THE CONTRIBUTION OF PUBLIC PROCUREMENT TO U.S. FEDERAL GOVERNMENT'S RESCUE OF THE LATE 2000S ECONOMIC RECESSION

Yaotai Lu*

ABSTRACT. In the late 2000s, the United States endured the longest economic crises since World War II. On the basis of the economic theory advanced by Adam Smith concerning the roles of government in economic activities and the theory proposed by John Keynes on government fiscal policies when confronted with economic recession, this paper examines the impacts of U.S. federal government's procurement provisions on the recovery of the U.S. economy during and after the late 2000s economic recession.

The paper discusses the importance of government spending in economic rescue. It analyzes the structure of spending and the tax cut provisions of U.S. federal economic rescue strategies. Analysis has demonstrated that in the rescue package spending provisions are the primary way that has achieved the most value of input because they have an average higher multiplier effect than tax cut provisions. Public spending has produced greater impacts on the economic recovery than tax cuts. However, government spending as a form of stimulus strategy has a slow pace to produce expected effects. Special measures are needed to further improve the impacts on stimulus spending to curb economic crisis.

* *Yaotai Lu, Ph.D., is an adjunct faculty in the School of Public Administration, Florida Atlantic University. His research interests are in public budgeting and finance, public asset management, and public procurement.*

INTRODUCTION

As the largest economy, the United States has a gross domestic product (GDP) that is greater than the total of the next three largest economies in the world (including China, Japan, and Germany). Since the fourth quarter of 2007, the growth rate of U.S. economy has decreased and the scale of U.S. economy has contracted until the second quarter of 2009. According to the National Bureau of Economic Research (NBER), a panel of academic economists, during the period from December 2007 to June 2009 the United States has endured the longest economic recession since World War II. After a record six straight quarters of decline, the U.S. economy started growing again in the third quarter of 2009 (from July to September).

During the eighteen-month recession between the last quarter of 2007 and the second quarter of 2009, the U.S. economy experienced the largest decline in GDP growth. In the fourth quarter of 2008, real GDP fell at a rate of 5.4 percent; in the first quarter of 2009, real GDP further plunged at a rate of 6.4 percent (Council of Economic Advisors, 2009b, 2010a). With regard to employment, by January 2009, about 3.8 million jobs had already been lost since the business-cycle peak in December 2007 (Council of Economic Advisors, 2009a). This situation became worse in the first half of 2009. In the first quarter of 2009, the U.S. lost 691,000 jobs per month. In the second quarter of 2009, the U.S. continued to lose 428,000 jobs per month (Council of Economic Advisors, 2010a). In October, 2009, unemployment rate in the United States jumped to 10.2 percent, the highest since 1983 (Gravelle, Hungerford, & Labonte, 2009). Industrial production had fallen at a 4.3 percent annual rate during the first eight months of 2008, and this situation deteriorated much more quickly at an annual rate of 18.3 percent during the five months from September 2008 to January 2009 (Council of Economic Advisors, 2009a).

The housing market has also experienced the most severe drop during the economic recession between the last quarter of 2007 and the second quarter of 2009. In the peak year of 2007, Americans had house net worth equivalent to $64.2 trillion. By the third quarter of 2009, $13.8 trillion of that value, i.e., 21.5 percent of the total net worth of $64.2 trillion, had evaporated because of the burst of the housing bubble. This drop of household net worth is even bigger than that during the Great Depression. The rate of seriously delinquent

mortgages increased from a low 0.4 percent in July, 2007 to 4.2 percent in February, 2010 (Allegretto, 2011).

Since December 2007, the U.S. federal government has taken a series of policies to stimulate economy. Based on economic theories on governmental roles and strategies for curbing economic recession, this paper explores the structure of U.S. economic rescue, especially spending and tax cut policies implemented through the stimulus package of the American Recovery and Reinvestment Act (ARRA) of 2009. The paper analyzes the effects of spending and tax cut policies on economic growth during and after the economic recession. It is found that generally spending provisions have much higher output multipliers than do tax cut provisions because some tax cuts are partially saved by their recipients (Zandi, 2008; Elmendorf, 2009a; Congressional Budget Office, 2009a), that spending has produced greater aggregate impact than tax cuts. However, the implementation of government spending programs is generally a long process by which funds for stimulus programs are expended at a slow pace. In order to support the implementation of certain government procurement programs, the federal government has changed a number of acquisition regulations, some of which can be controversial, to facilitate the award of federal contracts. In spite of these changes, there are still barriers that lengthen the expenditure of contract funds.

ECONOMIC THEORIES AND ECONOMY RESCUE DURING RECESSION

According to Keynes (1936), aggregate demand consists of the demands for the individual components of the economy, such as consumption, investment, government spending, and net export. In other word, aggregate supply equals the sum of personal consumption expenditures, gross private domestic investment, gross government investment and consumption expenditures, and net exports (total export minus total imports). Keynes (1936) argued that of these components, the demands for consumption, government purchases, and imports were stable. Comparatively, personal investment demand is unstable, thus it is the primary source of fluctuation of aggregate demand. Investment decisions are more determined by the expectations of the future held by decision makers of firms than by levels of savings and interest rate. Expectation

influences stock prices which, in return, influence financing resources of firms and investment in business of firms because stock market is the primary source of funding for firms.

During an economic recession, business confidence in investment is possibly depressed, and this may result in contraction of output. According to Keynes (1936), workers will gradually reduce their nominal wage demands in a trend of wage cuts during economic recessions. However, there is no assurance about how long this process may take. Government cannot afford to wait for this process to come through in the long run while economy deteriorates without any rescue. When personal consumption does not increase and when expectation is depressing and influences private investment, government has to take strategies to stimulate economy by increasing aggregate demand through monetary and/or fiscal policies.

According to Knoop (2004), government may have three options to increase aggregate demand. One option is to increase money supply. High money supply may reduce interest rate and thus encourages investment by driving up stock prices. However, Keynes (1936) contended that money supply may not work well to increase investment because expectations may remain low and because individuals and banks tend to hold more money as a precautionary measure during recession. American experiences in the Great Depression proved this assumption (Knoop, 2004). Keynesian economists, such as Hicks (1937) and Philips (1958), identified a strong negative relationship between inflation and unemployment. This suggests that money supply may increase employment when it causes inflation. Friedman (1968) agreed that monetary policy can function to offset major economic disturbances in unusual circumstances, such as during financial crisis and banking panics.

A second option available to government for increasing aggregate demand is tax cuts. This strategy work well to generate large spending multipliers if recipients do not save the money from tax cut and spend it. A third option is that government increases the level of procurement of goods and services. Keynes (1936) supported this strategy because government spending might increase aggregate expenditure that creates more demands and employment opportunities.

Throughout the U.S. history, the federal government has adopted all of these three options to combat economic recession or crisis. Different strategies have been implemented on the basis of the extent to which a recession or crisis influenced the national economy.

POLICY ENVIRONMENT LEADING TO ENACTMENT OF THE ARRA

Since the onset of the economic recession in the last quarter of 2007 when the American economy began to significantly turn down, the U.S. federal government has implemented a series of monetary, tax, and purchasing policies to curb the declining trend of economic growth. From December 2007 to March 2010, the Federal Reserve instituted the Term Auction Facility (TAF) program to distribute dollar liquidity when bank funding markets were under severe strain. From March 2008 to January 2009, the federal government implemented financial measures to help JP Morgan Chase to purchase Bear Stearns Cos, to place Fannie Mae and Freddie Mac into conservatorship, to buy illiquid and difficult-to-value assets through the Emergency Economic Stabilization Act of 2008, and to provide a loan to bail out the auto industry, especially General Motors, Ford, and Chrysler. In February 2008, the Economic Stimulus Act of 2008 was enacted to provide individual tax rebate for low- and middle-income U.S. tax payers. The Act increased limits on expensing investment cost and accelerated depreciation of qualifying investment. It also increased the limit imposed on mortgages eligible for purchase by government sponsored enterprises, such as Fannie Mae and Freddie Mac. In November 2008, through the Unemployment Extension Act, the federal government lengthened the period of government assistance to unemployed Americans in the shrinking job market.

These response policies were not all as successful as expected. TAF produced a strong effect on reducing financial strains of inter-bank money market (Cecchetti, 2009; Wu, 2011). However, TAF had a limited impact on reducing the gap between the three-month inter-bank lending rate and the three-month expected federal funds rate (Wu, 2011). TAF had short-term effects on the spread between three-month inter-bank lending rate and the overnight index swamp, but this effect is not sustained (In, Cui & Maharaj, 2008). The financial rescue policies directed at the banking system as a whole

demonstrated positive cumulative abnormal returns while those rescue policies targeted at particular financial institutions produced some negative returns (Fratianni & Marchionne, 2011). Overall, the response interventions presented short-term benefits, but they had long-run costs for market efficiency and stability (von Furstenburg, 2009).

Despite the implementation of a series of economic and financial strategies to curb the economic recession, the U.S. economy continued to contract rapidly. In the last two quarters of 2008, house production and sales were continuously declining; and the delinquency rate on subprime mortgage loans kept increasing, reaching a new high of 20.03 percent (U.S. Department of Housing and Urban Development, 2009). In the last quarter of 2008, the U.S. lost 652,000 jobs each month while GDP decrease by 5.4 percent. In the first quarter of 2009 the number of lost jobs jumped to 753,000 each month with an unemployment rate over 8 percent while GDP decreased by a record high of 6.4 percent (Council of Economic Advisors, 2010b; Bureau of Labor, 2012). The financial outlook was not encouraging after new financial policies had been carried out. In December 2008, the Federal Reserve cut the funds rate essentially to historical lows between zero and a quarter percentage point. Vast amounts of money were expected to be pumped out to businesses and consumers. This was almost the last weapon Federal Reserve could use from its arsenal to battle the U.S. economic slump.

Many forecasters anticipated that there was gap between real GDP and its potential level (Europe Central Bank, 2011; Congressional Budget Office, 2009a; Basu & Fernald, 2009; Weidner & Williams, 2009). During the economic recession, the actual level of output fell short of the potential level of output which provided an indication of the medium-to-long-term level of real output in the economy (Europe Central Bank, 2009). The output gap is negative when demand falls short of the production volume. CBO (2009a) expected a negative output gap of averaged 6.9 percent in 2009 and 2010. On this basis, further response policies that would provide extended stimulus seemed appropriate while the national economy was still plummeting. In addition, if economic stimulus ends before the national economy has started to regain its strength, potential risk exists that the weak economy would exacerbate. After a year of severe economic recession, policy makers desired to take further

fiscal measures of stimulus to mitigate further exacerbation in the national economy and to bring economy to the right track. Considering these factors, the American Recovery and Reinvestment Act (ARRA) of 2009 was an expected, overall rescue package that was to stimulate the economy from various dimensions.

THE FUNDAMENTAL PROVISIONS AND IMPACT OF THE ARRA

The Fundamental Provisions of the ARRA

The ARRA contains a variety of distinctive stimulus provisions. It was originally scored to cost a total of $787 billion over a ten-and-half-year period, but the Congressional Budget Office revised the number upward to $862 billion because of higher than expected cost of unemployment insurance, food stamps, and Build America Bonds (Committee for a Responsible Federal Budget, 2010). Generally, the fiscal stimulus package involved spending, tax cuts, or a combination of both. Of the originally projected total cost, the spending parts accounted for 63.7 percent ($501.6 billion) and tax provisions accounted for 36.3 percent ($285.6 billion). After the budgetary costs were adjusted, the spending parts accounted for 61 percent ($525 billion) and the tax provisions accounted for 39 percent ($337 billion). Specifically, the stimulus spending provisions involve health care, education, infrastructure, food stamp, unemployment pension, state fiscal relief, state fiscal stabilization, home buying, energy, and innovative technology. The tax cut provisions involve Making Work Pay tax credit, Alternative Minimum Tax patch, COBRA (Consolidated Omnibus Budget Reconciliation Act) health subsidies, child tax credit, college tax credit, and the Earned Income Tax Credit.

Table 1. Stimulus Activities, Cost by Category, and Estimated Output Multipliers of Major ARRA Provisions

Activities	Costs 2009-19 ($billion)	Output Multiplier Estimated by CBO
Purchases of goods & services by federal Gov.	88	1.0-2.5
Transfer to S-L government for infrastructure	44	1.0-2.5

Transfer to S-L government for other purposes	215	0.7-1.9
Transfer payments to individuals	100	0.8-2.2
One-time payments to retirees	18	0.2-1.2
Two-year tax cuts for lower- & middle-income people	168	0.5-1.7
One-year tax cuts for high-income people	70	0.1-0.5
Extension of first-time homebuyer credit	7	0.2-1.0
Corporate tax provisions primarily affecting cash flow	21	0-0.4
Other	56	n/a
Total	787	n/a

Source: Congressional Budget Office, 2009b, Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output as of September.

Table 1 lists the stimulus activities and costs by category of the ARRA major provisions. The activities are categorized in consistency with classification of fiscal approaches to estimating output multipliers used by Congressional Budget Office. Of the spending funds, direct and indirect government purchasing occupied $275 billion, accounting for roughly 35 percent; entitlement costs $224 billion, taking up 28 percent; and tax cuts and benefits $288 billion, equaling approximately 37 percent (Recovery.gov).

Spend-out Rate of ARRA Stimulus Funds

In order for the stimulus budgetary outlays and tax cuts to produce expected effects on economic growth, the federal government originally implemented a fast spend-out rate to avoid a serious risk of a downward economic spiral. Therefore, CBO distributed most of the ARRA stimulus budget in the first three year after the Act was enacted: 23 percent of the total cost by the end of FY 2009, 74 percent by the end of FY 2010, and 91 percent by the end of 2011 (Committee for a Responsible Federal Budget, 2009). In actuality, the outlays and tax cuts in FY 2009 accounted for 30.7

percent of the total adjusted stimulus cost ($862 billion), 40.8 percent in FY 2010, 9.4 percent in the first two quarters of 2011. In January 2012, CBO readjusted the ARRA cost at $831 billion (Congressional Budget Office, 2012). Based on this readjusted total, the actual spend-out accounted for 83.9 percent of the total stimulus cost by the end of the second quarter of 2011. The actual outlays and tax cuts were fundamentally consistent with the projected spend-out rate. Table 2 demonstrates this consistency.

Table 2. Projected and Actual Progress of the ARRA Stimulus Spend-Out FYs 2009-2011

		2009	2010	2011
Projected	Spend-out ($billion)	185	399	134
	% of ($787b)	23%	51%	17%
Actual	Spend-out ($billion)	264.3	352.2	80.7 (Q1-2)
	% of ($862 b)	30.7%	40.8%	9.4% (Q1-2)

Source: Committee for a Responsible Federal Budget, 2001; the author's calculation based on data from Congressional Budget Office, 2011.

Not all ARRA stimulus funds were spent out at the same rate. Many funds of tax cuts (such as corporate tax cuts, Making Work Pay tax credit, and AMT patch) and transfer payments to individuals (like unemployment compensation and health insurance assistance) distributed their most part of total spending or tax credits within the first eighteen months. Unlike the tax reduction funds and transfer to individual funds, spending funds, especially those of infrastructure, had a slower spend-out rate. This is because large public spending programs usually involve a variety of procedures like need assessment, solicitation, bidding process, evaluation, testing, and contracting process. Construction, especially that of large-scale infrastructure facilities, pertains to many other factors such as survey of construction site, environmental protection, and traffic control in many cases. These factors suggest that spending requires more time and proceeds at a slower rate. Table 3 demonstrates this spend-out tendency of spending and tax reductions. In the first six quarters,

from Quarter 2 of 2009 through Quarter 3 of 2010, after the ARRA was enacted (Quarter 2 of 2009 is considered here the first quarter because the ARRA was passed in February 2009 and a very small amount of fund was expended in Quarter 1 of 2009.), the cumulative amount of spending accounted for 57 percent of the total $525 billion; the cumulative amount of tax reductions accounted for 76.4 percent of the total $337 billion. During the same period from the second quarter of 2009 through the third quarter of 2010, tax reductions funds were expended almost 20 percent faster than were spending funds.

Table 3. Spending and Tax Reductions of First 6 Quarters (in billion dollars)

	Q2 2009	Q3 2009	Q4 2009	Q1 2009	Q2 2010	Q3 2010	% of Total
Spending	47.7	54.4	53.5	46.7	46.4	50.6	57%
Tax Reductions	35.6	31.8	30.2	65.4	77.9	16.4	76.4%
Total	83.3	86.2	83.7	112.1	124.3	67	64.6%

Source: the author's calculation based on data from Council of Economic Advisors, 2011, the Economic Impact of the American Recovery and Reinvestment of 2009 Eighth Quarterly Report.

Impacts of the ARRA Funds

The output multiplier is usually used to elaborate the economic impact of government spending and tax reduction implemented as stimulus strategies to bring national economy back to the right track. The output multiplier is the ratio of a change in output to the change in government spending or tax cut. It estimates the cumulative effects of each dollar spending or reduction in tax revenues on economic output in terms of real gross domestic product. Although there is little consensus on the size of the output multiplier (Ramey, 2011), rankings of multipliers estimated by various researchers may share some similarities. Both Congressional Budget Office (2009b) and Zandi (2008) rank spending provisions as having higher multipliers than tax reduction provisions. Zandi (2008) has estimated the multipliers of spending provisions between 1.36 (revenue transfer to

state governments) and 1.73 (temporary increase in food stamps), and the multipliers of tax provisions between 0.27 (accelerated depreciation) and 1.29 (payroll tax holiday). Similarly, Congressional Budget Office (2009b) has ranked "direct government purchasing" as having the highest multipliers ranging from 1.0 to 2.5; and "one-time payments to retirees" as the spending provision with lowest multipliers between 0.2 and 1.2. In contrast, of CBO's rankings of multipliers, "tax cuts for lower- and middle-income people" has the highest multipliers between 0.5 and 1.7, and "corporate tax provisions" has the lowest multipliers between 0 and 0.4. The Council of Economic Advisors (2010c) ranks all spending provisions and tax provisions in the same order as CBO (2009b) does although this council defines the multiplier in somewhat a different way.

According to CBO (2009b), each multiplier reflects estimated direct and indirect effects of a dollar's worth on the national aggregate output. Government procurement of goods and services directly leads to business activities and thus contributes to economic output that would otherwise not occur. Transfer payments to state and local governments for non-purchasing purposes may replace recipients' own resources for budget. Thus, these transfer payments may fail to produce as considerable effects on economic output and employment as purchasing funds do (Conley & Dupor, 2001). The direct effect of transfer payments to individuals and tax cuts depends on the financial condition and behavior of recipients. When recipients need financial aid and select to spend the money provided, transfer payments to individuals and tax cuts directly lead to economic activity and produces estimated direct effect on economic output. Otherwise, transferred money and saved tax would be deposited for future use, thus leading to smaller indirect effect on economic output. Considering these factors, direct purchase of goods and services has the highest multipliers and produces greatest impacts on the nation's output in terms of GDP.

CBO forecasted the total impact of ARRA provisions on the national aggregate output by multiplying estimated multipliers of each provision by the dollar amounts of the provision. It combined the multiplying results with estimates of effects of output changes on unemployment and participation in labor fore to predict the total impact of the ARRA provisions on nationwide employment (Congressional Budget Office, 2009b).

Table 4. ARRA Stimulus Funds and Effect on GDP and Employment through Second Quarter of 2011

	Outlays[1]	Tax Cuts[1]	Real GDP Growth[2]	ARRA Effect on GDP (%)[3]	Payroll Employment Growth[4]
2009 Q1	8.6	2.4	-6.7	n/a	-784
2009 Q2	47.7	35.6	-0.7	0.8	-515
2009 Q3	54.4	31.8	1.7	1.7	-255
2009 Q4	53.5	30.2	3.8	2.1	-138
2010 Q1	46.7	65.4	3.9	2.5	15
2010 Q2	46.4	77.9	3.8	2.7	97
2010 Q3	50.6	16.4	2.5	2.7	65
2010 Q4	40.7	8.2	2.3	2.3	141
2011 Q1	25	33.8	0.4	2.3	165
2011 Q2	25.1	-3.2	1.3	2.0	98

Source: Council of Economic Advisors: the Economic Impact of the American Recovery and Reinvestment of 2009 Eighth Quarterly Report, the author's calculation based on data in this report; Bureau of Economic Analysis, 2012, U.S. Economy at a Glance, Perspective from BEA Accounts.

Notes:

1. Through the end of each quarter by billions of dollars;
2. Quarterly percent change seasonally adjusted annual rate;
3. Estimated by using CEA multiplier model;
4. Average monthly change from end of quarter to end of quarter in thousands, temporary census workers excluded.

Taking into account real GDP growth and the average monthly change of payroll employment growth (as shown in Table 4) since the ARRA was enacted in February 2009, the ARRA provisions have produced considerable impact on national aggregate output and

employment. New stimulus provisions enhanced confidence of businesses and individual citizens. By the end of the first quarter of 2009, the U.S. GDP continued to plunge to a decrease of 6.7 percent. Simultaneously, the U.S. lost an average of approximately 784 thousand jobs each month in the first quarter of 2009. After $47.7 billion of spending funds was expended and $35.6 billion of tax cuts was executed from the ARRA stimulus provisions in the second quarter of 2009, real GDP growth jumped back from a decrease of 6.7 percent to a decrease of 0.7 percent. In the same period of time, the status of employment was improved to a large extent. The U.S. loss of jobs was an average of 515 thousand per month. According to CEA (2011), in the second quarter of 2009, the ARRA raised the level of real GDP, relative to what it otherwise would have been, by 0.8 percent. Based on calculation of multiplier of the ARRA provisions (CEA, 2010c), the amount of tax cut funds had a total of 25.41 billion multiplier points; the amount of stimulus outlays had a total of 47.17 billion multiplier points (see Table 5). This suggests that stimulus outlays accounted for 65 percent of the ARRA contribution to the federal government's reaction to the economic crisis in the second quarter of 2009.

In the third quarter of 2009, the federal government expended $54.4 billion and cut $31.8 billion of tax through the ARRA provisions. This resulted in an increase of real GDP by 1.7 percent. The employment status continued to improve. The U.S. lost roughly an average of 255 thousand jobs each month. CEA (2011) calculation suggests that during this period, the ARRA raised the level of real GDP by 1.7 percent. Based on multiplier estimated by CEA (2010c), the ARRA tax cut funds provided 14.89 billion multiplier points; the ARRA outlay funds provided 77.01 billion multiplier points. This means that federal spending funds accounted for 83.8 percent of ARRA contribution to the federal government's reaction to the economic crisis in the third quarter of 2009 (see Table 5).

In the fourth quarter of 2009 and the first quarter of 2010, the federal government continued to provide large amounts of stimulus outlay funds and cut tax for both individuals and businesses. The real GDP grew respectively by 3.8 percent in the fourth quarter of 2009 and by 3.9 percent in the first quarter of 2010. An average of roughly 138 thousand jobs was lost per month in the fourth quarter of 2009. But in the first quarter of 2010, the U.S. labor market stopped losing

jobs after eight consecutive quarters (CEA, 2011). There occurred an increase of about 15 thousand jobs on the labor market in the first quarter of 2010. Estimated by CEA (2011), the ARRA raised the level of real GDP respectively by 2.1 percent in the fourth quarter of 2009 and by 2.5 percent in the first quarter of 2010. In terms of multiplier points, the ARRA spending provisions provided 83.7 percent of fiscal contribution to federal government's reaction to the economic crisis in the fourth quarter of 2009, 63 percent in the first quarter of 2010.

Table 5. Output Multiplier Points of ARRA Provisions by Functional Category

Element[a]	2009 Q2[d]	MP[b,e]	2009 Q3[d]	MP[b,e]	2009 Q4[d]	MP[b,e]	2010 Q1[d]	MP[b,e]
Tax 1[c] (0.8)	26.3	21.04	14.3	11.44	15.8	12.64	43.8	35.04
Tax 2[c] (0.4)	7.8	3.12	6	2.4	3.5	1.4	11.4	4.56
Tax 3[c] (0.1)	12.5	1.25	10.5	1.05	9	0.9	6.9	0.69
Tax Subtotal	46.6	25.41	30.8	14.89	28.3	14.94	62.1	40.29
Outlay 1[c] (1.1)	19.7	21.67	15.6	17.16	15.5	17.05	16.2	17.82
Outlay 2[c] (1.5)	9.6	14.4	22.2	33.3	23.4	35.1	16.2	24.3
Outlay 3[c] (1.5)	7.4	11.1	17.7	26.55	16.5	24.75	17.7	26.55
Outlay Subtotal	36.7	47.17	55.5	77.01	55.4	76.9	50.1	68.67
Outlay & Tax Cuts	83.3	72.58	86.3	91.9	83.7	91.84	112.2	108.96

Notes:

a. Element includes both the ARRA provisions in six categories and multiplier in the bracket.

b. MP stands for multiplier points.

c. Tax 1: Individual Tax Cuts; Tax 2: AMT Relief; Tax 3: Business Tax Incentives; Outlay 1: State Fiscal Relief; Outlay 2: Aid to Directly Impacted Individuals; Outlay 3: Public Investment Outlays.

d. The amount of ARRA element funds is in billions of dollars.

e. Multiplier points are in billions of points.

Data analysis indicates that the ARRA played a significant role in the turnaround of the national economy. Both the real GDP and employment considerably improved after large amounts of spending funds and tax cuts were provided by the federal government through the ARRA. Since the second quarter of 2009, the real GDP grew solidly in four consecutive quarters; employment started to spring up and sustained in five sequential quarters.

After the first quarter of 2010, the federal government has maintained large scale of spending and tax cuts largely for four quarters from the second quarter of 2010 to the first quarter of 2011. During this period of time, the federal government provided roughly $162.7 billion to further stimulate the economy. Tax cuts in the same period amounted to $136.3 billion. Both the real GDP and employment continued to increase, even though at much slower rates of growth. The ARRA stimulus funds continued to help raise the level of the real GDP. Because of higher multipliers, spending provisions of the ARRA have been playing a more significant role than tax cut provisions in maintaining the increasing economy. Considering the global environment, the U.S. economy is still gaining strength to grow to its full scale.

It should be noted that the multiplier theory is inherently inconsistent. There have been discrepancies in generation of multiplier effects owing to use of distinct factors and analysis approaches. With respect to government purchasing, since some of the factors used to calculate estimates of multiplier effects are widely in dispute, the multiplier values different analysts have generated could be in large range (Gravelle et al, 2009 (2009). Despite of disputes between various models, some researchers, like Mark Zandi

(2008) of Moody's Economy.com, Congressional Budget Office (2009b), and Council of Economic Advisors (2010c), have generated similar ranking of government purchasing multipliers. In addition, most economists would agree that government spending provisions have higher multiplier values than tax cut and tax relief provisions. However, because estimate of spending multipliers is determined by a variety of factors, such as monetary policy, price rigidity, presence of a zero lower bound constraint, alternative fiscal rules, and redistribution, the size of the output multiplier of government spending may be critically affected (Mulligan, 2011; Christiano, Eichenbaum, & Rebelo, 2011; Manacelli & Perotti, 2011; Woodford, 2011; Ono, 2011).

POLICY CONSIDERATION FOR SPENDING PROVISIONS TO PLAY ITS ROLE

There has been much research on the impact of the ARRA stimulus provisions. Like CEA and CBO, some researchers demonstrate that fiscal stimulus through the ARRA has generated enormous impact on the national aggregate output and employment. Using the state-level allocation of federal stimulus funds from the ARRA, Wilson (2011) found that the ARRA stimulus spending had a positive and statistically significant impact on total nonfarm employment and employment in state and local government, construction domain, and manufacturing sector. Conley & Dupor (2011) suggested that while ARRA created or saved a large number of jobs in the government sector, it destroyed or forestalled twice the number of jobs in the private sector. Ramney (2011) argued that none of his analysis results indicated that government spending has multiplier effects beyond its direct effect. Despite discrepancies between research findings, there is no denial that government must take countermeasures to curb economic recession; and government spending is a more effective direct strategy to stimulate economy. Therefore, based on the characteristics of government spending, appropriate policies and strategies shall be implemented to fully exploit the strengths of government spending in the process of rescuing national economy.

TIMELINESS REQUIREMENT OF SPENDING PROVISIONS

As previously mentioned, government procurement of goods and services as a form of economic stimulus proceeds at a slower pace than tax cut strategies. In the first six quarters after the ARRA was enacted, the federal government expended 57 percent of total stimulus funds through the ARRA provisions. This pace of spending is slower than the 76.4 percent of tax cut funds. Actually, this slow pace of spending occurs under many major programs. The delay of spending is caused by legislative and administrative process. Large spending programs take effect until a resolution was approved through a legislative procedure, which is rather complex in the federal government. In the administrative process, spending funds are apportioned to target agencies; expenditures are planned; appropriate contractors are selected and contracts awarded; vouchers are submitted for expenditure; and expenses get reimbursed. In addition, a behavior lag exists because time elapses before recipients of spending funds increase spending (Gravelle et al, 2009).

Different significant purchasing programs progress at distinctive paces. By average, it takes about one year to expend 60 percent, two years 85 percent, of total purchasing funds. With respect to highway construction, it takes one year to expend 27 percent, two years 68 percent, and three years 84 percent of total purchasing budget authority. For water projects, the spending pace is much slower. It takes three years to expend only 54 percent of the purchasing program fund (Elmendorf, 2009b). Spending at a slow pace runs into conflict with the requirement of timeliness to affect changes in actual national output.

Fortunately, it has taken an extraordinarily short time for the ARRA to be enacted and executed. Spend-out started soon after the Act was signed into law in February 2009. In the remaining time of the first quarter of 2009, approximately $8.6 billion was expended from spending funds; $2.4 billion of tax was cut from revenue programs. Actual spend-out pace and tax cut execution has been fundamentally consistent with the projected rate. The federal government has implemented strategies to ensure that the ARRA stimulus spending funds are expended in a timely, effective, and efficient manner and for right purposes. The ARRA (Sec. 1605)

requires that the iron, steel, and manufactured goods used in any project for the construction, alteration, maintenance, or repair of a public building or public work funded by the ARRA must be produced in the United States. Although the ARRA makes it clear that fulfillment of this requirement should be consistent with the U.S. obligations under international agreements, this clarification is controversial because the mandate may violate the requirement of the WTO Government Procurement Agreement regarding fair treatment of foreign suppliers in the process of government procurement. The ARRA (Sec. 1512) also requires recipients of the ARRA funds and sub-recipients of award equal to or larger than 25 thousand dollars report the use of the ARRA funds on a quarterly basis. The reports will be posted to Recovery.gov.

In addition, the ARRA requires government contracting officers to enter data in the Federal Procurement Data System on any action funded in whole or in part by the ARRA. It also provides authority for both the Government Accountability Office and agency inspector generals to audit and review contract and subcontract as well as contractor and subcontractor personnel. The ARRA (Sec. 1553) protects whistle-blowing concerning programs or contracts using the ARRA funds.

BARRIERS AND REFORMATIVE STRATEGIES

There exist barriers in policy, administration, finance, and personnel that prevent effective and efficient use of purchasing funds provided through the ARRA. The federal government procurement system is complex. It is regulated by hundreds of statutes, executive orders, and regulations. To fulfill relevant requirements, departments and agencies that are given authority to manage the ARRA purchasing funds spend large amounts of time developing purchasing programs and supervising contract administration. Complicated procedures result in loss of time and implementation lag of the ARRA purchasing provisions. Bonding requirements lead to higher bid because the cost is passed to the owner. They may prevent newly established businesses from entering contracts with government. Moreover, there is lengthy time between invoicing and payment owing to complicated financial procedures. Overall, these barriers may have caused stimulus purchasing programs funded by the ARRA to be less effective and less efficient than expected.

To implement the ARRA provisions, the federal government could take special administrative and legislative measures to guarantee timeliness and eliminate unnecessary barriers. Special legislation could be enacted to allow contracts to be awarded without competitive bidding, to award money to recipients who spend more quickly rather than by formula across jurisdictions, to offer financial incentives to contractors for fast completion of programs, and to set deadlines for states to obligate money (Gravlle et al, 2009; Elmendorf, 2009).

CONCLUSION

Amidst the strategies the U.S. federal government has implemented in response to economic turndown, the economic stimulus through the American Recovery and Reinvestment Act of 2009 has been an effective one that significantly curbs the economic crisis in the late 2000s. In the huge stimulus package of the ARRA, government spending has played a paramount role because spending provisions have greater multiplying impacts on national output, and because stimulus spending programs, while in huge magnitude, involve a wide range of economic areas as well as a large number of directly impacted individuals. This means that through the ARRA, public procurement has made enormous contribution to U.S. federal government's rescue of the late 2000s economic crisis. However, the implementation of the federal stimulus spending policies could be barricaded by barriers in policy, administration, and finance. Special measures may be taken to improve the timeliness and effectiveness of the stimulus spending programs during and after economic crisis.

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