

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



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

NINTH QUARTERLY REPORT

FEBRUARY 1, 2013

THE ECONOMIC IMPACT OF THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009
NINTH 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 ninth report and it provides an assessment of the effects of the Act through the third quarter of 2012.

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 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 4.7 million from the start of 2010 to the end of the third quarter of 2012. (From the national employment trough in February 2010 to December 2012, private payroll employment increased by 5.8 million, accounting for the preliminary benchmark revision).
- Cumulating the impact from the second quarter of 2009 to the third quarter of 2012, ARRA was responsible for an additional 6.0 million employment-years (an employment-year is equivalent to one payroll job for one year). This is roughly on-track with the original estimate of 6.8 million employment-years from CEA's May 2009 report.
- Because ARRA was designed to be temporary and has now begun to phase out, a snapshot of the impact of ARRA in the third quarter of 2012 shows a somewhat smaller impact than when ARRA was in full effect from late 2009 to early 2011. Nevertheless, CEA estimates ARRA has raised the level of GDP in the third quarter of 2012, relative to what it otherwise would have been, by 0.7 percent. In addition, CEA estimates that in the third quarter of 2012, ARRA has raised employment relative to what it otherwise would have been by 753,000.
- Estimates contained in this report are very similar to those of a wide range of other analysts, including the non-partisan Congressional Budget Office.

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	6
IV. CONCLUSION	18

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 alarming rate and employment was falling by more than 700,000 jobs per month. The plunge in economic activity was even deeper than the Bureau of Economic Analysis initially reported: revised estimates showed that the economy contracted at an 8.9 percent annualized rate in the last quarter of 2008, from the initial advanced estimate of 3.8 percent, the largest quarterly downward revision in history. The Administration immediately took bold steps to turn around an economy in free fall. The Recovery 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, ARRA was part of a comprehensive policy response to the economic turmoil that gripped the United States and the world economy.

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 ninth report provides an assessment of the effects of the Act through the third quarter of 2012.¹

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

¹ 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-arr-report.pdf>).

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 753,000 jobs in the third quarter of 2012. Cumulating the impact from the second quarter of 2009 to the third quarter of 2012, the Recovery Act was responsible for an additional 6.0 million employment-years (an employment-year is equivalent to one payroll job for one year). This is roughly on-track with the original estimate of 6.8 million employment-years from CEA's May 2009 report.

The report begins in Section II with a summary of the spending and tax reductions that have occurred under ARRA to date. Section III contains the key analysis of the overall economic impact of the Recovery Act. In keeping with previous reports, this report estimates the role of the Recovery Act using estimates of the effects of fiscal policy from standard macroeconomic forecasting models. This method indicates that 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 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.² 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 outlayed, 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 at the end of each quarter since the Act's passage.³ At the end of the third quarter of 2012, the sum of outlays and tax cuts was \$768 billion, with an additional \$38 billion obligated but not yet outlayed. 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.⁴ Additionally, the sum of spending, obligations in excess of spending, and tax cuts is \$806 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.

² 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 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 2013 Mid-Session Review. To provide the most accurate quarterly estimates of the impact of 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).

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

⁴ CBO (2009) projected that the spending and revenue effects in fiscal year 2009 (that is, through the third quarter) would be \$184.9 billion, \$399.4 billion in fiscal 2010, and \$134.4 billion in fiscal 2011. CBO has since published a revised estimate of the direct effect on the deficit of ARRA of \$833 billion (CBO 2012). This number is not comparable to the estimated cost at passage of \$787 billion because it does not include adjustments for the effect of 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.

Table 1. Outlays, Obligations, and Tax Reductions

	Through the end of ^f														
	2009:Q1 (Mar)	2009:Q2 (Jun)	2009:Q3 (Sep)	2009:Q4 (Dec)	2010:Q1 (Mar)	2010:Q2 (Jun)	2010:Q3 (Sep)	2010:Q4 (Dec)	2011:Q1 (Mar)	2011:Q2 (Jun)	2011:Q3 (Sep)	2011:Q4 (Dec)	2012:Q1 (Mar)	2012:Q2 ^c (Jun)	2012:Q3 (Sep)
	Billions of Dollars														
Outlays	8.6	56.3	110.7	164.2	210.9	257.3	307.9	348.6	373.6	398.7	420.5	438.2	452.6	465.4	477.4
Obligations	30.5	157.8	256.3	313.9	362.1	403.8	452.4	473.2	479.4	484.4	493.6	499.3	504.5	511.0	515.4
Tax Reductions	2.4	38.0	69.8	100.0	164.8	242.1	258.5	266.8	298.7	293.6	295.7	297.7	293.7	290.7	290.3
Sum of Outlays and Tax Reductions ^b	11.0	94.3	180.5	264.2	375.8	499.4	566.3	615.4	672.3	692.3	716.2	735.9	746.3	756.1	767.6

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 FY2013 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.

c. Data on outlays and obligations for 2012:Q2 are from the July 6, 2012 Financial and Activities Reports.

B. Trends and Developments

Table 2 shows the breakdown of aggregate outlays and tax relief into 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 \$83 to \$86 billion per quarter over the last three quarters of 2009, total outlays plus tax cuts were \$112 billion in the first quarter of 2010, \$124 billion in the second quarter of 2010, \$67 billion in the third quarter of 2010, and \$49 billion in the fourth quarter of 2010. Total outlays plus tax cuts were \$57 billion in the first quarter of 2011, \$20 billion in the second quarter of 2011, \$24 billion in the third quarter of 2011, and \$20 billion in the fourth quarter of 2011.⁵ Total outlays plus tax cuts were about \$10 billion in the first three quarters of 2012. As noted in prior quarterly reports, ARRA was intended to be temporary and the total outlays and the tax cuts were designed to decline over time.

⁵ Much of the difference from the second to the third quarter of 2010 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 \$77 billion in the second quarter and \$60 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 ^a														
	2009:Q1 (Mar)	2009:Q2 (Jun)	2009:Q3 (Sep)	2009:Q4 (Dec)	2010:Q1 (Mar)	2010:Q2 (Jun)	2010:Q3 (Sep)	2010:Q4 (Dec)	2011:Q1 (Mar)	2011:Q2 (Jun)	2011:Q3 (Sep)	2011:Q4 (Dec)	2012:Q1 (Mar)	2012:Q2 ^c (Jun)	2012:Q3 (Sep)
	Billions of Dollars														
Individual Tax Cuts	2.3	28.6	42.9	58.7	102.0	124.4	134.2	142.9	168.3	180.5	180.9	181.0	181.3	181.3	181.3
AMT Relief	0.0	7.8	13.8	17.3	28.7	76.2	83.4	83.4	88.1	69.0	69.0	69.0	69.0	69.0	69.0
Business Tax Incentives	0.1	12.6	23.1	32.1	39.0	43.9	41.3	39.8	38.3	36.9	35.4	34.5	33.5	32.6	31.7
State Fiscal Relief	8.5	28.2	43.8	59.3	75.5	92.1	107.1	121.7	126.1	130.8	133.1	134.9	136.6	137.9	139.1
Aid to Directly Impacted Individuals	0.0	9.6	31.8	55.2	71.4	76.6	81.3	86.0	89.5	92.8	96.8	99.2	101.4	103.6	105.6
Public Investment Outlays	0.0	7.4	25.1	41.6	59.2	86.2	119.0	141.6	162.0	182.3	201.0	217.2	224.4	231.6	241.0
Total^b	11.0	94.3	180.5	264.2	375.8	499.4	566.3	615.4	672.3	692.3	716.2	735.9	746.3	756.1	767.6
Change in Total (from End of Previous Quarter)	11.0	83.3	86.2	83.7	111.6	123.6	66.9	49.1	56.9	20.0	23.9	19.6	10.4	9.8	11.6

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 FY2013 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.

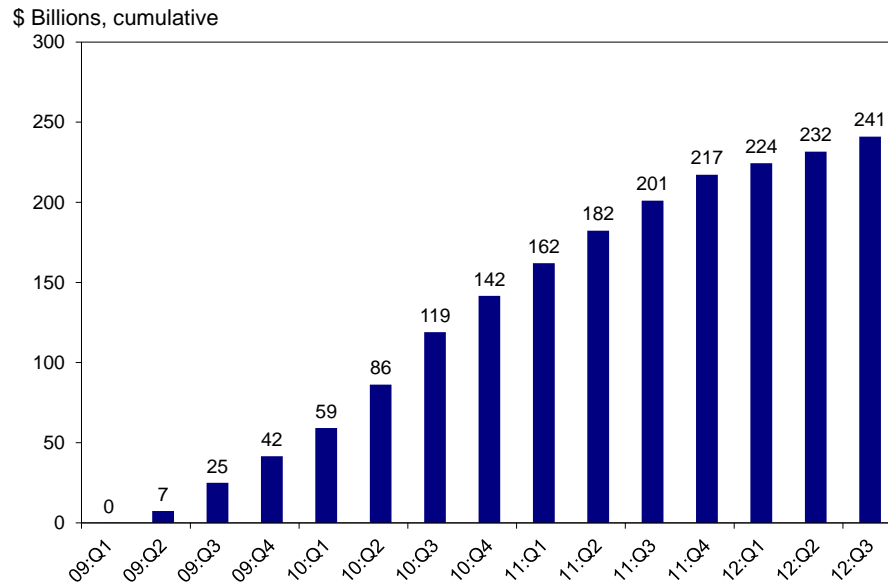
c. Data on outlays and obligations for 2012:Q2 are from the July 6, 2012 Financial and Activities Reports.

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. A number of those have been directed to rural projects to strengthen regional economies and ensure that Americans living in rural communities have access to a first-class education, affordable healthcare, and improved economic opportunities. Examples include DOT Federal Highway programs and USDA investments in rural hospitals, schools, and renewable energy.

Overall, these outlays have increased from \$7 billion through the end of the second quarter of 2009 to \$241 billion through the end of the third quarter of 2012 (see Figure 1).

Figure 1. Public Investment Outlays



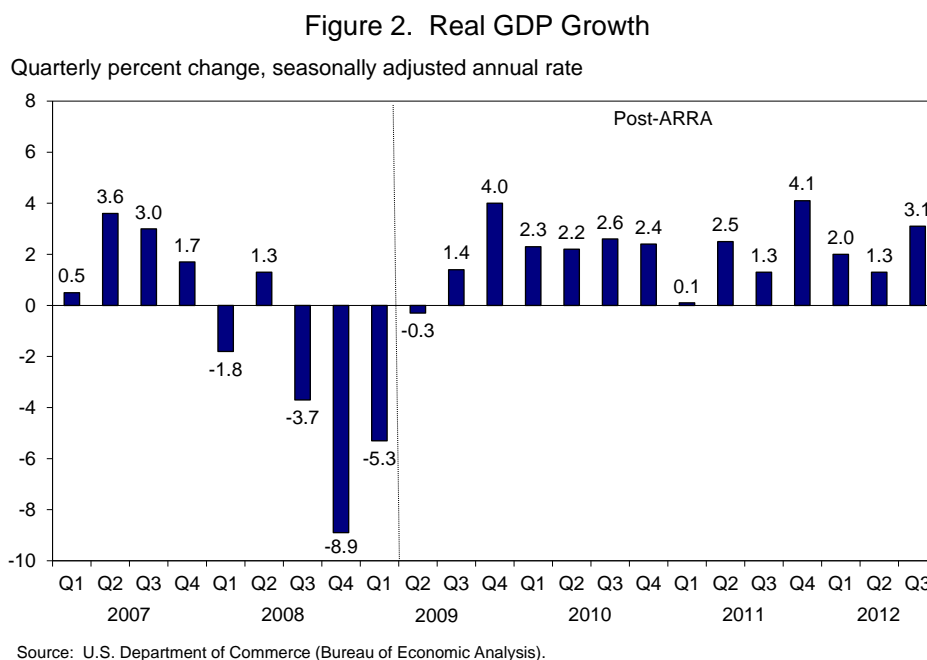
III. EVIDENCE OF THE ECONOMIC IMPACT OF THE RECOVERY ACT

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 third quarter of 2012. 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 fell 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 plunging at an annual rate of 8.9 percent in the fourth quarter of 2008 and dropping at an

annual rate of 5.3 percent in the first quarter of 2009, GDP ticked down at a rate of 0.3 percent in the second quarter, and then rose at a rate of 1.4 percent in the third quarter and 4.0 percent in the fourth. The improvement in growth of 12.9 percentage points from the fourth quarter of 2008 to the fourth quarter of 2009 (that is, the swing from growth at a -8.9 percent rate to growth at a 4.0 percent rate) was the largest over any four quarters since 1976.

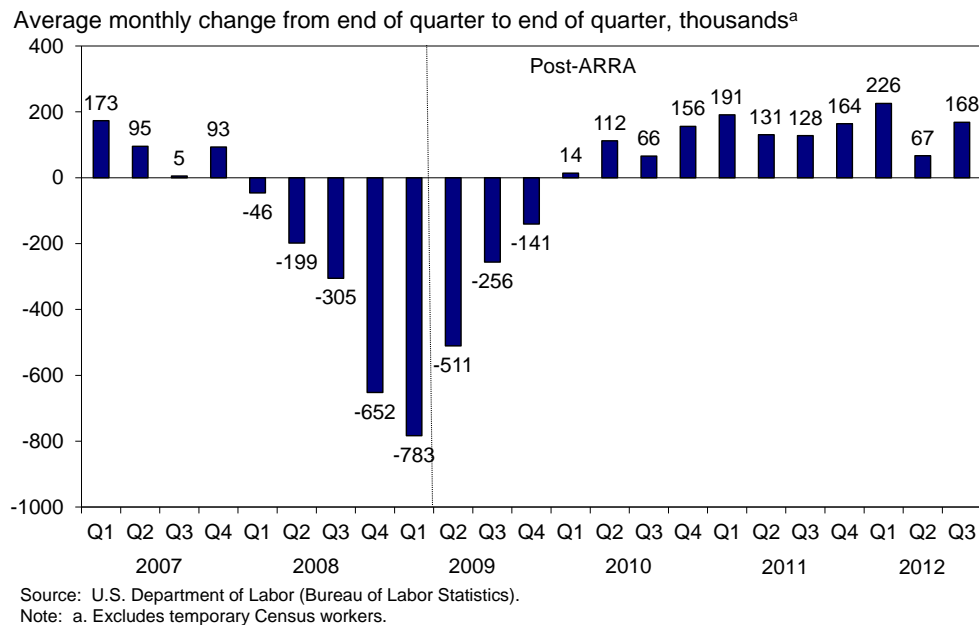


This growth continued in 2010 as GDP grew at a 2.3 percent annual rate in the first quarter and a 2.2 percent rate in the second quarter. GDP growth ticked up to 2.6 percent in the third quarter and 2.4 percent in the fourth quarter. In the first quarter of 2011, GDP growth moderated to 0.1 percent before rebounding to a 2.5 percent growth rate in the second quarter, a 1.3 percent growth rate in the third quarter, and 4.1 percent in the fourth quarter. GDP growth moderated to 2.0 percent in the first quarter of 2012, 1.3 percent in the second quarter, and rebounded to 3.1 percent in the third quarter.

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

783,000 jobs per month. Job losses fell to 511,000 per month in the second quarter, 256,000 per month in the third, and 141,000 in the fourth. The economy began adding jobs in 2010, with average gains of 14,000 per month in the first quarter, 112,000 per month in the second quarter, 66,000 per month in the third quarter, and 156,000 per month in the fourth quarter.⁶ Solid job gains continued into 2011 as an average of 191,000 jobs were added per month in the first quarter, an average of 131,000 jobs were added per month in the second quarter, an average of 128,000 jobs were added per month in the third quarter, and an average of 164,000 jobs were added per month in the fourth quarter. The highest average monthly job gains of the recovery to date were reached in the first quarter of 2012, with an average of 226,000 jobs added per month. Monthly job gains moderated in the second quarter of 2012, with an average of 67,000 added per month, but increased in the third quarter, with an average of 168,000 added per month. The *reversal* in the average monthly change in employment over the past fourteen quarters was among the largest on record. Private sector job growth also moved from deep losses in 2009 to increases averaging 25,000 in 2010:Q1, 123,000 in 2010:Q2, 112,000 in 2010:Q3, 157,000 in 2010:Q4, 212,000 in 2011:Q1, 158,000 in 2011:Q2, 148,000 in 2011:Q3, 184,000 in 2011:Q4, 226,000 in 2012:Q1, 88,000 in 2012:Q2, and 140,000 in 2012:Q3.

Figure 3. Payroll Employment Growth



⁶ These figures exclude temporary workers hired for the decennial Census.

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 the unemployment rate remains elevated. Monthly job growth averaged 156,000 for the twelve months ending September 2012, and while more robust growth is needed, this is movement in the 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.⁷

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 third quarter of 2012, relative to what it otherwise would have been, by 0.7 percent. This approach also indicates that the Act increased employment, relative to what it otherwise would have been, by 753,000 in the third quarter of 2012. These estimates from the model are consistent with a substantial impact on both the level of GDP and employment through 2012:Q3, but one that is less than previously estimated as ARRA's outlays and tax cuts phase out.

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

	2009:Q2	2009:Q3	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1	2011:Q2	2011:Q3	2011:Q4	2012:Q1	2012:Q2	2012:Q3
GDP Level (Percent)	0.8	1.7	2.1	2.5	2.8	2.7	2.3	2.3	2.0	1.7	1.4	1.0	0.7	0.7
Employment Level	403,000	1,126,000	1,756,000	2,226,000	2,551,000	2,669,000	2,497,000	2,362,000	2,152,000	1,909,000	1,616,000	1,235,000	928,000	753,000

Source: CEA calculations.

Because ARRA was designed to be temporary and has been phasing out over the course of 2012, it is important to also consider the cumulative impact of the Act since the legislation

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

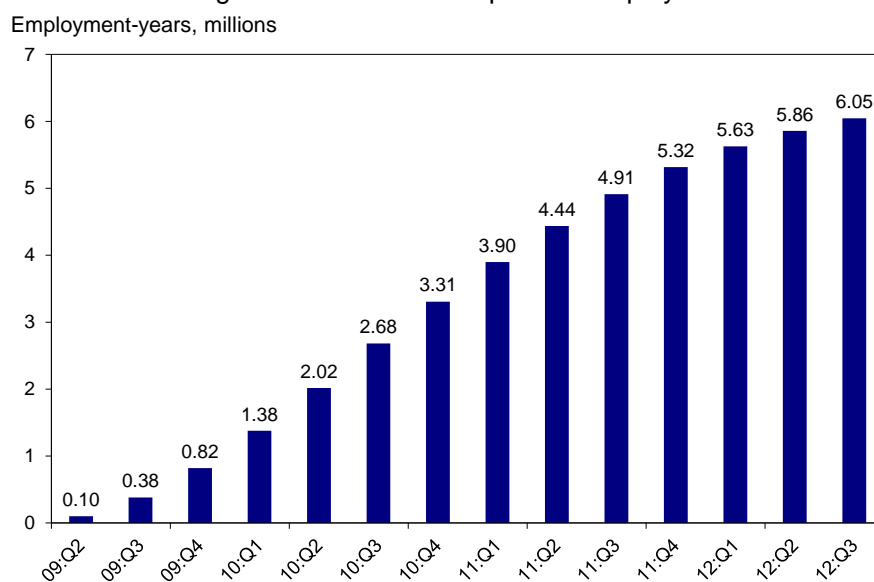
was first passed. While Table 3 above presents snapshots of the impact of the law in particular quarters, Table 4 below compliments the analysis by providing a running total of the impact of ARRA on employment since mid-2009. The estimates in Table 4 show cumulative employment-years created by ARRA, where one employment-year is equivalent to one payroll job for the duration of one year. CEA estimates that from the second quarter of 2009 to the third quarter of 2012, ARRA was responsible for just over 6 million additional employment-years. These figures are also displayed graphically in Figure 4. This is roughly on-track with the original estimate of 6.8 million employment-years from CEA's May 2009 report.

Table 4. Estimates of the Cumulative Effect of ARRA Using CEA Multiplier Model

	2009:Q2	2009:Q3	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1	2011:Q2	2011:Q3	2011:Q4	2012:Q1	2012:Q2	2012:Q3
Employment-Years	101,000	382,000	821,000	1,378,000	2,016,000	2,683,000	3,307,000	3,898,000	4,436,000	4,913,000	5,317,000	5,626,000	5,858,000	6,046,000

Source: CEA calculations.

Figure 4. Cumulative Impact on Employment



Source: CEA calculations.

C. Evidence of Effects from Recipient Reporting

There have now been twelve rounds of quarterly recipient reports.⁸ As described in

⁸ See the 6th quarterly report (pp. 13-15) for additional information.

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 53 percent in the third quarter of 2012.

Table 5. ARRA Spending Covered by Recipient Reporting

	For the Quarter (Not Cumulative)												
	2009:Q3	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1	2011:Q2	2011:Q3	2011:Q4	2012:Q1	2012:Q2	2012:Q3
	Billions of Dollars												
ARRA Total													
Outlays	53.3	53.5	46.7	46.4	50.6	40.7	25.0	25.1	21.9	17.7	14.3	12.8	12.0
Obligations	94.3	57.6	48.2	41.7	48.6	20.8	6.2	5.0	9.2	5.7	5.2	6.5	4.4
Tax Reductions	31.8	30.2	64.9	77.3	16.4	8.4	31.9	- 5.1	2.1	2.0	- 4.0	- 3.0	- 0.5
Outlays Plus Tax Reductions ^a	85.1	83.7	111.6	123.6	66.9	49.1	56.9	20.0	23.9	19.6	10.4	9.8	11.6
Subject to Recipient Reporting Requirement													
Outlays	14.9	17.8	18.8	25.1	26.3	20.5	18.4	19.5	14.9	11.7	8.1	7.1	6.1
Obligations	70.5	15.3	26.5	15.8	30.3	5.1	1.9	0.8	3.2	- 0.1	- 0.2	- 0.1	0.1
Tax Reductions	0.0	0.0	0.0	0.0	0.0	0.0	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	17.5%	21.2%	16.9%	20.3%	39.3%	41.7%	32.3%	97.5%	62.3%	59.4%	78.4%	72.6%	53.0%

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 FY2013 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 Section III.B. 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 of these quarters were substantially more than 20 percent of the corresponding estimates from the model approach.

Table 6 shows the jobs reported by recipients through the third quarter of 2012.

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	2011:Q2	2011:Q3	2011:Q4	2012:Q1	2012:Q2	2012:Q3
Recipient reported jobs	608,078	682,322	750,045	675,841	582,089	560,992	545,262	402,900	204,337	158,575	152,295	135,015

Source: Recipient reports downloaded from Recovery.gov on December 4, 2012.

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 2012:Q3, the model implies 188,000 jobs were due directly to the spending subject to reporting requirements, roughly in line with the 135,015 jobs reported.

D. 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.⁹ The first row repeats the model-based estimates from Section III.B. The next two rows show the low and high estimates prepared by the Congressional Budget Office. The estimate from the CEA model approach is

⁹ The forecasts in tables 7 and 8 only estimate the effect of the Recovery Act on GDP and employment and do not account for the impact of subsequent fiscal actions.

¹⁰ 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.

within the CBO range and is similar to private sector estimates.

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

	2009:Q2	2009:Q3	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1	2011:Q2	2011:Q3	2011:Q4	2012:Q1	2012:Q2	2012:Q3
	Percent													
CEA: Model Approach	0.8	1.7	2.1	2.5	2.7	2.7	2.3	2.3	2.0	1.7	1.4	1.0	0.7	0.7
CBO: Low	0.4	0.6	0.7	0.9	0.8	0.7	0.6	0.6	0.4	0.3	0.2	0.1	0.1	0.1
CBO: High	1.4	2.4	3.4	4.3	4.6	4.1	3.5	3.2	2.5	2.0	1.5	1.0	0.8	0.7
Goldman Sachs	0.5	1.4	1.9	2.3	2.6	2.4	2.1	1.8	1.5	1.2	0.9	-	-	-
IHS Global Insight	0.5	1.2	1.7	2.0	2.2	2.3	2.2	2.0	1.8	1.5	1.3	1.0	0.8	0.7
James Glassman, J.P.Morgan Chase	1.3	1.8	2.6	3.3	3.8	3.6	3.1	2.7	1.9	1.5	0.6	0.2	-0.1	-0.2
Macroeconomic Advisers	0.5	1.0	1.4	1.7	2.1	2.1	2.1	2.3	2.3	2.2	1.8	1.6	1.5	1.4
Mark Zandi, Moody's Economy.com	0.8	1.6	2.2	2.5	2.7	2.7	2.6	2.3	2.0	1.5	1.1	0.7	0.5	0.4

Sources: See text for details.

Note: Goldman Sachs does not publish an estimate of the effect of the ARRA on the level of GDP in 2012.

Fewer estimates of the employment effects of the Recovery Act are available, but those that have been gathered are reported in Table 8. 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.

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 ARRA on the Level of Employment

	2009:Q2	2009:Q3	2009:Q4	2010:Q1	2010:Q2	2010:Q3	2010:Q4	2011:Q1	2011:Q2	2011:Q3	2011:Q4	2012:Q1	2012:Q2	2012:Q3
CEA: Model Approach	401,000	1,121,000	1,751,000	2,221,000	2,547,000	2,667,000	2,497,000	2,365,000	2,159,000	1,909,000	1,616,000	1,235,000	928,000	753,000
CBO: Low	100,000	300,000	500,000	600,000	700,000	700,000	600,000	600,000	500,000	400,000	300,000	200,000	200,000	200,000
CBO: High	500,000	1,200,000	1,900,000	2,700,000	3,400,000	3,600,000	3,500,000	3,300,000	2,900,000	2,400,000	2,000,000	1,500,000	1,200,000	900,000
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	2,367,000	2,176,000	1,970,000	1,702,000	1,438,000	1,197,000
Macroeconomic Advisers	248,000	623,000	1,057,000	1,462,000	1,847,000	2,119,000	2,329,000	2,479,000	2,588,000	2,588,000	2,414,000	2,198,000	1,978,000	1,823,000
Mark Zandi, Moody's Economy.com	500,000	1,010,000	1,490,000	1,890,000	2,250,000	2,520,000	2,490,000	2,320,000	1,940,000	1,480,000	1,040,000	730,000	520,000	410,000

Sources: See text for details.

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.

E. The Recovery Act Compared to Earlier Stimulus Measures

Several major stimulus measures were passed prior to the enactment of ARRA. In response to economic recessions, Congress and the Bush Administration passed sizable stimulus bills in 2001 and 2008. The 2001 tax rebate awarded up to \$300 for single individuals and \$600 for married couples filing joint returns. The rebate, delivered through checks issued by the Treasury Department between July and September of 2001, was an *advance* payment for the tax benefit associated with the reduction in federal income tax rate from 15 to 10 percent on taxpayers' first \$6,000 of taxable income for singles and \$12,000 for married couples filing jointly. Taxpayers who filed a tax return for tax year 2000 received the rebate check based on their 2000 income.

The 2001 rebate was weakly progressive because it was capped at a flat dollar amount but was less targeted to low- and middle-income families than the 2008 rebate because even high-income taxpayers benefited from the new 10 percent tax bracket on their first \$6,000 (or \$12,000 if married filing jointly) of taxable income. Low-income families that were not required to file a tax return or did not have sufficient taxable income would receive no or only a partial rebate.

In 2008, taxpayers received a tax rebate for their 2007 federal income tax liability up to \$600 for individuals, \$1,200 for married couples, and an additional \$300 per child. Families lacking income tax liability received a minimum payment of \$300 (or \$600 if married filing jointly) if they had income of at least \$3,000 (combined from earnings, Social Security benefits, Railroad Retirement benefits, and certain veterans' payments) and filed a tax return for 2007. The Internal Revenue Service estimated that as many as 12.5 million tax returns, out of a 154.7 million total, were filed for tax year 2007 solely to receive the stimulus payment.

The 2008 tax rebate was targeted to low- and middle-income families as it was reduced or not available for taxpayers with income above \$75,000 (or \$150,000 if married filing jointly). In addition, the tax rebate was generally progressive because payments were capped at a flat

dollar amount and phased out with income. The one-time stimulus payments were delivered between May and July of 2008 by mail or electronic fund transfers to taxpayers who filed a 2007 tax return.

Evidence on the effectiveness of the 2001 and 2008 rebates is mixed. The literature shows a complicated behavioral response. Credit constrained households and households with low liquid wealth exhibited high marginal propensities to consume (MPC), while other households did not. Many households did not immediately spend the whole rebate, either spending it over multiple quarters, or initially paying down debt before increasing consumption. Some evidence shows that the rebates incentivized households to purchase new cars; these large purchases led to high average spending levels. Perhaps due to the role of large durable good purchases, the MPC out of lump-sum payments is shown to be higher than smaller rebates or a flow of small payments through reduced withholding.

Johnson, Parker, and Souleles (2006) examine the 2001 tax rebates using a unique addendum to the Consumer Expenditure (CE) Survey. They exploit the random timing of rebate disbursement across households to identify the causal effect of the rebate on spending. The authors find that approximately 20-40 percent of the rebate checks were spent on non-durables in the quarter of receipt, and that approximately two-thirds of the rebate checks were spent on non-durables within two quarters of receipt.¹¹ The authors find evidence that low-income and liquidity constrained households exhibited higher MPC relative to other households.

Parker *et al.* (2011) examine the 2008 tax rebates by studying a special addendum to the CE—similar to the approach used in Johnson, Parker, and Souleles (2006). Parker *et al.* find that 12-30 percent of the 2008 rebates were spent on durable goods in the quarter of receipt and 50-90 percent of the stimulus payment was spent—including both durable and non-durable good purchases—in the quarter of receipt. In particular, the large average change in spending was driven by increased likelihood of purchasing a new vehicle. The authors posit that the difference

¹¹ Durable spending in the study is too imprecise to estimate with any precision. Subsequently, the study simply measures the effect of the rebates on non-durable consumption.

between the 2001 and 2008 responses could in part be driven by the larger size of the 2008 rebate. That is, larger rebates may be more likely to drive changes in more expensive non-durable goods.

Misra and Surico (2011) use the Johnson, Parker and Souleles (2006) data on the 2001 rebates to estimate a heterogeneous response model. They find that about 45 percent of households spent a share not statistically different from 0, 15 percent spent a share not statistically different from 1, and the remaining households spent some intermediate share. Households with higher income and high liquid wealth had very low levels of spending, while households with low income and low liquid wealth tended to spend more. The role of liquid wealth in spending patterns is confirmed by Carroll (2012), who argues that marginal propensity to consume is closely related to liquid wealth and household preferences.

Shapiro and Slemrod (2003, 2009) use a rider on the monthly *Survey of Consumers* to measure survey responses to the 2001 and 2008 rebates, respectively. A small fraction of respondents—just 21.8 percent—reported that the 2001 rebate would lead them to increase spending, in sharp contrast to the changes in consumption identified in the study of consumer expenditures. Particularly low levels of spending were reported by respondents with low, but not zero, levels of stock market wealth; Shapiro and Slemrod speculate that this is consistent with a saver/spender model in which some households are driven to accumulate assets more than others. The authors also attribute the low level of reported spending to the widespread expectation that additional tax cuts would not be legislated.

Shapiro and Slemrod (2009) found that much of the 2008 stimulus would be used to pay off debt. Nearly half—48.2 percent—of respondents indicated that they would use the stimulus payments mostly towards debt payment, compared to 19.9 of respondents who would mostly spend the payment and 31.8 percent of respondents who said they would mostly save the stimulus. The authors find little correlation between reported stimulus spending and reported income, but do find a strong positive correlation between age and reported spending; older households were more likely to spend the stimulus than younger households.

Agarwal, Liu and Souleles (2007) examine the month-by-month consumer response to the 2001 tax rebate checks using credit card data. This study has the unique advantage of measuring the extent to which consumers are credit constrained. The authors found a “lumpy” response by consumers to the rebate, with credit card users initially paying down debt then later using the increased liquidity to increase consumption. The authors found that credit-constrained households in the sample spent up to more than 60 percent of the rebate, with lower spending rates for households without credit constraints.

F. The U.S. Stimulus in International Context

The damages from the great recession were not limited to the U.S. To varying degrees, countries around the world saw their growth rates stagnate and their fiscal outlooks plummet. The international response was diverse. Central banks responded by steeply lowering interest rates in an attempt to make credit cheaper while central governments undertook a variety of financial sector and regulatory reforms aimed at easing the economics losses.

Some nations responded to the recession with large stimulus packages relative to the size of their economy, while others reacted by cutting budget shortfalls and raising aggregate tax revenues. One study of the OECD policy response finds that among 28 major industrialized countries, six nations—Greece, Iceland, Ireland, Portugal, Austria, and Italy—had negative growth rates for government consumption and investment between Q1:2009 and Q1:2010 (Aizenman and Pasricha 2011). In this study, the U.S. ranked the 9th lowest (out of 28 countries) in terms of the size of its growth in government consumption and investment. Moreover, the study finds that 11 out of 28 OECD countries exhibited procyclical fiscal policies over Q1:2004 to Q1:2010, measured by the difference in growth rates of government spending between 2004-2007 relative to 2007-2010. The U.S. showed mildly countercyclical policies relative to other OECD nations, meaning that government spending increased slightly faster during the recession than it did during the period immediately preceding the economic slowdown.

In an interconnected global economy, actions by a domestic government have worldwide repercussions. The benefits of countercyclical fiscal policy are enjoyed not just by the country

providing the stimulus, but by the country's trading partners as well. One study of the global effects G-20 stimulus policies from 2007-2009 showed that the United States benefitted from international stimulus efforts, just as other countries benefitted from the Recovery Act (Freedman et al. 2010). In 2009, GDP in the U.S. was raised by 1.9 percentage points by the global stimulus effort. While the bulk of this gain—1.5 percentage points—came from the U.S.'s own stimulus measures, some growth was derived from fiscal stimulus in emerging Asian countries (0.3 percentage points), Japan (0.1 percentage points), Europe (0.1 percentage points), and the rest of the world (0.2 percentage points). Similarly, stimulus policies in the U.S. boosted worldwide GDP growth by 0.7 percentage points in 2009 and 2010.

IV. CONCLUSION

This report continues the Council of Economic Advisers' assessment of the economic impact of the American Recovery and Reinvestment Act through the third quarter of 2012.

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. In the third quarter of 2012, the report estimates that the Recovery Act raised employment by 753,000 jobs relative to what it otherwise would have been. Cumulating the impact from the second quarter of 2009 to the third quarter of 2012, ARRA was responsible for an additional 6.0 million employment-years (an employment-year is equivalent to one payroll job for one year). This is roughly on-track with the original estimate of 6.8 million employment-years from CEA's May 2009 report.

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.

REFERENCES

- Agarwal, Sumit, Chunlin Liu, and Nicholas S. Souleles. 2007. "The Reaction of Consumer Spending and Debt to Tax Rebates: Evidence from Consumer Credit Data." Federal Reserve Bank of Chicago Working Paper 2007-10.
- Aizenman, Joshua, and Gurnain Kaur Pasricha. 2011. "Net Fiscal Stimulus During the Great Recession." National Bureau of Economic Research Working Paper No. 16779.
- Carroll, Christopher D. 2012. "Implications of Wealth Heterogeneity for Macroeconomics." Paper written for Academic Consultants' meeting at the Federal Reserve Board.
- Congressional Budget Office. 2009. "H.R. 1, American Recovery and Reinvestment Act of 2009."
- Congressional Budget Office. 2012. "Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from April 2012 Through June 2012."
- Council of Economic Advisers. 2009a. "Estimates of Job Creation from the American Recovery and Reinvestment Act of 2009."
- Council of Economic Advisers. 2009b. "The Economic Impact of the American Recovery and Reinvestment Act of 2009, First Quarterly Report."
- Council of Economic Advisers. 2010a. "The Economic Impact of the American Recovery and Reinvestment Act of 2009, Second Quarterly Report."
- Council of Economic Advisers. 2010b. "The Economic Impact of the American Recovery and Reinvestment Act of 2009, Third Quarterly Report."
- Council of Economic Advisers. 2010c. "The Economic Impact of the American Recovery and Reinvestment Act of 2009, Fourth Quarterly Report."
- Freedman, Charles, Michael Kumhof, Douglas Laxton, Dirk Muir, and Susanna Mursula. 2010. "Global Effects of Fiscal Stimulus During the Crisis." *Journal of Monetary Economics* 57(5): 506–526.
- Johnson, David S., Jonathan A. Parker, and Nicholas S. Souleles. 2006. "Household Expenditure and the Income Tax Rebates of 2001." *American Economic Review* 96(5): 1589–1610.
- Misra, Kanishka, and Paolo Surico. 2011. "Heterogeneous Responses and Aggregate Impact of the 2001 Income Tax Rebates." CEPR Discussion Paper No. DP8306.
- Parker, Jonathan A., Nicholas S. Souleles, David S. Johnson, and Robert McClelland. 2011.

“Consumer Spending and the Economic Stimulus Payments of 2008.” National Bureau of Economic Research Working Paper No. 16684.

Shapiro, Matthew D., and Joel Slemrod. 2003. “Consumer Response to Tax Rebates.” *American Economic Review* 93(1): 381–396.

Shapiro, Matthew D., and Joel Slemrod. 2009. “Did the 2008 Tax Rebates Stimulate Spending?” National Bureau of Economic Research Working Paper No. 14753.

U.S. Department of Commerce. Bureau of Economic Analysis. “National Economic Accounts.” Accessed January 2012.

U.S. Department of Labor. Bureau of Labor Statistics. “Quarterly Census of Employment and Wages.” Accessed January 2012.

U.S. Department of Labor. Bureau of Labor Statistics. “Current Employment Statistics Survey: National.” Accessed January 2012.

U.S. Department of Labor. Bureau of Labor Statistics. “Current Employment Statistics Survey: State Employment and Unemployment.” Accessed January 2012.

U.S. Recovery Accountability and Transparency Board. Data from Recovery.gov website. <http://www.recovery.gov/>. Accessed January 2012.