



Technical Appendix and References for
18 Million Jobs by 2012

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Published in *The Nation*, March 8, 2010

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In this appendix, I explain how I derive five key sets of findings presented in *The Nation* article. These findings include:

1. How 18 million new jobs could be created by the end of 2012 within the framework of today's economic situation;
2. How a reduction in unemployment generates a corresponding reduction in the federal government's fiscal deficit, even without any tax rate increases or reductions in government commitments through assistance programs such as unemployment insurance, food stamps, or Medicaid;
3. How long it would take to achieve a five or four percent unemployment rate if we allow for a "normal" recovery to play itself out;
4. How the low interest rate that the federal government now pays on its debts generates around \$175 billion less in interest payments than would be the case if the government were forced to service its currently incurred debts at Reagan-era interest rates; and
5. How an expansion of the federal government's current loan guarantee programs by approximately \$250 billion would generate a modest impact on the government's budget.

In addition, I provide references here for all the main statistics and related information provided in *The Nation* article.

1. CREATING 18 MILLION JOBS BY THE END OF 2012

Calculations of a 3-Year Employment Growth Path

Total U.S. employment in January 2010 is 138.3 million. Just as a simple growth calculation, let's first observe what happens if we allow employment to grow at an annual rate of either 4.0 or 4.2 percent between January 2010 and January 2013. The figures are presented in Table 1 below.

TABLE 1. U.S. EMPLOYMENT EXPANSION FROM JANUARY 2010 – JANUARY 2013
 WITH 4.0 OR 4.2 PERCENT EMPLOYMENT GROWTH

Hypothetical Exercise

Actual U.S. Employment in January 2010 is 138.3 Million

	4.0% Employment Growth Scenario		4.2% Employment Growth Scenario	
	Total employment	Increase in employment	Total employment	Increase in employment
January 2010	138.3 million	--	138.3 million	--
January 2011	143.8 million	+ 5.5 million	144.1 million	+ 5.8 million
January 2012	149.6 million	+5.8 million	150.2 million	+6.1 million
January 2013	155.6 million	+ 6 million	156.5 million	+6.3 million
Total employment increase January 2010 – January 2013	--	+17.3 million	--	+18.2 million

As we can see from the calculations above, a straight annual average 4.0 percent employment rate for 2010 – 2012 will produce a net increase in employment by January 2013 of 17.3 million jobs. A modestly higher 4.2 percent average annual employment growth rate for 2010 – 2012 will produce 18.2 million new jobs as of January 2013. An employment growth rate in this range will be needed to achieve the goal of about 18 million new jobs by the end of 2012.

Is a Roughly 4 Percent Employment Growth Rate Feasible?

GDP and employment growth. The first issue to consider in answering this question is the relationship between GDP and employment growth. For the sake of simplicity, I worked from the assumptions used in the January 10, 2009 paper “The Job Impact of the American Recovery and Reinvestment Act,” by Christina Romer, Chair of the President’s Council of Economic Advisors, and Jared Bernstein, Chief Economist and Economic Policy Advisor to the Vice President. They write, “We ...use the relatively conservative rule of thumb that a 1 percent increase in GDP corresponds to an increase of employment of approximately...three-quarters of a percent” (p. 3). According to this “relatively conservative” rule-of-thumb, to achieve an average 4 percent employment growth rate would require a 5.3 percent average GDP growth rate.

However, this relationship between average GDP and employment growth assumes that the composition of employment remains fixed over time. In *The Nation* piece and other writings, my co-authors and I have proposed shifting the composition of overall employment towards clean energy rather than fossil fuel energy, and toward education, infrastructure and health care rather than military spending. As I note in *The Nation* article, “Infrastructure projects create 40 percent

more jobs per dollar than spending on the military, health care creates 70 percent more jobs, and education creates 240 percent more jobs.” I have elsewhere also shown that clean energy investments generate approximately 3 times more jobs per dollar of expenditure than spending on fossil fuels (see Pollin, Heintz, and Garrett-Peltier 2009, Pollin and Garrett-Peltier 2009).

The military and fossil fuel energy industries combined account for about \$1.4 trillion, or about 10 percent of U.S. GDP. If we were to shift about 10 percent of the spending in these combined industries, or about \$140 billion in total, away from fossil fuels and the military and toward clean energy, education, and infrastructure, that alone would increase overall employment by about 2 million jobs. If we spread that employment increase equally over three years, that would mean an average annual employment increase through the spending shift of bit less than 700,000 jobs per year. That would be in addition to the average of about 6 million new jobs per year based on a 4 percent average annual employment growth rate.

From these calculations, we can say, again conservatively, that with such a shift in spending priorities, to achieve a 4 percent employment growth rate, it would not be necessary to achieve a 5.3 percent GDP growth rate but rather a modestly lower 5.0 percent GDP growth rate. Another way of expressing this same relationship is that a 1 percent average GDP growth rate would generate an increase in employment of about 0.8 percent, rather than the 0.75 percent employment growth rate assumed by Romer and Bernstein.

How to Achieve a 5 Percent GDP Growth Rate?

The Nation article describes two broad types of initiatives: “measures to buttress the economy’s floor and thereby prevent another 2008-type collapse; and measures to inject new job-generating investments into the economy.” Various types of social spending—unemployment insurance, work sharing, food stamps and related measures—as well general support for state and local governments are the primary means of keeping the economy’s floor strong. Assuming the economy’s floor is maintained, that then means that initiatives to positively expand business investment will translate into higher employment and GDP. This is because these positive investment injections will not have to fight against equal or stronger forces pushing GDP down, as would be true if state and local government budgets are allowed to collapse.

Without strong forces acting negatively on GDP, how much new spending would be required to expand GDP by about five percent? GDP for the fourth quarter of 2009 was \$14.5 trillion. Five percent of this is \$730 billion. Thus, my proposal in *The Nation* article that banks and other financial institutions inject around \$700 billion in new credit for businesses to invest would itself account for nearly all the new spending needed to increase GDP by around 5 percent. Of course, businesses will also be investing from their own internal savings as well as from \$700 billion in borrowed funds. Overall, it is certainly realistic to assume that business investment spending could rise by at least \$700 billion, and possibly significantly beyond that, as a key feature of a healthy recovery. As I note in *The Nation*, the rate of new investment spending will then have to continue for 2011 and 2012 as well to sustain a 5 percent GDP growth rate. The five percent GDP growth rate would then translate into an approximately 4 percent employment growth rate.

How Does All This Translate to a 4 Percent Unemployment Rate by 2012?

The economy's official unemployment rate is calculated as the total number of people who report being unemployed divided by the total number of people in the labor force.

As we saw in the calculations in Table 1, following an average annual employment growth rate of about 4 percent per year for 3 years, there would be about 156 million people employed in the U.S. by the end of 2012. But how many people would be participating in the labor force?

As of January 2010, the labor force participation rate was 64.7 percent of the U.S. population. However, labor force participation falls in recessions. If we are assuming a strong economic expansion in 2010-2012, then labor force participation will rise. For the expansion year 2005, labor force participation was 66 percent. Let's assume the expansion is substantially stronger than 2005. That would imply a labor force participation rate perhaps as high as 68 percent.

For the year 2012, the U.S. Census Bureau predicts that U.S. working age population will be about 240 million. If 68 percent of these employment-aged people are in the labor force, that translates into 163 million people. If 156 million people are employed by the end of 2012, that then means that 7 million will be unemployed (163 million labor force – 156 million employed = 7 million unemployed). The unemployment rate for 2012 would therefore be 4.3 percent (i.e. 7 million/163 million). These figures and calculations are all summarized in Table 2 below.

TABLE 2. CALCULATIONS UNDERLYING A 4 PERCENT UNEMPLOYMENT RATE BY 2012
Hypothetical Exercise

1) Total employment by the end of 2012 with ~ 4% employment growth	156 million
2) Approximate working-age population in 2012	240 million
3) Assumed labor force participation rate in 2012	68 percent
4) Labor force in 2012 (= row 2 x row 3)	163 million (= 240 million x .68)
5) 2012 Unemployment (= row 4 - row 1)	7 million (= 163 million - 156 million)
6) 2012 Unemployment rate (= row 5/row 4)	4.3%

2. HOW A ONE PERCENT FALL IN UNEMPLOYMENT REDUCES THE FEDERAL DEFICIT BY \$90 BILLION

In *The Nation* article itself, I give a general explanation as to how this occurs: “When people are newly employed, they can support themselves and pay more taxes. Conversely, when unemployment rises, the government is faced with huge extra spending burdens through unemployment insurance, food stamps, Medicaid, and related social safety net commitments.” The quantitative details behind this general observation are as follows.

In a well-known paper by Oliver Blanchard and Roberto Perotti (2002, p. 1335), they find that, for the case of the U.S. economy, a one percent increase in GDP will produce a combined improvement in the government's fiscal situation—i.e. increases in tax revenues or reductions in government transfer payment obligations, such as unemployment insurance, Medicaid, and food stamps—of about 2.1 percent. (Blanchard is currently Director of the Research Department at the International Monetary Fund). In a still unpublished study using more recent data, my Political Economy Research Institute colleague Professor James Heintz has derived an almost identical result.

In the discussion above, I explained how I was able to assume that a 1 percent increase in GDP will generate a 0.8 percent reduction in unemployment. Given this previous assumption, we can then also assume, following Blanchard and Perotti, that a 0.8 percent reduction in unemployment will also generate a 2.1 percent improvement in the government's fiscal situation. This is the same as saying a 1 percent reduction in unemployment will generate a 2.63 percent improvement in the government's fiscal situation (i.e. $2.1/0.8 = 2.63$).

The simple math here is as follows:

- A) If a 1% increase in GDP = a 2.1% improvement in government's fiscal situation; and
- B) A 1% increase in GDP = a 0.8% reduction in unemployment rate,

therefore

- A) A 0.8% reduction in the unemployment rate = a 2.1% improvement in the government's fiscal situation; and
- B) A 1% reduction in the unemployment rate = a 2.63% improvement in the government's fiscal situation.

With the most recent third quarter of 2009 data, government receipts from taxation were about \$3.4 trillion. We then calculate 2.63 percent of 3.4 trillion, which is \$89.4 billion.

3. ESTIMATING THE FALL IN UNEMPLOYMENT GROWTH OVER A "NORMAL" RECOVERY

In *The Nation* article, I wrote that under a "normal" recovery scenario, unemployment would not likely fall to around 5 percent until early 2017. We would not likely hit 4 percent unemployment until mid-2018, assuming the recovery could be kept going for another eight years.

These estimates are derived from calculations by Mark Thoma of University of Oregon. Thoma found that the average rate of decline in the unemployment rate over the last three recessions was 0.061 percentage points per month.

Thus, as Thoma shows, starting from an approximately 10 percent unemployment rate, we can calculate the fall to five percent unemployment at the average rate over the previous three recessions as:

$(10 \text{ percent} - 5 \text{ percent}) / (0.061 \text{ percentage point decline per month}) = 81.8 \text{ months}$, or almost 6.8 years.

To get to four percent unemployment under this same average rate would be:

$(10 \text{ percent} - 4 \text{ percent}) / (0.061 \text{ percentage point decline per month}) = 98.4 \text{ months}$, or 8.2 years.

4. HOW FEDERAL BORROWING AT CURRENT VS. REAGAN-ERA RATES SAVES THE TREASURY ABOUT \$175 BILLION/YEAR

The fiscal deficit for 2009 was around \$1.6 trillion. The average interest rate on 5-year U.S. Treasury bonds for 2009 was 2.2 percent. This would mean annual interest payments of \$35 billion (i.e. \$1.6 trillion x .022). If the interest rate on this same debt were instead 13 percent, annual interest payments would be \$208 billion (i.e. \$1.6 trillion x 0.13). The difference is \$172 billion (i.e. \$208 billion - \$35 billion).

5. FISCAL IMPACT OF AN ADDITIONAL \$250 IN GOVERNMENT-GUARANTEED LOANS

Loan guarantees are “contingent liabilities” for the government. That means the government incurs no costs outside of administration until a borrower defaults on a guaranteed loan. How much the government would pay out depends then on the percentage of the total loan that is guaranteed. In *The Nation* article, I proposed that the federal government approximately double the amount of the loans that it guarantees. That would mean an additional \$250 billion in guaranteed loans. Because the point of proposing such a policy is to reactivate the business borrowing for investment, I will assume a very high rate on the guarantees, of 90 percent. This way, for a \$1 million loan on which the borrower defaults, the loss to the bank making the loan is only \$100,000. Of course, one could adjust the guarantee rate either upward or downward, as needed, depending on how aggressively the government would want to push new credit lines into the private business community.

With \$250 billion in new loan guarantees, and with 90 percent of those loans guaranteed, that would mean that the government is effectively guaranteeing \$225 billion worth of new loans. If the default rate on these loans is equal to the four percent rate of 2007, that would mean that the government is responsible for reimbursing the banks for \$9 billion (= \$225 billion x 0.04). This is about 0.3 percent of the 2009 fiscal deficit.

If, again, policymakers concluded that a 90 percent guarantee was too high, the rate could be adjusted downward. Of course, in that case, the government’s obligations in the event of default would fall correspondingly.

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