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## Fiscal Policy and Full Employment

By Brad DeLong, Larry Summers, and Laurence Ball

At present and going forward, activist fiscal policy is likely to be essential for the American economy to operate near potential levels of output and employment. This conclusion is a substantial change in view from the near-consensus of economists that monetary policy alone could and should be left to carry out the stabilization policy mission, a view that prevailed for nearly a generation prior to the 2008 financial crisis.

As of 2007, what was then called the “Great Moderation”<sup>1</sup> in the United States had lasted for 20 years. Since 1984 fluctuations in output and unemployment had been modest and seemed to even out over time, and confidence grew that the business cycle had been largely tamed. Much of the credit for this experience went to monetary policy, which had learned how to coarsely tune if not fine-tune the economy. In 1997, it was Paul Krugman who said, “the unemployment rate will be what Alan Greenspan wants it to be, plus or minus a random error reflecting the fact that he is not quite God.”<sup>2</sup> The Federal Reserve appeared to have the tools to successfully manage aggregate demand to achieve the maximum levels of employment and production consistent with rough price stability.

As of 2007, a near-consensus of economists likewise agreed that fiscal policy should *not* be a tool for smoothing the business cycle. Instead, the focus of good fiscal policy was the right-sizing of government spending and the control of budget deficits. Preventing excessive deficits was essential to maintaining confidence and avoiding unduly high interest rates that would slow economic growth. Adding an unnecessary stabilization policy mission to fiscal policy, so the near-consensus went, could only create distraction and confusion to no benefit.

But in 2008 the Great Moderation came to an abrupt close, as the financial crisis that started in 2007 ushered in the Great Recession. On December 5, 2008, the Federal Reserve lowered the federal funds rate below 20 basis points (0.2 percent), using up all its conventional monetary policy ammunition. Since then, the Federal Reserve has sought to boost aggregate demand through the unconventional policies of forward guidance and quantitative easing. Yet in spite of this monetary stimulus, the recovery that technically began in the second half of 2009 has been dismal in terms of moving output and employment toward their pre-2008 trends, and in comparison with previous recoveries from deep recessions.

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<sup>1</sup> See James H. Stock and Mark W. Watson, “Has the Business Cycle Changed and Why?” *NBER Macroeconomics Annual 2002* (Chicago: University of Chicago Press), 2003, <http://www.nber.org/chapters/c11075>.

<sup>2</sup> Paul Krugman, “Vulgar Keynesians,” *Slate*, February 6, 1997, <http://web.mit.edu/krugman/www/vulgar.html>.

In some ways, the end of the Great Moderation and the onset of the Great Recession have had remarkably little impact on public policy debates. The most discussed economic issue in Washington over the last four years has been the need for strong action to achieve fiscal consolidation, not the urgency of restoring full employment. Despite the fact that inflation and employment are both well below target, the vast majority of criticism directed at the Fed has been claims that its policy has been too lax.

If there has been a change in public discourse, it has been a shift from the optimism of the Great Moderation to a growing belief that the damage to the labor force and economy from the Great Recession is permanent, that we are settling into a “new normal” in which employment levels easily reached before 2008 are now unattainable.

But while the new economic conditions of the post-Great Moderation era do require substantially new economic thinking, they do not warrant an attitude of resignation about a semi-stagnant new normal. Ironically, the appropriate new thinking is largely old thinking: traditional Keynesian ideas of the 1930s to 1960s that were largely downplayed in the wake of the stagflation of the 1970s and the accompanying “New Classical” revolution in macroeconomic theory. The most important of these ideas are these three concepts: Keynes’s view that the liquidity trap, or zero bound on short-term nominal interest rates, can sharply limit the efficacy of monetary stabilization policy; President Kennedy’s “Economics 101” view of the desirability of fiscal stimulus during a slump; and the possibility that a prolonged episode of weak demand and high unemployment in an economy may have destructive consequences for aggregate supply.<sup>3</sup>

After outlining these ideas in the pages that follow, we discuss policy implications. In an economy with a depressed labor market and monetary policy constrained by the zero bound, there is strong case for a fiscal expansion to boost aggregate demand. The benefits from such a policy greatly exceed traditional estimates of fiscal multipliers, both because increases in demand raise expected inflation, which reduces real interest rates, and because pushing the economy toward full employment will have positive effects on the labor force and productivity that last for a long time.

We argue that in a liquidity trap environment like the one we are experiencing at present, properly designed fiscal stimulus is likely to reduce rather than increase the long-run debt burden.<sup>4</sup> This outcome reflects a combination of (1) the direct benefits of stimulus in raising revenues; (2) the favorable impact of increased gross domestic product (GDP) in reducing the debt/GDP ratio; (3) the possibility that fiscal stimulus today reduces future spending burdens, such as the cost of deferred maintenance; (4) favorable supply impacts of public investments; and (5) possible reductions in real interest rate costs that come from increases in expected inflation.

We also present new evidence derived from recent research at the Federal Reserve. Reifschneider et al.<sup>5</sup> introduce “hysteresis” on the supply side into the Federal Reserve’s principal macroeconomic model. Hysteresis refers to a situation in which cyclical economic downturns diminish the economy’s ability to produce output in the future. The finding from this exercise is that a sustained increase in government purchases can reduce the long-run debt/GDP ratio, even in the absence of direct supply-side benefits

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<sup>3</sup> See Arthur M. Okun, “Upward Mobility in a High-Pressure Economy,” *Brookings Papers on Economic Activity* 1973:1, and Olivier J. Blanchard and Lawrence H. Summers, “Hysteresis and the European Unemployment Problem,” *NBER Macroeconomics Annual* 1986.

<sup>4</sup> An idea with a long pedigree, dating back at least to the 1940s, the last time long-term U.S. government real and nominal interest rates were this low. See Abba Lerner, “Functional Finance and the Federal Debt,” *Social Research* 10(1): 38-51, 1943.

<sup>5</sup> Dave Reifschneider, William Wascher, and David Wilcox, “Aggregate Supply in the United States: Recent Developments and Implications for the Conduct of Monetary Policy,” FEDS Working Paper 2013-77, 2013.

from government purchases, and even in the absence of any impact of current purchases on future needs for government spending.

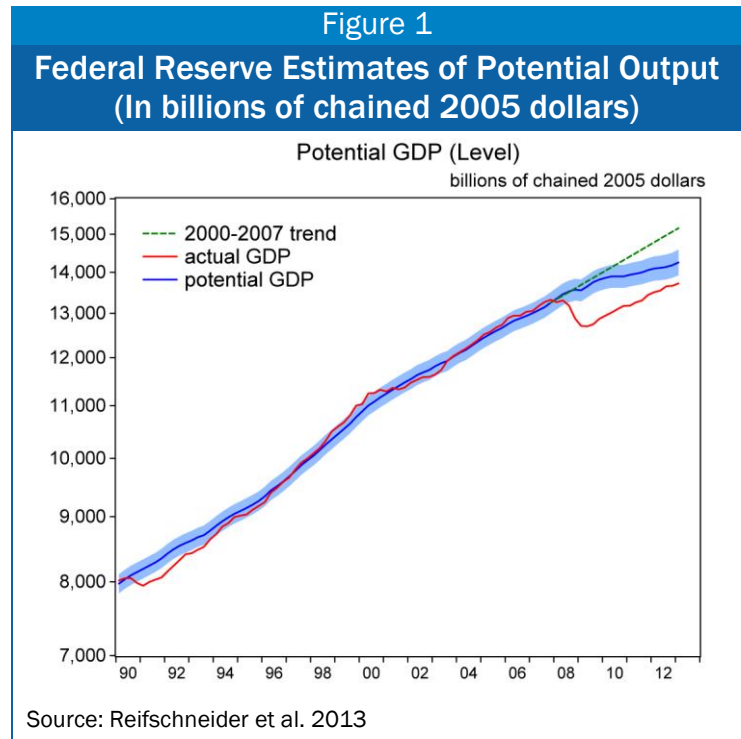
## The Downturn and the Disappointing Recovery

Figure 1 from Reifschneider et al. traces the behavior of real GDP (the bottom line) relative to the supply-side growth trend that the economy appeared to be following before 2008, as estimated by the authors' state-space model from pre-financial crisis data (the top line). In 2013 GDP was approximately 10 percent below its previous trend, with output growing too slowly to close this gap. (The middle line in the graph is the Federal Reserve's statistical estimate of how much of the output loss is permanent, a major focus of what follows.)

Similarly, it appears that only very limited progress has been made in returning employment to normal levels. While unemployment has declined substantially, from its peak of 10.0% in October 2009 to 6.7% in February 2014, this 3.3 percentage-point decline is mostly a reflection of labor force withdrawal rather than successful job-finding. The fall in the official unemployment rate has not been accompanied by the 1 point rise in labor force participation that one would expect based on past recoveries, but by a further 2 point decline. Thus, arithmetically, only 0.3 points of the decline in the unemployment rate are due to increases in the employment-to-population ratio, and 3.0 points are due to dropouts from the labor force.<sup>6</sup>

The employment-to-population ratio peaked at 63.4% in December 2006, fell sharply to 58.5% in October 2009, and since then has flat lined, standing today at 58.8%. Of particular concern are the persistently high rates of long-term unemployment, defined as the share of the labor force looking for work for at least six months. Since 1975, the average long-term jobless rate has been about 1%, but over the last downturn it peaked at a historically unprecedented level of 4.4%, and it remains highly elevated at over 2%.

This erosion since 2007 of labor force participation and of estimates of potential output has no obvious cause related to factor supply or technology. Indeed, it has come as a surprise to nearly all forecasters. The Congressional Budget Office's (CBO) forecasts of potential output as of 2008 included no future growth slowdown. In January 2010, CBO projected an average unemployment rate for 2013 of 6.2%; the actual rate was 7.3%. CBO projected a labor force participation rate for 2014 of 65.1%; actual labor force participation in February 2014 was 63.0%.



<sup>6</sup> Some of the labor force decline is due to demography; nevertheless, recent analysis by Jan Hatzius and David Mericle ("U.S. Daily: A Roundup on Labor Market Slack and Wages," Goldman Sachs Research, February 14, 2014) suggests that the unemployment gap — the difference between the current rate and full employment — is at least 2.5 percentage points, and this four-and-a-half years into an economic expansion.

If we look at history, we can see why economists expected a strong recovery from the Great Recession, and we can see why it did not happen. The worst post-World War II recession before that of 2008-09 was the recession of 1981-82. The unemployment rate peaked at 10.8% at the end of 1982, but it then fell rapidly to 7.2% with rising labor force participation over the following year-and-a-half. Unemployment was pushed down rapidly by output growth rates of 7-8%. With that experience as background, it was not unnatural to anticipate as of late 2009 a similar recovery from the spike in unemployment.

This expectation, however, neglected to consider the reasons for the 1980s recovery. As documented by Romer and Romer,<sup>7</sup> rapid growth after 1982 was fueled by the countercyclical policy of the Federal Reserve. With short-term nominal interest rates at 15% when the 1980s downturn began, the Federal Reserve had ample room to reduce interest rates sharply and continue to reduce them until a strong recovery took hold. The Federal Reserve also reduced interest rates in 2008, but the loosening cycle began with the federal funds rate at 5%, and by the end of that year the funds rate had already hit its lower bound of zero — just as economists such as Rudebusch<sup>8</sup> were estimating that, according to standard interest rate rules, the economy needed rates of -4% or -5% for a strong recovery. Such a degree of monetary ease was obviously impossible: nobody would lend money at a significantly negative nominal interest rate rather than hold currency.

The idea that interest rates can get stuck above the level needed for full employment, constraining the effectiveness of monetary policy, is the liquidity trap that Keynes emphasized in his *General Theory* in 1936.<sup>9</sup> Through most of the decades since Keynes wrote, the liquidity trap was considered a theoretical oddity of little practical importance — a concept useful primarily for designing trick questions on college economics exams. But U.S. short-term nominal interest rates on safe assets like government securities have been stuck at zero for more than five years. Japanese short-term safe rates have been below 1% for 20 years. An escape from the liquidity trap is not imminent. The median Federal Open Market Committee (FOMC) participant is now anticipating that as of December 2015 the federal funds rate will still be only 75 basis points (0.75 percent). And at every stage since 2007, the median FOMC participant has overestimated the future strength of the economy, the level of inflation, and the level of interest rates. The futures market is more pessimistic, predicting a December 2015 federal funds rate of 60 basis points.

It is certainly the case that the Federal Reserve still has some expansionary policy options. Even when the federal funds rate is constrained by the zero bound, the Federal Reserve can still lower longer-term interest rates by providing forward guidance as to the future path of the short-term rate, and via “quantitative easing.” However, as even strong proponents recognize, quantitative easing policies raise issues of sustainability, market distortion, efficacy, and exit management. Moreover, the experience of both the United States and the United Kingdom over the last year raises doubts about the credibility of long-term forward guidance.

As DeLong and Summers<sup>10</sup> explain at length, the liquidity trap magnifies the impact of fiscal policy on economic activity and employment. During a liquidity trap, interest rates will not be increased when a fiscal expansion raises the level of demand, thereby avoiding the crowding-out effects that normally arise

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<sup>7</sup> Christina Romer and David Romer, “What Ends Recessions?” *NBER Macroeconomics Annual*, 1994.

<sup>8</sup> Glenn D. Rudebusch, “The Fed’s Monetary Policy Response to the Current Crisis,” *FRBSF Economic Letter* 2009-17, Federal Reserve Bank of San Francisco, 2009.

<sup>9</sup> John Maynard Keynes, *The General Theory of Employment, Interest, and Money*, 1936.

<sup>10</sup> J. Bradford DeLong and Lawrence H. Summers, “Fiscal Policy in a Depressed Economy,” *Brookings Papers on Economic Activity* 2012:2.

from fiscal policies. Moreover, with a fixed nominal interest rate, if increases in demand raise the rate of inflation, real interest rates fall and investment is stimulated.

This last point deserves emphasis. In normal times, the Federal Reserve has a preferred level of economic activity given its views on output and employment. It therefore can be expected to offset any fiscal impacts on growth. This was the logic behind the Clinton 1993 budget program. Reducing prospective deficits was expected to and in fact did lead to a reduction in interest rates, which in turn crowded in investment, stimulating growth.

Under current circumstances, though, fiscal stimulus crowds in investment to the extent that it succeeds in raising future demand and thus profit levels, and to the extent that it succeeds in raising expected future inflation and so reducing real interest rates.

## The Long-Term Effects of Cyclical Slumps

### ***Evidence from historical comparisons and labor market studies***

The lessons of economic history suggest that the tepid quality of the current U.S. recovery should not be *too* surprising. For ease of presentation, economics textbooks typically portray recessions as temporary events, as part of a “cycle” that is independent of and does not affect the longer-run “trend,” and after recessions losses in output and employment are reversed within a few years. But empirical support for this view comes primarily from the post-1873, pre-1970 United States, and is complicated by the fact that the Great Depression of the 1930s was followed by the countervailing extraordinary war mobilization of World War II. The textbook model of short-term recessions is contradicted by research based on broader international data. International Monetary Fund (IMF) studies, such as the 2009 *World Economic Outlook*,<sup>11</sup> that look at post-World War II financial crises have found that essentially *all* of the output decline associated with a typical crisis persists for at least seven years, and little or none of the shortfall relative to the pre-crisis trend is recovered within that time span. Reinhart and Rogoff<sup>12</sup> and others have also documented that the output losses following financial crises are persistent indeed. The ugly technical term for these highly persistent effects is hysteresis.

Earlier work such as Blanchard and Summers as well as Ball<sup>13</sup> focused on the effects of deep recessions on the natural rate of unemployment. The empirical record showed that more often than not increases in unemployment were highly persistent. In many European countries the recessions of the 1980s and 1990s caused rises in unemployment that were never reversed — and unemployment ratcheted up again as the 2008 crisis spread around the world. There appeared to be a correlation between persistent unemployment-rate increases after a downturn and an absence of a strong stimulative monetary response to recession. Although the zero bound on interest rates was rarely binding, monetary policy was constrained by other factors. Often the key factor was either Europe’s current common currency or the system of fixed exchange rates that preceded it. Sometimes countercyclical monetary policy was precluded by anti-inflationary zeal on the part of policymakers, notably Margaret Thatcher in the United Kingdom. The absence of sufficient monetary stimulus is a feature that these episodes have in common with the recent U.S. experience, as the appropriate monetary policy response, at least in the interest-rate-rule calculations of Rudebusch, was arithmetically not possible.

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<sup>11</sup> International Monetary Fund, “What’s the Damage: Medium-Term Output Dynamics After Financial Crises,” *World Economic Outlook*, October 2009.

<sup>12</sup> Carmen M. Reinhart and Kenneth S. Rogoff, “The Aftermath of Financial Crises,” *American Economic Review*, May 2009.

<sup>13</sup> Blanchard and Summers; Laurence Ball, “Aggregate Demand and Long-Run Unemployment,” *Brookings Papers on Economic Activity* 1999:2 .

The historical evidence for hysteresis is complemented by lines of research in labor economics by Ghyrad, Davis and von Wachter, Oreopoulos et al.,<sup>14</sup> and many others. This work documents substantial deleterious effects of deep economic slumps on individual workers who lose jobs — in other words, the microeconomic problems that underlie persistent unemployment. Lost jobs disrupt careers, because workers become less and less likely to find new jobs as the length of their unemployment spells increases. An experiment by Ghyrad, in which resumes were sent to employers that advertised jobs, found that workers with more than six months of unemployment experienced very low employer response rates — lower than those for workers who had less relevant experience but did not possess the stigma of a long unemployment spell.

Even when an unemployed worker finds a job, it is typically at a lower wage than he or she earned before. It is striking that this adverse effect on earnings is still apparent decades later. It is even more striking, as Davis and von Wachter find, that these effects are particularly large when a worker loses a job during a recession. A rational-signaling model in which a long unemployment spell reveals that a worker is potentially of a low-productivity type would imply that those who lose their jobs due to an aggregate shock like a financial crisis are more likely to re-attain employment afterwards, not less.

As Oreopoulos et al. find, a recession also damages the long-term prospects of young workers entering the labor force. Those who graduate from college during a recession have worse labor market prospects. Once again, the adverse effects on workers' earnings last for decades.

### ***Evidence from Federal Reserve staff estimates***

These harmful effects on individual workers are not the only long-term damage from recessions. As emphasized by Reifschneider et al., physical investment falls sharply in recessions. The pace of formation of new firms also falls, as does research and development by existing firms and the development and testing of business models. Distortions of the economy's relative price structure and the shortfall in spending initiated by a recession make it difficult to do the economic calculation of whether an investment project is profitable. All of these effects make for a less-productive economy in the long term.

Reifschneider et al. currently estimate that three-tenths of the 10% shortfall of U.S. output relative to the pre-2008 trend will eventually be reversed but that the rest is a permanent downward-level shift in the path of potential output. Today's level of potential output appears to be roughly 7% lower than the level anticipated before the 2008 crisis.

### ***Evidence from the Congressional Budget Office assessment of potential output***

The Federal Reserve staff assessments of the long-run shadow cast on potential output by the Great Recession are consistent with current analysis by the Congressional Budget Office (CBO).

As the weak recovery has dragged on, CBO has reduced its forecasts of potential output. The forecast for 2014 made in 2013 is 8.2 percent lower than the forecast for 2014 made in 2007. Yang<sup>15</sup> has decomposed this loss of potential output into three components. He finds that about 40% is explained by a long-term

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<sup>14</sup> Rand Ghyrad, "The Jobless Trap," Northeastern University, 2013; Steven J. Davis, and Till von Wachter, "Recessions and the Costs of Job Loss," *Brookings Papers on Economic Activity* 2011:2; Phillip Oreopoulos, Till von Wachter, and Andrew Heisz, "The Short- and Long-Term Career Effects of Graduating in a Recession," *American Economic Journal: Applied Economics*, January 2012.

<sup>15</sup> Unpublished analysis by David Yang, 2014

decline in projected future labor input measured by total hours worked; 50% is explained by a decline in investment and thus in the accumulation path of physical capital; and the remaining 10% is explained by a fall in the projected growth path of total factor productivity.

A recent study by CBO<sup>16</sup> suggests that the Great Recession is *not* the reason that potential output has fallen below the path the agency forecast before 2008. “The impact of cyclical weakness in the economy,” according to the report, “accounts for just 1.8 percentage points, or about one-fourth, of the difference from the 2007 projection, even though the downward revision to potential GDP coincided with the severe recession of 2007-2009 and the subsequent slow recovery.” The report states that the primary reason it has reduced its forecasts of potential output is a slowdown in trend output growth that began early in the 2000s — but which the agency’s researchers only detected recently — and it is a coincidence that this pre-2007 growth slowdown was only recognized in the aftermath of the Great Recession.

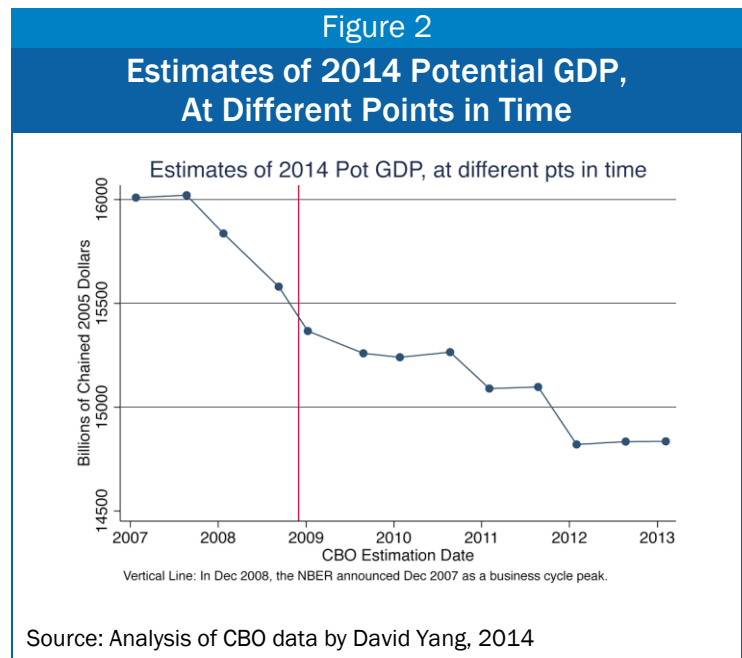
We remain skeptical of CBO’s view. As we noted, research consistently finds that recessions following financial crises cause long-term losses in output. The disappointing U.S. growth since 2007 fits this pattern. It is natural to interpret recent experience as a typical example of hysteresis, not as some more subtle shift in the economy unrelated to the recession that occurred at the same time.

Moreover, CBO’s position does not appear fully consistent with Figure 2, which depicts the evolution of CBO’s estimate of potential 2014 GDP. It is noteworthy that the potential output path declines steadily from 2007 to 2014. This pattern appears contrary to the CBO claim that revisions are explained by slow growth before 2007 and the fact that 2007 was a cyclical peak. If those were the real sources of the revisions, they should have been heavily frontloaded relative to the downturn — in other words, most of CBO’s revisions should have occurred as soon as it recognized 2007 as a peak (the National Bureau of Economic Research called it in December 2008). This is not the case.

As CBO discusses in its recent report, its current estimates of potential output growth are heavily influenced by actual output growth between 2001 and 2007, the last two cyclical peaks. A problem with this approach is that 2001 was a very strong peak — output appears to have risen substantially above potential, as reflected by the unemployment rate of 3.9% in late 2000. The 2007 peak was a weak one — it achieved its status as a peak only because growth was halted abruptly by the financial crisis. We suspect that the growth of output between a strong peak and a weak peak — from a point well above potential to one closer to potential — underestimates the trend growth rate.

## The Potential for Recovery

<sup>16</sup> Congressional Budget Office, “Revisions to CBO’s Projection of Potential Output Since 2007,” 2014, <http://www.cbo.gov/sites/default/files/cbofiles/attachments/45150-PotentialOutput.pdf>.



The U.S. economy is on a path toward long-term under-performance, but this outcome is not inevitable. The economy spiraled downward in 2008 because of a fall in aggregate demand — sharp declines in consumption and investment resulting from the disruption of the financial system and accompanying panic. We believe that a sufficient strengthening of demand can push output back toward its pre-2008 trend and minimize the long-term damage from the Great Recession.

Where might stronger aggregate demand come from? We can hope for good luck, such as a surge in investment in new technologies, a rise in exports driven by economic growth in other countries, or a return to normal levels of risk tolerance on the part of savers and financial intermediaries. But a more reliable approach is to use macroeconomic policy to boost demand.

During the Great Moderation era before 2008, macroeconomic policy typically meant monetary policy. In today's weak economy, the Federal Reserve should certainly try to support aggregate demand through an accommodative policy stance. Economists are actively debating how much unconventional monetary policies such as quantitative easing have contributed to the recovery, the potential for further unconventional policies going forward, and whatever risks might be created by the interaction of a very large Federal Reserve balance sheet and our current banking and regulatory system. We will not take a position on these complex and unsettled issues. Instead, we will emphasize the most straightforward way to stimulate demand at the zero bound: fiscal expansion.

### ***A role for fiscal policy?***

Fiscal expansion could take the form of cuts in net taxes or increases in government spending. Well-targeted policies such as public investment would have important direct benefits. Vice President Biden's observation that he has a "third world" experience every time he flies into New York is just one sign that the United States has systematically underinvested in public infrastructure capital. But for the current discussion the key effect of fiscal policy is the boost that it provides to aggregate demand.

There have been many conflicting claims in the public debate about the effects of fiscal policy. Many argue that fiscal expansion is counterproductive because it reduces economic confidence and thus private spending by more than it increases public spending. However, there has now been enough policy experience and research to reach a clear and firm conclusion: fiscal expansion is indeed expansionary in economies like the United States today, where interest rates are near the zero bound and therefore there is little risk of crowding out private investment. Several years ago, after reviewing a variety of evidence, including cross-country and time-series analysis and micro examinations of the 2009 Obama stimulus, David Romer concluded that the positive effects of fiscal expansion are an issue "that we should view as settled."<sup>17</sup> Since then, Blanchard and Leigh<sup>18</sup> have found that fiscal multipliers in advanced economies were larger than expected during 2009 and 2010, with the result that output fell short of IMF forecasts in countries that pursued fiscal austerity. Under current conditions the multiplier — the effect of a dollar of spending or of net tax cuts on GDP — appears likely to be not just positive but greater than 1.0.

An economy with a positive multiplier, with hysteresis, and with interest rates on short-term government debt at their zero bound has very different characteristics from what we used to think of as a normal economy — one with interest rates even on short-term Treasury debt bounded well away from zero, with monetary offsets to fiscal policy substantially reducing if not eliminating the multiplier, and with a

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<sup>17</sup> David Romer, "What Have We Learned About Fiscal Policy From the Crisis?" Conference on Macro and Growth Policies in the Wake of the Crisis, International Monetary Fund, Washington, DC, March 2011.

<sup>18</sup> Olivier Blanchard and Daniel Leigh, "Growth Forecast Errors and Fiscal Multipliers," International Monetary Fund Working Paper 13/1, 2013.



tendency to rapidly return to a pre-downturn potential growth path. In what we used to see as a normal economy, a fiscal boost had little effect on current employment and production and, because it raised the debt/GDP ratio, induced substantial future drag on potential output through its amortization costs. But when interest rates are near zero, amortization costs are near or less than zero, monetary policy offset is absent, and persistent hysteresis effects on the tax base have a very high present value. In this setting, a sizable fiscal expansion could go a long way toward restoring full employment. A shift to greater austerity would have the opposite effects. Either way, decisions about fiscal policy today will influence the economy into the distant future.

### ***Fiscal policy and debt in the long run***

Our advocacy of a fiscal expansion runs strongly counter to the conventional wisdom, which is that long-run fiscal sustainability requires that the government tighten its belt in response to a downturn that reduces the tax base, even or perhaps especially in the case of hysteresis. At a time when the government's net debt has risen above 70% of a year's GDP, concerns about the federal government's debt are no doubt legitimate. An increase in the debt/GDP ratio certainly has the potential to reduce the funds available for productive private investment relative to a counterfactual with a stable debt/GDP ratio. And a debt that is or even looks out of control is a threat to financial stability, and via its effects on real interest rates an additional drag on capital formation even if current debt and deficits are not that large.

It is natural to think that a cut in net taxes or an increase in government purchases increases the national debt, and indeed that is the short-run effect. In the view of many reasonable people, that fact creates a dilemma: a fiscal expansion is good for the unemployment problem, but bad for the debt problem. We believe, however, that this tradeoff does not really exist. Under current circumstances, the *long-run* effects of fiscal expansion on the debt are benign.

This conclusion follows from the long-lasting effects of fiscal expansion on output. In the presence of hysteresis, a one-time temporary cut in net taxes increases output into the distant future. A persistent output increase creates a persistent rise in tax revenue. These long-term fiscal benefits can more than amortize the initial rise in the deficit if the real cost of financing government debt remains low enough.

DeLong and Summers analyze the conditions under which a tax cut pays for itself. The key parameters in their analysis include the short-run multiplier — the effect of a tax cut on current output — and also the “degree of hysteresis” — the effect of a rise in current output on potential output, an effect that persists into the future. Another key parameter is the marginal tax rate for the economy — the extra tax revenue that accrues from an extra dollar of output. For the United States, the marginal tax rate is approximately one-third. Together, the multiplier, the degree of hysteresis, and the marginal tax rate determine the long-run revenue gains from a current fiscal expansion.

The reader can consult the DeLong-Summers paper for their algebra, which also involves the interest rate paid by the government on its debt. The bottom line is that, for realistic values of the multiplier and the marginal tax rate, and assuming interest rates in the future are not much higher than in the past, only a small degree of hysteresis is needed for a tax cut to pay for itself. A degree of hysteresis of 0.05 is more than sufficient: this means that a one-dollar rise in current output must have an effect on potential output of 5 cents through its effects on investment, the labor force attachment of workers, and so on. DeLong and Summers argue that the degree of hysteresis is likely to exceed this threshold by a substantial margin, based on both historical evidence and the recent U.S. experience.

### ***Calibrating the analysis***

We can use the estimates in Reifscheider et al. to assess how deeply the United States economy currently is

embedded in the region where temporary fiscal expansion is self-financing. The senior Federal Reserve economists who are that study's authors are among the most credible students of the U.S. economy, and certainly do not have any commitment one way or another as to the empirical relevance for the U.S. economy today of the arguments in DeLong and Summers.

A simple and straightforward approach is to use the estimates of potential output from Reifschneider et al. to calculate the value of the hysteresis coefficient  $\eta$ . Figure 1 above showed the Reifschneider et al. state-space model estimates of the path of the output gap  $\gamma$ , measured as the difference between potential output (the middle line in the figure) and actual output (the bottom line). The output gap peaked at 7.3% in the third quarter of 2009. Added up over time, the cumulative output gap  $C(\gamma)$  through the first quarter of 2013 equaled 24.9 percentage point-years of U.S. potential output.

Let  $\sigma$  for “scarring” or “shadow” be the difference between what potential output would have been in the first quarter of 2013 based on the pre-2008 trend and where it ended up in that quarter according to the Fed estimates. The value of  $\sigma = 6.0\%$ . The implicit estimate of hysteresis  $\eta$  is then simply:

$$(1) \eta = \sigma / C(\gamma)$$

$$\text{And so } \eta = (6.0) / (24.9) = 0.24.$$

The estimate of  $\eta$ , 0.24, far exceeds the level of hysteresis required for a tax cut to be self-financing, which is 0.05 or less in the DeLong-Summers analysis.

A more sophisticated exercise looks more deeply into the Federal Reserve Board/U.S. (FRB/US) macroeconomic model that underpins the analysis of Reifschneider et al. and is one of the main tools used by the Federal Reserve. The baseline model includes one hysteresis effect: a fall in output reduces physical investment, which causes a long-lasting decrease in labor productivity. Reifschneider et al. augment this channel with hysteresis in the labor market: an output slump has persistent effects on the unemployment rate and labor force participation calibrated to be “roughly consistent with the experience of the last few years.”<sup>19</sup> Reifschneider and Summers (in progress) simulate the FRB/US model with and without labor-side hysteresis, taking as their initial conditions the state of the U.S. economy at the business cycle trough in 2009 and anticipation that the federal funds rate would remain at zero for a number of years. They derive the effects of an increase in government spending of 1 percent of GDP for five years, from 2009 through 2014. Figures 3A-D show the simulated effects of this fiscal stimulus on output, potential output, the government deficit, and debt.

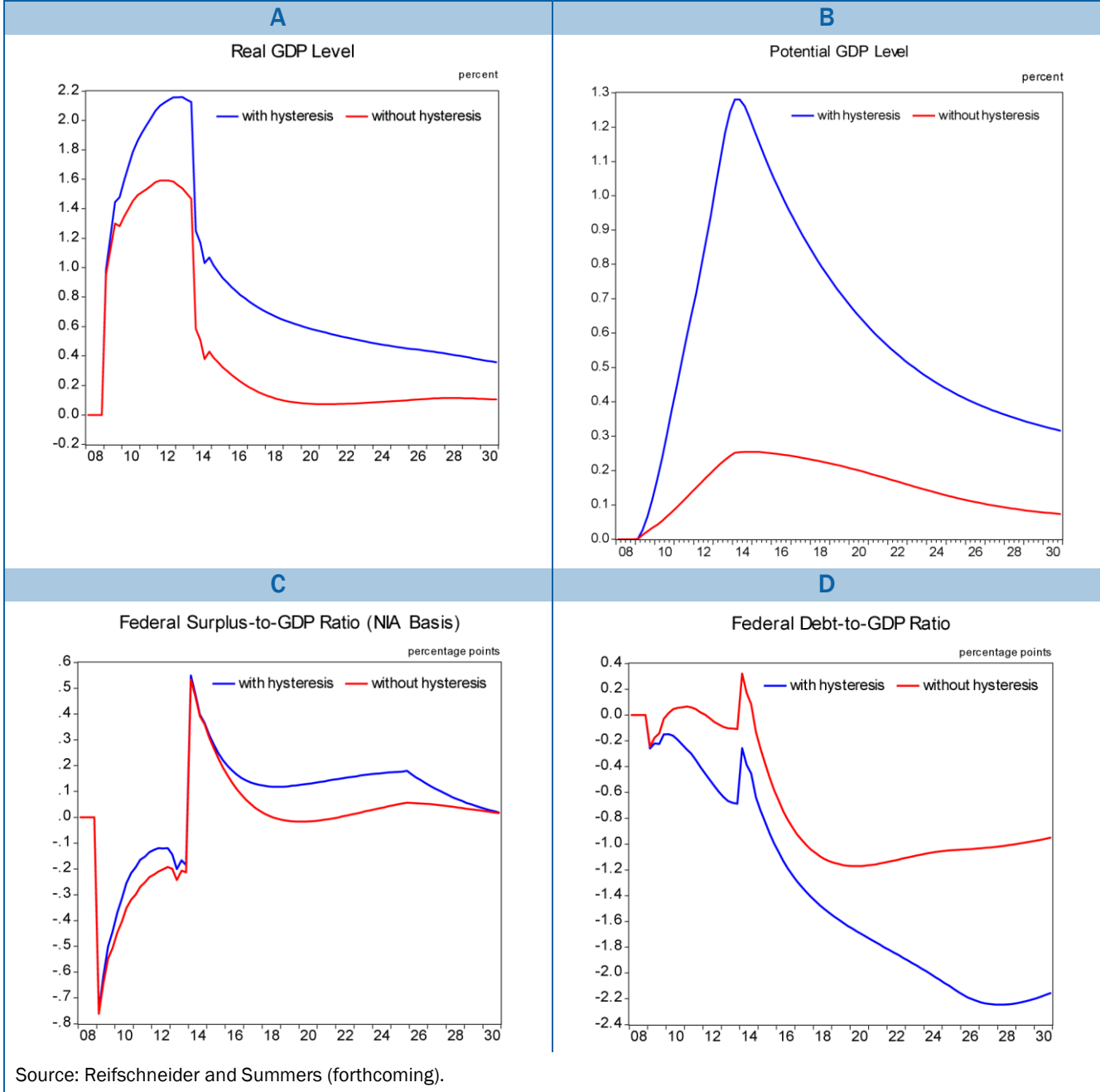
Figure 3A shows how the additional fiscal expansion in 2009 causes output to rise sharply in both versions of the model. Figure 3B shows the corresponding rise in potential output, which is much larger in the model that includes hysteresis in the labor market. The increase in potential output leads the stimulus to have an effect on real GDP that persists even after the policy's direct effects on aggregate demand are gone.

Figure 3

### Effects of a 1% of GDP Increase in Federal Purchases for 5 Years,

<sup>19</sup> In the specification of Reifschneider et al., labor market hysteresis arises when unemployment exceeds its natural rate by 1.25 percentage points or more. In this situation, an additional percentage point of unemployment in a quarter causes a persistent increase in the natural rate of 0.02 points and a persistent decrease in labor force participation of 0.04 points.

## With and Without Labor-Market Hysteresis



Figures 3C and 3D show that even in the baseline FRB/US model, the debt/GDP ratio eventually falls below the level it would have attained without the stimulus. In the model with calibrated labor-market hysteresis, the debt/GDP ratio immediately falls below and always remains below its baseline no-additional-stimulus level. Twenty years after the fiscal stimulus begins, this policy has reduced the debt/GDP ratio by 2.2 percentage points.

There is every reason to expect that these calculations are conservative. Allowing for a supply-side impact of increased public spending or the possibility that increases today would obviate the need for spending in the future, as in the case of necessary infrastructure maintenance, would augment the reduction in the debt/GDP ratio.

## Conclusion

The weak recovery in the labor market is a national crisis with a real human dimension. The costs of job loss, in addition to financial strain, include damage to physical and mental health. Studies have linked job losses to higher death rates, particularly immediately after job loss, but even in the long run by 10-15% for at least the next 20 years; higher rates of suicide as unemployment duration stretches on; and even higher rates of cancer mortality. Furthermore, studies have found that family members of people who have lost their jobs are also affected: being laid off increases the likelihood of divorce in the years immediately following the layoff, and children of laid-off workers are around 15 percent more likely to have to repeat a grade. To top it all off, the longer one is unemployed, the harder it is to find a new job — and thus the harder it becomes to escape these terrible costs.<sup>20</sup>

How can policymakers restore full employment? In our view, it is easier than one might think. Economics usually teaches us not to believe in a free lunch. But with even a small degree of hysteresis in a standard economic model such as the Federal Reserve's forecasting model, fiscal policymakers face an easy decision if the economy is weak with low labor demand and if interest rates are stuck at the zero bound. A fiscal expansion is then a win-win policy. It not only raises employment and output; it also reduces the long-term problem of government debt. Conversely, an insistence on austerity in these circumstances has perverse effects. It *worsens* the debt problem that motivates the policy. It prolongs the economic slump. It magnifies the long-term damage to the labor force and productivity. Keynes was right about fiscal policy and Herbert Hoover was wrong about the virtues of belt-tightening during an economic slump.

The recession that we have just been through will not be the nation's last, and expansionary fiscal policy will likely be needed again in the future. For reasons laid out in Summers,<sup>21</sup> we believe that the safe real interest rate necessary for full employment has declined considerably in the United States, raising concerns about secular stagnation — the idea that the financial conditions necessary for adequate growth and production near potential output are likely unsustainable, and that sustainable finance is likely to go along with unsatisfactory growth and production well below potential output. Under such circumstances it is likely that the zero lower bound on interest rates will be reached more frequently in the future than in the past, that fiscal expansion will reduce the need for extraordinary monetary policies that potentially create instability, and that debt burdens are less problematic because of lower interest rates.

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<sup>20</sup> Daniel Sullivan and Till von Wachter, "Job Displacement and Mortality: An Analysis Using Administrative Data," *Quarterly Journal of Economics*, August 2009, [http://www.columbia.edu/~vw2112/papers/sullivan\\_vonwachter\\_qje.pdf](http://www.columbia.edu/~vw2112/papers/sullivan_vonwachter_qje.pdf); Timothy J. Classen and Richard A. Dunn, "The Effect of Job Loss and Unemployment Duration on Suicide Risk in the United States: A New Look Using Mass Layoffs and Unemployment Insurance Claims," *Health Economics* 21(3): 338-50, March 2012;; E. Lyng, "Unemployment and Cancer: A Literature Review," <http://www.iarc.fr/en/publications/pdfs-online/epi/sp138/sp138-chap16.pdf>; Kerwin Kofi Charles and Melvin Stephens Jr., "Job Displacement, Disability, and Divorce," National Bureau of Economic Research Working Paper 8578, November 2001, <http://www.nber.org/papers/w8578.pdf>; Ann Huff Stevens and Jessamyn Schaller, "Short-Run Effects of Parental Job Loss on Children's Academic Achievement," National Bureau of Economic Research Working Paper 15480, November 2009, <http://www.nber.org/papers/w15480.pdf>; Robert Shimer, "The Probability of Finding a Job," *American Economic Review* 98(2): 268-73, April 2008.

<sup>21</sup> Lawrence Summers, "Transcript of Larry Summers Speech at the IMF Economic Forum, Nov. 13, 2013." <https://m.facebook.com/notes/randy-fellmy/transcript-of-larry-summers-speech-at-the-imf-economic-forum-nov-8-2013/585630634864563>.