



# EPI TESTIMONY

TESTIMONY GIVEN BY

**Josh Bivens, Ph.D.**  
*Macroeconomist*  
*Economic Policy Institute*

IN A HEARING BEFORE THE  
HOUSE COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY,  
SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

**“GREEN JOBS AND RED TAPE: ASSESSING FEDERAL  
EFFORTS TO ENCOURAGE EMPLOYMENT”**

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## Introduction

The U.S. economy faces large short-term and long-term challenges. The short-term challenge is reducing extremely high rates of joblessness – more than a year and half after the Great Recession officially ended unemployment remains very close to 9% and will likely average over this number for the entirety of 2011. The long-term challenge is a growing infrastructure deficit that threatens to drag on productivity growth and, most importantly, impede efforts to deal with the threat of global climate change.

The solution to the short-term challenge is simple – the U.S. economy is not producing enough jobs because there is still not enough aggregate demand for goods and services to boost demand for labor high enough to drive down the unemployment rate. The source of this demand shortfall is easy to identify – the bursting of the \$8 trillion housing bubble that provided a devastating wealth shock to American households, forcing them to cut back on spending. The burst housing bubble also led to an extreme contraction in the residential home-building sector of the economy. As households pulled back spending and demand generated by home-building evaporated, this cascaded throughout the rest of the economy, leading to large declines in other aspects of business investment.

Given that the source of today's joblessness problem is insufficient demand, the solution is for macroeconomic policymakers to pull the policy levers available to them to increase this demand. In the case of policy controlled by Congress, this means increasing government spending (both direct spending and transfers) and financing these increases with debt. This has been done since the Great Recession began, but just not enough to overcome the size of the negative shock to private sector spending caused by the bursting housing bubble. Arguing that no more can or should be done because the response to the Great Recession was historically ambitious (and it was) is the wrong way to think about the problem – withdrawing fiscal support to the economy now while joblessness remains historically high would be like firefighters walking away from a burning building on the rationale that 'we dumped more water on it than we ever have before yet it's still burning – so water must not be working'.

The solution to the long-term challenge is almost as straightforward – a substantial effort to boost infrastructure spending, in particular policies that help address the problem of global climate change – must be undertaken.

A key plank of a long-run campaign to boost infrastructure investments in the U.S. economy needs to deal with externalities – the fact that many economic activities (driving, industrial emissions of GHGs) are cheap (sometimes even subsidized) for individual users but impose large economy-wide costs on other stakeholders in the economy. The U.S. economy must both enact policies that allow markets to fully price-in the economic costs of emitting greenhouse gas (GHG) as well as kick-start the investments that will make the transition to a lower-GHG economy as seamless as possible.

The effort to put a correct price on GHG emissions has so far not moved forward much. But, the economic consequences of more-expensive GHG emissions are simple to forecast, so investments that both directly allow lower levels of GHG emissions as well as giving American households easy ways to transition away from GHG-intensive activities (providing high-quality public transportation options to allow people to drive less, for example) can, and have, moved first.

Efforts in recent years to promote "green jobs" have been a clear success, both in providing a shock absorber to an economy hit by the largest negative shock to private spending since the Great

Depression, as well as in laying a foundation for a cleaner economy in the future. In the testimony that follows, I'll just very quickly discuss some of the evidence supporting this judgment.

### **Green Jobs and the jobs-crisis**

The most ambitious down-payment on green investments for the future in recent years was the portions of the American Recovery and Reinvestment Act (ARRA) that boosted these. Below, I give an overview of the effectiveness of ARRA, drawing largely on previous testimony that I've given.

#### **The ARRA: basic summary**

It was noted above that both the Great Recession and the subsequent slow economic recovery were driven by a collapse in private demand for goods and services – a collapse caused by the bursting housing bubble.

The negative shock to private sector spending provided by the housing bubble's burst led to a cascade throughout the economy, negatively impacting consumers, businesses, and exports.

#### ***The general case for using fiscal support to stabilize the economy***

It's clear that boosting public spending and financing it through increased debt *works* to stabilize economies hit by demand shocks (like the bursting housing bubble). Macroeconomic researchers at Goldman Sachs have noted that the shock to private sector spending caused by the bursting of the housing bubble is actually *larger* than the shock that led to the Great Depression. However, because falling incomes also led to falling tax collections, and because falling incomes and joblessness led to automatic increases in safety net programs like unemployment insurance and food stamps and Medicaid, this led to a purely *mechanical* increase in the federal budget deficit of roughly three-quarters of a *trillion* dollars. These mechanical tax reductions and transfer payments buoyed private households' disposable incomes and acted as a powerful shock absorber against the bursting housing bubble; this is an absolutely key reason why the large initial shock of 2007/2008 did *not* lead to a second Depression.

One testament that rising budget deficits act as a shock absorber against collapsing private sector spending is the fact that essentially *no* professional economist criticized the increase in the budget deficit that arose *before* the passage of the Recovery Act; one can find no professional economist at the time arguing that policy should have kept the budget deficit from rising between January 2008 and February 2009.

#### ***The Recovery Act – recognizing that more fiscal support was needed***

The Recovery Act represented the correct assessment that the shock absorption provided by the purely *mechanical* rise in the deficit was too small (even when paired with the interest rate cuts undertaken by the Fed) to provide a quick recovery. So, the ARRA was constructed to provide an even larger cushion to the economy. Despite being premised on *exactly the same theory* as the rationale for automatic stabilizers, because it had a clear political sponsor (the Obama Administration) it became flypaper for criticism of all kinds.

One controversy surrounding the Recovery Act concerns the *composition* of the act, with many critics arguing that it was too heavily weighted towards spending at the expense of tax cuts to stimulate the economy. However, only about a third of the Act's appropriations actually funded direct government spending. More than a quarter of the appropriations were for tax cuts (and these were front-loaded, so more than a third of what has been disbursed so far has been tax-cuts) while the remainder went to transfer payments to individuals and states.

<Figure 1 here: Composition of the Recovery Act>

Further, the tax cuts preferred by many of the Act's critics – those going to businesses – were far and away *the least effective* stimulus included in the Act. Tax cuts are less efficient job-creators (especially those not targeted to lower-income households) because they may be saved instead of spent, and because many of the business tax cuts were essentially windfalls (often retroactive) that rewarded activity that would have been done (or had actually already happened) even without the Act.

On the other hand, safety net programs—such as unemployment insurance, nutrition assistance, and health insurance supports— are by definition well-targeted: they go to those families whose incomes have fallen below a threshold or who have recently suffered job loss. Consequently, recipients are much more likely to spend these payments -- they have to. And in terms of making sure that all increases in public debt are spent, infrastructure spending is best of all - none of it can be saved; it all must be spent.

<Figure 2: “Bang-for-buck” from various multipliers for stimulus>

*Is infrastructure investment “timely” enough to fight recessions?*

Another criticism aimed at the ARRA was that it outlaid money too slowly. Infrastructure investments in general are often criticized for not being “timely” enough to work well as anti-recession measures – the “timely” mantra was one reason, for example, why infrastructure investments were dismissed almost across-the-board by policymakers when the first stimulus package of January 2008 was debated and passed.<sup>1</sup>

Given the length of the Great Recession, and the projected time it will take even from today to reach full-employment, it seems safe to say that this argument can be put to rest: we are in no danger of starting infrastructure programs of any kind that will “miss” the economy's need for more demand.

In regards to ARRA, this criticism of its un-timeliness is particularly ironic given that its boost to economic growth has actually fallen to nearly zero by the last half of 2010 – just as economic growth was decelerating. In short, the substantial boost to the economy from the ARRA has come and gone and the need for more demand remains. This fade-out of ARRA's overall effect happened even as substantial new green investments were still coming on-line and boosting jobs and incomes.

The mechanics behind these two facts - that the ARRA's overall impact is fading while valuable green investments are still coming on-line each day - is simple: the bulk of ARRA's *overall* spending and tax cuts were actually (and contrary to the “untimeliness” charge) quite front-loaded. Many of the tax cuts were largely spent in the first year of its implementation and transfers to state governments and to households were often just a matter of expanding existing programs, so these started boosting purchasing power right away.

By 2011, however, many of these tax-cuts and state-transfers had started to expire (some of the transfers to households also expired, though the largest – the boost to unemployment insurance benefits – has been extended through 2011). Because the rate of spend-out from the ARRA was falling by the last half of 2010, its impact on growth was falling as well.

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<sup>1</sup> It should be noted that not everybody dismissed infrastructure spending as effective stimulus in early 2008 – see Eisenbréy, Irons and Mishel (2008).

However, this falling rate of spend-out would be even greater if the green investments that continue to roll-out each day were not still in the pipeline. While these green investments that continue to come on-line are not large enough to make up entirely for the massive withdrawal of ARRA's spending on transfers and tax cuts, they *do* still provide a real boost to the economy by cushioning the withdrawal of these other spending categories.

### ***The bottom-line on ARRA after two years***

The most contentious political controversy surrounding the ARRA is simply whether or not it helped *at all* to stabilize economic output and create or save jobs. A facile debating technique used by those contending that the Recovery Act did nothing invokes the Obama Administration's (admittedly ill-advised) forecast that the unemployment rate would rise to roughly 9% if the Recovery Act was not passed but would not reach 8% if it was enacted. When unemployment peaked at 10.1% *after* its passage, critics pounced, claiming sometimes that it had even somehow made things worse.

The problem with this interpretation is that it fails to consider the fact that it was not the Recovery Act that failed, but rather the imagination of economic forecasters (both within as well as outside the Obama Administration) about how much damage the collapsing housing bubble would do to the economy.

In short, the difference between an economy with and without the Recovery Act has come in just as advertised: *the economy has between 2-4 million jobs more than it would have had if the Act had not passed*. The underlying trend of the economy, however, was far worse than most forecast. The unemployment rate without the Recovery Act would have reached nearly 12%, not the 9% foreseen by the Obama Administration.

A good metaphor for this controversy is the temperature in a log cabin on a cold winter's night. Say that the weather forecast is for the temperature to reach thirty degrees. To stay warm, you decide to burn three logs in the fireplace. You do the math (and chemistry) and calculate that burning these three logs will generate enough heat to bring the inside of the cabin to fifty degrees – or twenty degrees warmer than the ambient temperature.

But the forecast is wrong – and instead temperatures plummet to ten degrees and burning the logs only results in a cabin temperature of thirty degrees. Has log-burning failed as a strategy to generate heat? Of course not. Has your estimate of the effectiveness of log-burning been wildly wrong? Nope – it was exactly right – it added twenty degrees to the ambient temperature. The only lesson from this is a simple one: since the weather turned out worse than expected you need more logs.

### ***Evidence on ARRA's impact***

What is often unappreciated in public debate is that the perspective that the ARRA worked as advertised to create 2-4 million jobs is the essential *consensus* among economic forecasters, both private and public. In short, for those whose salary depends on knowing what moves the economy from quarter to quarter, there is unanimity that the Act saved or created millions of jobs.

**<Figures 3—5 here: effect of the Recovery Act on GDP, jobs, and unemployment>**

There are a number of factors that explain the near-unanimity among forecasters who have examined the impact of ARRA.

First, it is firmly in line with what mainstream economic theory teaches is the likely effect of deficit-financed tax cuts, transfers and spending in an economy that has high unemployment even in the presence of rock-bottom interest rates (i.e., is in a liquidity trap). The effect of increasing deficits to finance tax cuts, transfers and spending in a *healthy* economy is ambiguous and there are many complications to assessing it. However, in a liquidity trap these complications fade away and the impact of these policy maneuvers become quite straightforward; they unambiguously push the economy closer to its potential, lowering the unemployment rate.

Second, the timing of the Recovery Act coincides perfectly with the halt in the downward spiral of both economic output and employment.<sup>2</sup> In the 6 months before the Act began paying out funds, gross domestic product *contracted* at a -5.9% annualized rate while in the 6 months after its passage the economy *grew* at a 0.75% annualized rate.

In the 6 months before the Recovery Act took effect, average monthly employment declined by over 700,000 while in the 6 months after its passage these declines fell nearly in half, to 369,000. In the second 6 months of the year following its passage average employment was roughly stable – and began growing consistently thereafter.<sup>3</sup>

<Figure 6 here: growth in GDP and employment pre/post ARRA>

#### **Green Jobs, the infrastructure deficit, and climate change**

Ample evidence exists arguing that there is a large deficit in needed physical infrastructure investments in the U.S. economy. Further, the threat of global climate change argues for significant resources to be spent to mitigate carbon emissions and put the economy on a low-carbon track in decades to come.

The more front-loaded these investment efforts are, the better it is for an American economy that looks saddled with a high unemployment rate for years to come. But, even after the jobs-crisis inflicted by the Great Recession recedes, the case for public investment on its own terms remains strong and needs to be accommodated in our nation's budgeting. Any plan to reduce the deficit that does not accommodate this needed improvement in the public capital stock is *economically* irresponsible.

#### **Evidence on public investment and growth**

A substantial economic literature exists that attempts to quantify the growth benefits of public investment. This literature was almost single-handedly sparked by David Aschauer's work in the late 1980s and early 1990s. Aschauer (1989a,b,c and 1990) provided copious evidence supporting the view that more than half of the rapid decline in productivity-growth that began in 1973 and persisted through 1995 could be attributed to slowing *public* investment.

Aschauer essentially used national-level data and ran regressions using changes in the public capital stock (often disaggregated by type) as an explanatory variable and various outcome measures (productivity growth, productivity growth in the private sector, the return to private sector investments)

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<sup>2</sup> In what follows I date the effect of the Recovery Act as beginning April 1, 2009. While it was passed in late February and some money was spent before this, April 2009 is the first month that saw significant amounts of money being spent.

<sup>3</sup> While there were months with job-losses in the second half of the year following ARRA's passage, these were mostly attributable to layoffs occurring due to the end of the decennial census – private sector employment has grown consistently since January 2010.

as independent variables. He found a large and significant positive relationship between growth in the public capital stock and in these private sector output variables.

Separately, Munnell (1990a,b and 1992) began pursuing a related research agenda. She also looked at national, time-series relationships between changes in the public capital stock and private-sector productivity growth and returns to capital, finding a significant and positive relationship.

Both the Aschauer and Munnell work demonstrated that public investment was in fact more likely to crowd-in private investment than to crowd it out. And both suggested that the declining rate of public investment was a prime culprit in explaining the productivity growth slowdown that began in the early 1970s.

A criticism of these initial studies was that their relatively simple time-series orientation led them to pick up spurious trends in their explanatory and independent variables. As neither public capital stock growth nor productivity growth is “stationary” – meaning that their average (and variance) change over time – then a simple regression relating one to the other might just be picking up a common, but non-causal, trend affecting both. The critics further argued that when the relevant series were “de-trended” (usually by first-differencing) the strong relationships between public investment and private sector growth outcomes were greatly weakened.

While the criticisms of the earlier Aschauer and Munnell work had some merit, the proposed solutions did not, so the conclusions drawn from de-trending should be rejected. Nobody really argues that there should be an *immediate* short-run relationship between public investment in, say the first quarter of 2009 and productivity growth in that same quarter. De-trending the series by definition removes the possibility of finding the kind of long-run equilibrium relationship between public investment and growth that the theory calls for and instead can only capture short-run adjustments of private-sector growth to public capital.

More importantly, consequent research that explicitly dealt with some of the criticisms of the first round of public investment research re-established strong findings that public investment aids growth – both total and even *private-sector* growth.

For example, when researchers, like Munnell (1992), examined variations across regions and states, they likewise found a durable link between public investment and productivity growth. While some researchers argued that this link was weakened by the inclusion of state fixed effects, Shioji (2001) has found positive and significant effects of public investment even when including these fixed effects. John Fernald’s (1999) work looks at the effect of targeted public investments (say improvements in roads and highways) on the productivity of industries most likely to benefit from a higher-quality public capital stock (trucking in the case of highway improvements) and found that this was indeed the case – public capital improvements led to significant increases in the private sector industries most likely to be affected by them.

James Heintz (2010) has undertaken the most recent re-working of Aschauer’s national-level results, incorporating and correcting many of the criticisms made of the original papers. He finds, after using up-to-date data and addressing the statistical issues raised in the earlier rounds of the debate, that the public capital and growth link may even be stronger than originally identified by Aschauer.

Further, one of the greatest challenges facing the U.S. and world economies going forward is global climate change. As a pure public *bad* (as opposed to public good) – climate change is completely non-rival and non-excludable. This argues that carbon mitigation to stop (or at least slow-down) climate change is a global public good and hence a prime candidate for addressing (at least partially) through public investments. Numerous economic studies have pointed to a large economic payoff from undertaking such a campaign to limit GHG emissions – and even these have generally not considered the considerable insurance value of making truly catastrophic outcomes of climate change much less likely in the future.

### **Responses to some quick objections about “green jobs”**

There are a number of objections often raised about efforts to expand “green jobs”. This section will just answer three of them quickly.

#### **What exactly are “green jobs”**

There is no standard definition. But, I think the definition that makes sense is to look at today’s economy, and then look at the economy we need to have in order to produce cleaner energy and fight GHG emissions. A cleaner economy will burn less coal, will see investments in pollution mitigation, and will see some job-categories like bus drivers increase their share of overall employment because demand for low-emissions alternative like public transportation are likely to rise.

Job-categories that are needed to build the clean-energy infrastructure are clearly green, but so are the job-categories that have a larger weight in overall employment as a consequence of the move to a clean-energy economy.

#### **Even if fiscal support and physical infrastructure projects are good, why do they have to be ‘green’?**

Fiscal support would “work” in short-run no matter what the money was spent on – spending money is the point. But, given that there is money to be spent, it makes sense to direct the spending on projects that will improve the long-run growth position of the U.S. economy. We know a couple of things about this long-run – countries around the world look to be moving towards lower-GHG activities and are investing enormous amounts in manufacturing goods that will be the foundation of this lower-GHG economy. Yet, because policy has still provided a clear signal on what the price of GHG emissions are going to be, private actors are still loathe to commit to money. Further, we know that a lower-GHG economy will demand many complementary public investments – high-quality public transportation for example. In short, making sure that a significant portion of the fiscal support we provide to the ailing economy also supports green investments seems like a clearly appropriate thing to do.

#### **Don’t we have to worry about the debt?**

As hard as it is to hear for people steeped in a Beltway culture that has used fear of deficits to fight every policy change they don’t like (be it spending increases or tax cuts), deficit fears just don’t apply to green investments, either in the short or the longer-term.

#### **Short-term**

In the short-term, no increase in fiscal support need worry us in regards to debt. The most well-pedigreed argument against increasing budget deficits in healthy economies is the fear that increased government borrowing causes interest rates to rise as public demand competes with private demand for fixed savings of households and businesses. These rising interest rates spurred by growing deficits results in private investment “crowding out” private capital formation and the lower value of the private capital stock leads to lower future growth. When economic commentators make arguments disparaging



the ability of the Recovery Act (or government spending of any kind) to create jobs, they generally make variants of this crowding-out argument.

The general failure of interest rates to rise in response to the increase in budget deficits, and to the Recovery Act in particular, is a prime piece of evidence that no crowding out of private investment is occurring, making the Recovery Act not just cheap, but essentially free in terms of its overall economic opportunity cost.<sup>4</sup> This is, again, not unexpected. Economic theory teaches that increased public borrowing during a liquidity trap does not crowd-out private sector activity.

<Figure 7 here: Long-term real interest rates>

### **Long-term**

In the long-term, if the economy recovers and begins allow for rates of joblessness much closer to historic norms during economic expansions, then fears of budget deficits putting upward pressure on interest rates may be better-founded. Yet, even this does not argue against green investments.

The way that rising interest rates harm the economy is by “crowding out” private sector spending and reducing the private capital stock. But, if deficits are incurred through public investments, then the overall level of the nation’s capital stock is unchanged, and just its composition is changed. And so long as the public investments have rates of return as high as the rate of risk-free Treasury bonds, then it is economically correct to undertake them. Given what the evidence tells us about the return to public sector investments, and given that we know that public investments have lagged private investments for some time, it seems clear that an increase in investments meant to close the infrastructure gap and fight global climate change will be very high-return indeed.

### **Conclusion**

Every serious effort to evaluate the impact of ARRA has indicated that it worked as advertised: the US economy would have 2-4 million fewer jobs today and would be hundreds of billions of dollars poorer had it not been passed.

Yet, as of December 2010 the U.S. economy still needs 11 million jobs to return the unemployment to its pre-recession level. Clearly more fiscal support is needed.

Given this need, it seems obvious that a smart policy-path to go down would be to extend those parts of ARRA that are most effective in spurring growth and employment in the near-term.

Even better, unlike some other forms of economic stimulus, if by some chance there is a miraculous economic recovery that leads to very low rates of unemployment very soon, additional green investments undertaken in coming years would not, *even if they are debt-financed*, “crowd-out” other investments and lead to a smaller economy-wide capital stock. That is, while the case for doing green investments now is made stronger by the fact that these investments will provide jobs to an economy

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<sup>4</sup> There is an additional channel through which increasing federal budget deficits in a healthy economy can lead to slower domestic income growth – if the increased borrowing spurred by them leads to greater borrowing from foreign investors. Very few (if any) detractors of the Recovery Act have made the argument that this has happened – and correctly so. The mechanism for this channel to work would have to be a rise in the trade deficit. But, the trade deficit fell significantly over the course of this recession.

presently starved of them, the case for these investments is still strong even if the economy does not need the jobs (a very unlikely possibility).

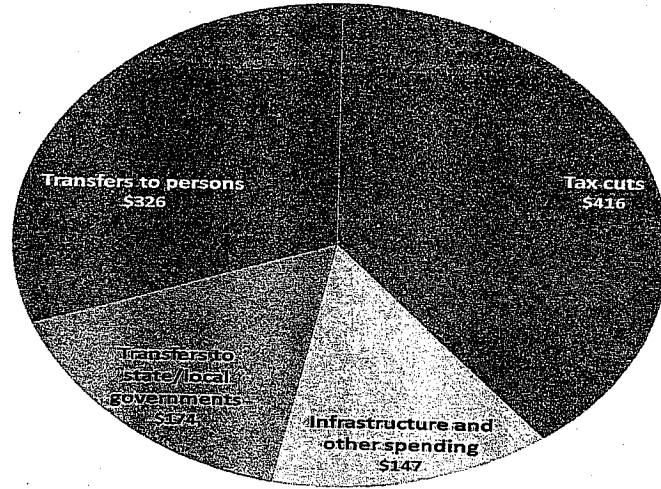
In short, the greatest short-term challenge facing the U.S. economy is finding enough work for the 25 million Americans that are either un- or under-employed while the greatest long-term challenge facing the U.S. and global economies is constructing a smooth transition to much less carbon-intensive forms of production. Investments in the green economy help ameliorate both challenges. Not undertaking them would be madness.

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Figure 1

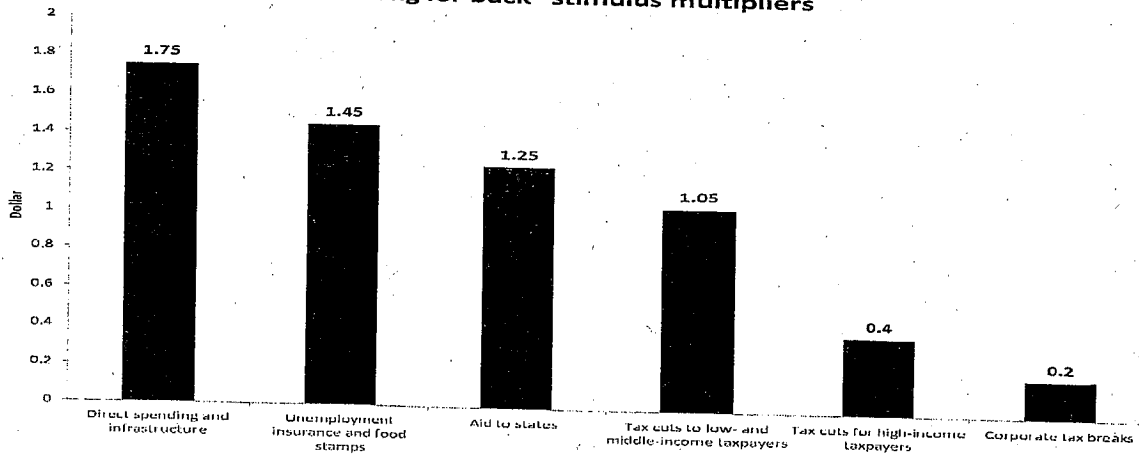
Fiscal stimulus in the 2007 recession: Where did it go?  
(Billions of dollars)



Source: Blinder and Zandi (2010)

Figure 2

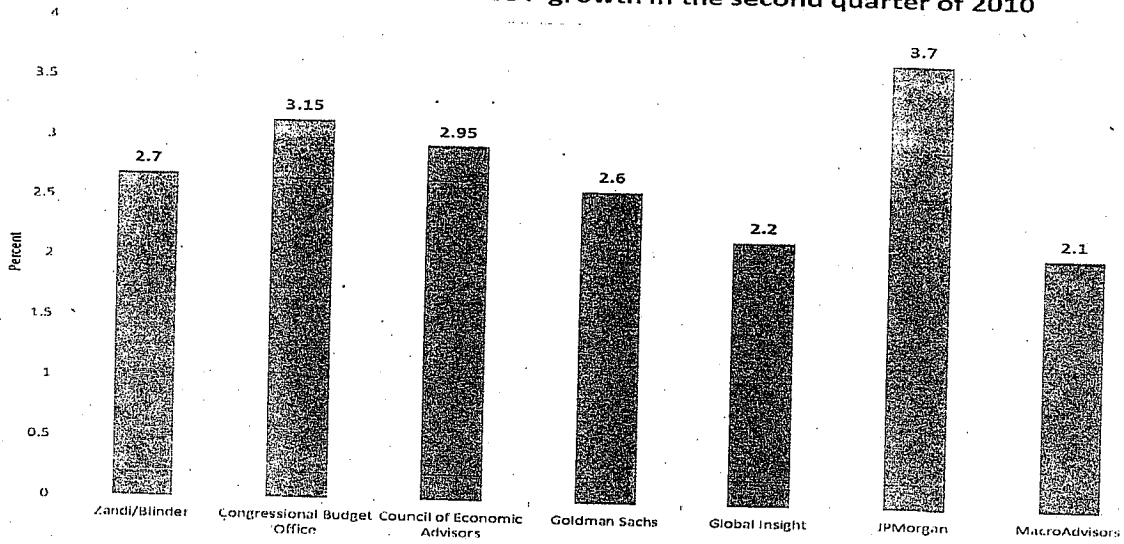
"Bang for buck" stimulus multipliers



Source: Congressional Budget Office data.

Figure 3

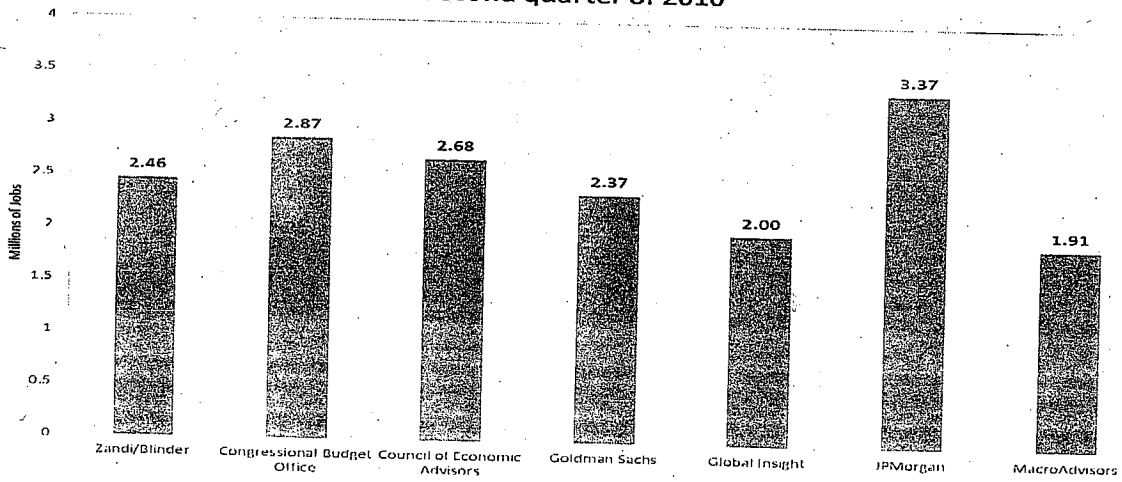
Contribution of stimulus to GDP growth in the second quarter of 2010



Source: Data from sources listed above.

Figure 4

Contribution of stimulus to employment growth in the second quarter of 2010



Source: Data from sources listed above.

Figure 5

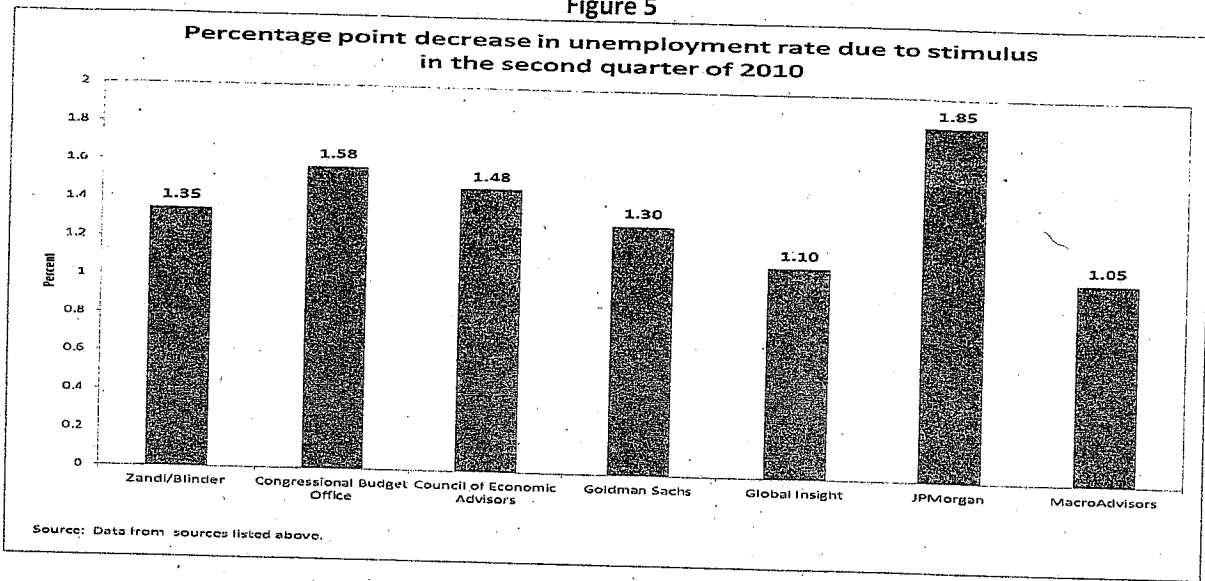


Figure 6

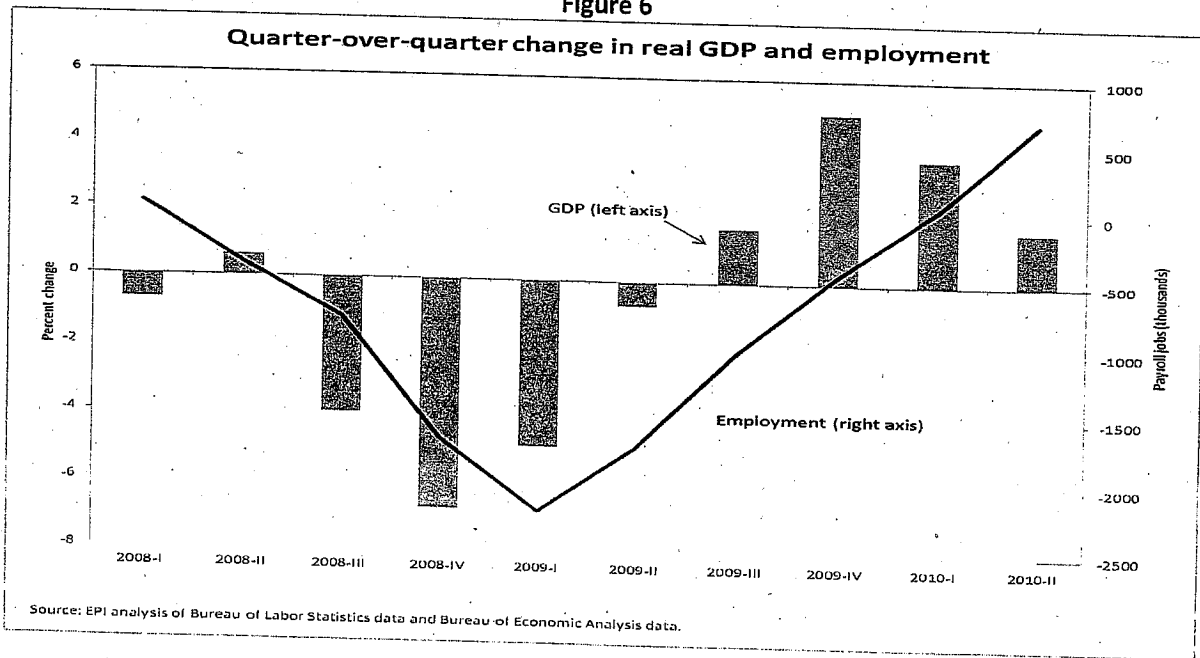


Figure 7

