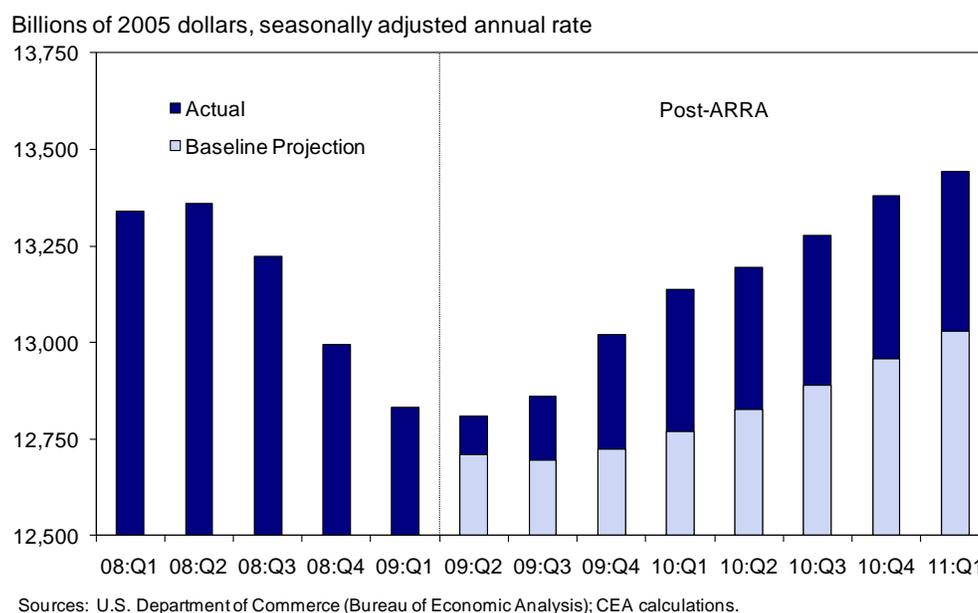
<sup>7</sup> See the 1<sup>st</sup> quarterly report (p. 23) and the 6<sup>th</sup> quarterly report (pp.8-9) for more details.

<sup>8</sup> For an explanation of the statistical baseline forecast methodology, see the 6<sup>th</sup> quarterly report pp. 10-11.

Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 will likely have substantial impacts on the economy in 2011. This will have no impact on the estimates from the economic model, but will affect the estimates from the statistical baseline. Thus, it would not be surprising to see the two methods continue to diverge over time, and in general, the vector autoregression (or VAR) procedure used to create the statistical baseline likely presents a less useful benchmark the more quarters that are estimated from the beginning of 2009:Q1.

**Results.** Figure 4 shows the results of this forecasting exercise for GDP, together with the actual path of GDP. Past history would have led one to expect GDP to continue to decline in the second and third quarters of 2009 before beginning to grow moderately in the fourth quarter. The figure shows that actual GDP has risen steadily above the forecast path. It was 0.8 percent above that path in 2009:Q2, 1.3 percent above in 2009:Q3, 2.3 percent above in 2009:Q4, 2.9 percent above from 2010:Q1 through 2010:Q2, 3.0 percent above in 2010:Q3, and 3.3 percent above in 2010:Q4. In 2011:Q1, the gap between the actual and projected levels of GDP was 3.2 percent.

Figure 4. Real GDP: Actual and Baseline Projected Levels



The top line in Table 4 summarizes the difference between the actual and forecasted paths of GDP using the statistical projection methodology.

Table 4. Estimates of the Effect of the ARRA Using CEA Statistical Projection Approach

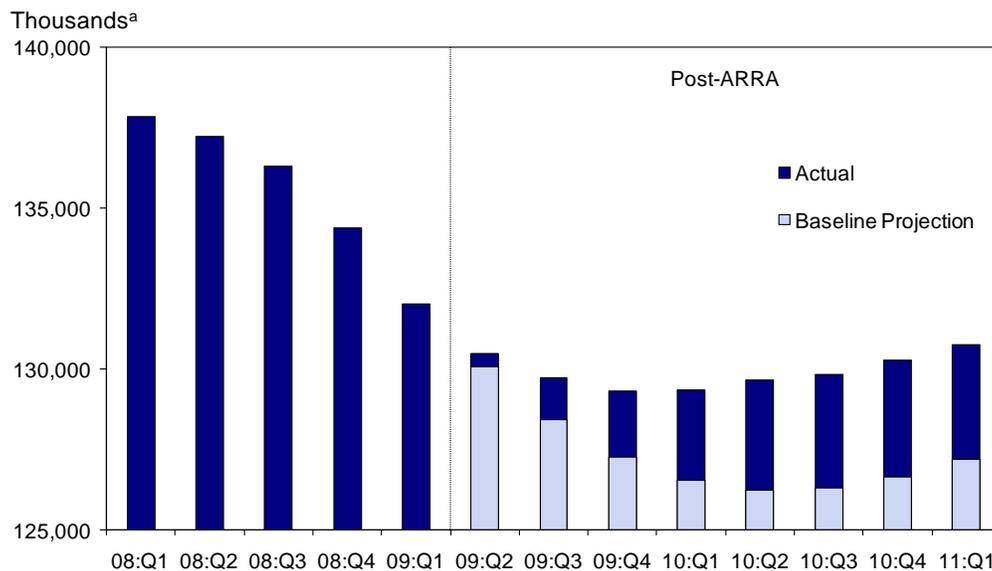
	2009:Q2	2009:Q3	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1
GDP Level (Percent)	+0.8	+1.3	+2.3	+2.9	+2.9	+3.0	+3.3	+3.2
Employment Level <sup>a</sup>	+276,000	+1,004,000	+1,811,000	+2,578,000	+3,224,000	+3,512,000	+3,611,000	+3,586,000

Source: CEA calculations.

Note: a. Estimates are for the middle month of the quarter.

Figure 5 shows the results for employment. Because employment growth normally changes relatively slowly, the usual historical patterns would have led one to expect employment losses to moderate only slowly over the course of 2009 and to continue through the middle of 2010. These results are summarized in the second line of Table 4.

Figure 5. Payroll Employment: Actual and Baseline Projected Levels



Sources: U.S. Department of Labor (Bureau of Labor Statistics); CEA calculations.  
Note: a. Excludes temporary Census workers.

The two methodologies suggest that in 2011:Q1 GDP was between 2.3 and 3.2 percent higher than it would have been without the ARRA. Currently, the economy has recovered all of the output lost during the recession from the peak in output in 2007:Q4. These estimates suggest that without the ARRA, the economy would have recovered less than 50 percent of this output loss. Similarly, the estimates suggest that in 2011:Q1 employment was 2.4 to 3.6 million higher than it would otherwise have been. In terms of direct impact on employment and GDP, the ARRA was intended to stop the economic slide and to be temporary stimulus to fill part of the substantial hole in aggregate demand left by the crisis. The Act was designed to have a peak cumulative impact in the second half of 2010. Because the ARRA was not designed to be permanent, these outlays and tax reductions will decline over time and thus the impact on GDP

and employment are phasing down.

#### D. Evidence of Effects from Recipient Reporting

There have now been seven rounds of quarterly recipient reports.<sup>9</sup> As described in the CEA's second quarterly report, the figures from the recipient reporting data do not provide a comprehensive or exact accounting of the jobs created or saved by the Recovery Act (CEA, 2010a, pp. 29-31). One key reason has already been mentioned: the reporting requirements will only apply to about one-third of the overall funding under the Act. The direct spending components of the Act, which are the main ones subject to the reporting requirements, are, as expected, spending out over a longer time horizon than other components. As a result, spending subject to the reporting requirements was initially a relatively small fraction of the total stimulus and comprised a larger share in the past three quarters.

Table 5 shows obligations, outlays, and tax reductions in each quarter for both the Recovery Act as a whole and for the subset of programs subject to recipient reporting requirements. The fraction of ARRA's outlays and tax cuts covered by the recipient reports was 32% in the first quarter of 2011.

Table 5. ARRA Spending Covered by Recipient Reporting

	2009:Q3	2009:Q4	For the Quarter (Not Cumulative)				
			2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1
	Billions of Dollars						
ARRA Total							
Outlays	53.3	53.5	46.7	46.4	50.6	40.7	25.0
Obligations	94.3	57.6	48.2	41.7	48.6	20.8	6.2
Tax Reductions	29.8	28.8	63.4	76.6	16.8	8.8	32.7
Outlays Plus Tax Reductions <sup>a</sup>	83.1	82.3	110.1	122.9	67.4	49.5	57.7
Subject to Recipient Reporting Requirement							
Outlays	14.9	17.8	18.8	25.1	26.3	20.5	18.4
Obligations	70.5	15.3	26.5	15.8	30.3	5.1	1.9
Tax Reductions	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Outlays Subject to Reporting Requirement as Percent of Outlays Plus Tax Reductions	17.9%	21.6%	17.1%	20.5%	39.0%	41.4%	31.8%

Sources: Agency Financial and Activity Reports to the Office of Management and Budget; simulations from the Department of the Treasury (Office of Tax Analysis) based on the FY2011 Mid-Session Review.

Note: a. Items may not add to total due to rounding.

Although the recipient reporting data cannot be used directly to determine the overall impact of the Recovery Act on employment, the data provide a useful check on the estimates from the aggregate approaches described in Sections III.B and III.C. One simple way to perform such a check is to note that while in the first few quarters direct reporting was available, the funds subject to the reporting requirements were only about 20 percent of the overall stimulus under the Act, and the jobs figures from the recipient reports for each quarter were substantially

<sup>9</sup> See the 6<sup>th</sup> quarterly report (pp. 13-15) for additional information.

more than 20 percent of the corresponding estimates from the model and projection approaches.

Table 6 shows the jobs reported by recipients through the first quarter of 2011.

Table 6. Recipient Reported Direct Jobs  
(for the portion of ARRA spending subject to recipient reporting requirements)

	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1
Recipient reported jobs	608,078	682,322	750,045	675,841	582,089	560,992

Source: Recipient reports downloaded from Recovery.gov on June 27, 2011.

In the case of the model approach, we can improve on this simple comparison by asking what the approach implies about the jobs impact from an amount of government spending equal to the amount subject to the recipient reporting requirement. Further, we can adjust the multipliers used in the model to omit the estimates of jobs created by the additional spending by the workers who are employed on the projects (which are obviously not included in the recipient reports); this brings the multiplier-based estimates closer to what the recipients were asked to report. For 2010:Q1, for example, the model approach implies about 500,000 jobs due directly to the spending subject to reporting requirements, as opposed to the 682,000 jobs actually reported. In 2011:Q1, the model implies 566,000 jobs were due directly to the spending subject to reporting requirements, almost exactly equal to the 561,000 jobs reported.

## E. Comparison with Other Estimates of the Effects of the Recovery Act

Many other economists and forecasters have estimated the impact of the Recovery Act. Most of those estimates are based on formal macroeconomic models.

Table 7 reports estimates of the contribution of the Recovery Act to GDP since the Act was passed from an array of public and private forecasters.<sup>10</sup> The first row repeats the model-based estimates from Section III.B, and the second row shows the estimates from Section III.C based on the comparison of actual outcomes with projections of the normal evolution of the economy. The next two rows show the low and high estimates prepared by the Congressional Budget Office. The estimates from the CEA model approach is in the middle of the CBO range and similar to private sector estimates. The projection approach gives a result at the high end of the CBO range.

<sup>10</sup> Before using estimates from sources used in our earlier reports, we checked with each forecaster to ensure that their estimates of the effects of the Act had not changed.

Table 7. Estimates of the Effects of the ARRA on the Level of GDP

	2009:Q2	2009:Q3	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1
	Percent							
CEA: Model Approach	+0.8	+1.7	+2.1	+2.5	+2.8	+2.7	+2.3	+2.3
CEA: Projection Approach	+0.8	+1.3	+2.3	+2.9	+2.9	+3.0	+3.3	+3.2
CBO: Low	+0.8	+1.2	+1.5	+1.8	+1.7	+1.4	+1.1	+1.1
CBO: High	+1.3	+2.5	+3.4	+4.4	+4.6	+4.1	+3.5	+3.1
Goldman Sachs	+0.5	+1.4	+1.9	+2.3	+2.6	+2.4	+2.1	+1.8
IHS/Global Insight	+0.5	+1.2	+1.7	+2.0	+2.2	+2.3	+2.2	+2.0
James Glassman, J.P.Morgan Chase	+1.3	+1.8	+2.6	+3.3	+3.8	+3.6	+3.1	+2.7
Macroeconomic Advisers	+0.5	+1.0	+1.4	+1.7	+2.1	+2.1	+2.1	+2.3
Mark Zandi, Moody's Economy.com	+0.8	+1.6	+2.2	+2.5	+2.7	+2.7	+2.6	+2.4

Sources: See text for details.

Fewer estimates of the employment effects of the Recovery Act are available, but those that have been gathered are reported in Table 8.<sup>11</sup> The CEA model-based estimates are well within the range of the other estimates. It is useful to note that the CEA estimate is based on the most recent spending and tax reduction data, whereas some of the private sector estimates have not been updated in many months. Also, the CEA employment effect is derived from the GDP effect using standard estimates of the usual relationship between the two series and the GDP estimate was in the middle of the range of other GDP estimates.

The employment effects of the Recovery Act are measured at a point in time and therefore should not be compared to the costs across the entire life of the program.

Table 8. Estimates of the Effects of the ARRA on the Level of Employment

	2009:Q2	2009:Q3	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1
CEA: Model Approach	+400,000	+1,122,000	+1,755,000	+2,227,000	+2,556,000	+2,680,000	+2,513,000	+2,392,000
CEA: Projection Approach <sup>a</sup>	+276,000	+1,004,000	+1,811,000	+2,578,000	+3,224,000	+3,512,000	+3,611,000	+3,586,000
CBO: Low	+300,000	+600,000	+900,000	+1,300,000	+1,400,000	+1,400,000	+1,300,000	+1,200,000
CBO: High	+500,000	+1,200,000	+1,900,000	+2,800,000	+3,400,000	+3,600,000	+3,500,000	+3,300,000
IHS/Global Insight	+228,000	+689,000	+1,245,000	+1,696,000	+2,107,000	+2,342,000	+2,445,000	+2,437,000
Macroeconomic Advisers	+248,000	+623,000	+1,057,000	+1,462,000	+1,847,000	+2,119,000	+2,329,000	+2,479,000
Mark Zandi, Moody's Economy.com	+500,000	+1,008,000	+1,486,000	+1,893,000	+2,249,000	+2,522,000	+2,492,000	+2,473,000

Sources: See text for details.

Notes: a. Estimates are for the middle month of the quarter.

The CEA employment estimates based on the projection approach, in contrast, are above the range of most other estimates for the past three quarters. This difference reflects two facts. First, the other estimates are largely based on economic models similar to that used in the CEA's model approach. Second, the turnaround of employment has been faster than one would have expected given the behavior of the economy before the passage of the Recovery Act and standard estimates of the effects of stimulus. Thus, an approach that takes into account the actual behavior of employment tends to yield higher estimates than ones that rely on a historical

<sup>11</sup> The sources are the same as for Table 7.

multiplier approach. Furthermore, as noted above, a projection approach will include the effects of additional policies passed since the Recovery Act and thus is likely to continue to diverge from model based estimates over time.

In light of the actual behavior of GDP, the estimates in Table 7 suggest that most forecasters believe that, in the absence of the Act, GDP would have declined sharply in 2009:Q2 and continued to decline in 2009:Q3, and that growth would have been considerably weaker in subsequent quarters than it actually was. Likewise, the estimates in Table 8 imply that most forecasters believe that jobs losses would have moderated much more slowly than they actually did over the course of 2009, and that substantial job losses would have continued into 2010.

#### **IV. CONCLUSION**

This report continues the Council of Economic Advisers' assessment of the economic impact of the American Recovery and Reinvestment Act and the response of the economy as of the first quarter of 2011.

The analysis indicates that the Recovery Act has played a significant role in the turnaround of the economy that has occurred over the past two years. Real GDP reached its low point in the second quarter of 2009 and has been growing solidly since then, in large part because of the tax cuts and spending increases included in the Act. Employment, after falling dramatically, began to grow again on a sustained basis through 2010. As of the first quarter of 2011, the report estimates that the Recovery Act raised employment by 2.4 to 3.6 million jobs relative to what it otherwise would have been.

As discussed in previous ARRA reports, measuring the impact of policy on growth and employment is inherently difficult because no one can observe directly what would have occurred without the policy. But multiple methodologies and multiple sources point to similar estimates of ARRA's impact on the economy.