



PERC DATA POINTS

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REVISIONIST ECONOMIC HISTORY? POTENTIAL GDP IN THE UNITED STATES

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In the third quarter of 2017, the Gross Domestic Product in the United States reached its full potential for the first time in over a decade. Reactions to this in the media have been varied, with some attributing this glowing achievement to the current administration while skeptics point out that the economy is still under-performing. This article highlights both of these perspectives by explaining the concept of potential GDP, and examining how estimates have changed following the Great Recession.

WHAT IS GDP?

Gross Domestic Product (GDP) is the total market value of all goods and services produced in a country in a given year. In other words, it is a measure of the total aggregated output of an economy. Moreover, inflation-adjusted GDP, called real GDP (RGDP), is the most well-known and widely used indicator of a country's economic performance.

WHAT IS POTENTIAL GDP?

Potential RGDP is also inflation-adjusted, and is a projection of the "maximum sustainable output of the economy", or rather a projection of the 'maximal' level of GDP in a particular year. (Congressional Budget Office, The Budget and Economic Outlook: 2014 to 2024 (February 2014, p. 5)) Reported in the CBO's multi-annual report, "The Budget and Economic Outlook," the potential RGDP statistic is derived from data and projections of capital services, labor supply, productivity, and actual RGDP. In most time periods, these inputs are relatively stable and predictable. It is important to note, however, that potential RGDP is a theoretical concept that does not have a directly-observable real world analog. RGDP serves as a concept with a measurable real world counterpart, even though our calculated RGDP statistics contain interpolations, estimations and measurement errors. There is the possibility that we could actually tally all the final goods and services transactions in the economy and recover RGDP. With potential RGDP, there is nothing to count, as potential RGDP is a level of RGDP that only occurs when the economy is at full employment. Economists and policy makers do not agree on what it means to be at full employment. Thus, the accuracy of CBO or other projections of potential RGDP are difficult to judge, as the answer would depend on the methodology and assumptions used to generate potential RGDP. Further, as with RGDP itself, there are year to year revisions made to both past and future values of the CBO's projections. These adjustments are made as estimation techniques change and as more data become available that leads to changes both in what the CBO thinks will happen in the future and in what the CBO thinks has happened in the past.

It is important to distinguish movements in potential RGDP, which represent long-term movements in economic

potential, with shorter run movements that correspond to the business cycle. Expansions and recessions – the business cycle – should not, in principal, alter potential RGDP. Instead expansions should represent periods where RGDP is growing toward, or perhaps temporarily equaling or even exceeding, potential. Likewise, recessions represent periods where RGDP is falling further below potential. As such, the business cycle represents movements toward or away from potential. In contrast, potential represents the largest possible level of output, the level that occurs at full employment during the heights of the expansionary phase of a business cycle.

Potential RGDP is used for a multitude of purposes. Ideally, potential RGDP serves as a benchmark of the achievable level of RGDP, and as such it could serve as a reasonable quantified goal for the U.S. economy. Accurate and stable projections of potential RGDP, used in conjunction with actual RGDP, can provide clear quantification of a country’s over, or under, performance. Historical potential RGDP serves as an excellent retrospective tool to analyze how the economy has fared in the past. Policy makers use the difference between potential and actual GDP to determine monetary policy, as the popular Taylor rule for monetary policy includes a measure of the output gap, conceptually related to either a measure of deviations of unemployment from the ‘natural rate of unemployment’ or to deviations of actual RGDP from potential RGDP. The CBO also uses potential RGDP in making other projections, such as forecasts of federal revenue and spending.

RGDP DATA

RGDP and potential RGDP are adjusted to correct for changes caused by inflation. RGDP data is taken from the Federal Reserve Bank of St. Louis’s FRED database. Potential GDP data is taken from the CBO’s “Potential GDP and Underlying Inputs” database. All potential GDP values are stated in 2009 dollars. All GDP statistics are generated for the standard business cycle quarter and then annualized.

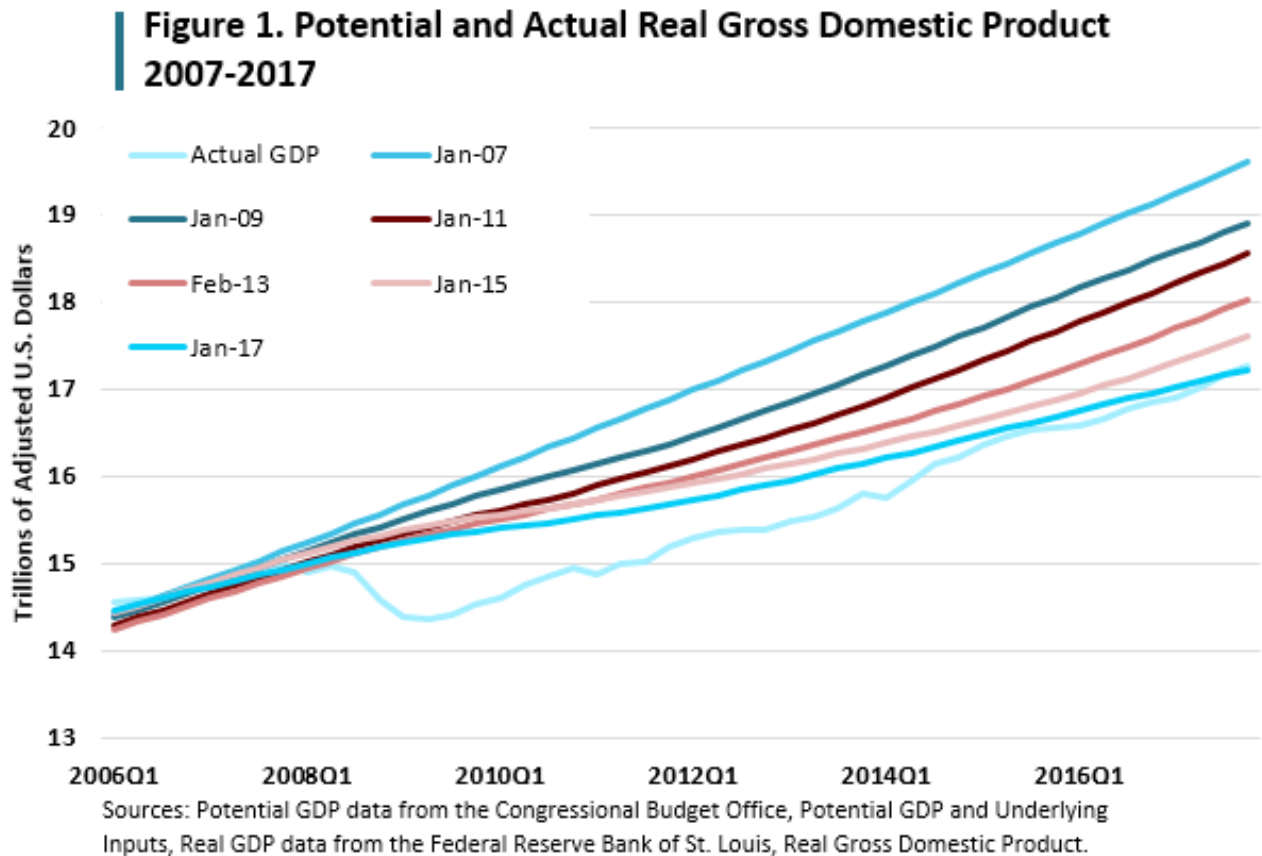


Figure 1 graphs actual RGDP and potential RGDP Projections from 2006 through 2017. As actual RGDP data is also subject to revisions over time, we graph data reported by the Bureau of Economic Analysis as of February 20th

2018. Note the large decline in actual RGDP in 2008, corresponding to what has been labeled The Great Recession. In the figure, RGDP fell from \$15,061 billion in 2008 Q2 to \$14,356 billion by 2009 Q2, a decline of \$706.6 billion or 4.7%. Subsequent to 2009 Q2 RGDP seemed to grow steadily if slowly from the level of \$14,356 billion. In fact, the graph of actual RGDP follows what is called a ‘step function,’ where RGDP takes a step down during the Great Recession and never increases. The growth rate, represented by the trend or slope of the graph, is similar before and after the downward step, but the Great Recession caused a seemingly permanent step down in the level of RGDP. That ‘step down’ seems to be about \$1 trillion, the distance between actual RGDP and the potential RGDP levels being forecast even in January 2011. The economy moves forward with what appears to be a highly persistent if not permanent reduction in the level of RGDP compared to its previous trend.

This is clearest when comparing actual RGDP to the potential RGDP series that the CBO published in January 2007, prior to The Great Recession. The CBO forecast of potential RGDP continues to grow smoothly from 2007 onward, whereas actual RGDP fell sharply in 2008 and then, when growth resumed, grew at approximately the rate of growth of the CBO January 2007 forecast of potential RGDP, but at a permanently lower level.

As the CBO gained more perspective and witnessed actual economic performance after the Great Recession, it lowered its forecast of potential RGDP. In Figure 1 this can be seen by looking at CBO forecasts – and backcasts – of potential RGDP made in January 2009, January 2011, February 2013, January 2015, and January 2017. Looking at the graph, after the Great Recession actual RGDP is converging to potential RGDP more by revisions of the potential RGDP series than by increases in actual RGDP!

The sequence of CBO projections of potential RGDP show a continuing series of downward revisions. The concept of potential RGDP, based on demographics and slowly moving economic magnitudes, is not supposed to be changing drastically over time, but the magnitude and continual change of these continual revisions to the potential RGDP series is startling. For instance, between 2009 and 2011 the CBO forecasts of potential RGDP for the future time period 2017 Q1 was reduced by \$365 billion, and between 2011 and 2013 forecasts of potential RGDP for 2017 Q1 were reduced by an additional \$520 billion. These continual downward revisions in potential RGDP indicate that the CBO was only gradually learning of the large changes in the economy that accompanied the Great Recession and the Worldwide Financial Crisis. They also indicate how slowly policymakers became cognizant of the extent of the structural change to the economy caused by the Great Recession, the Worldwide Financial Crisis, and possible the policy responses to these events.

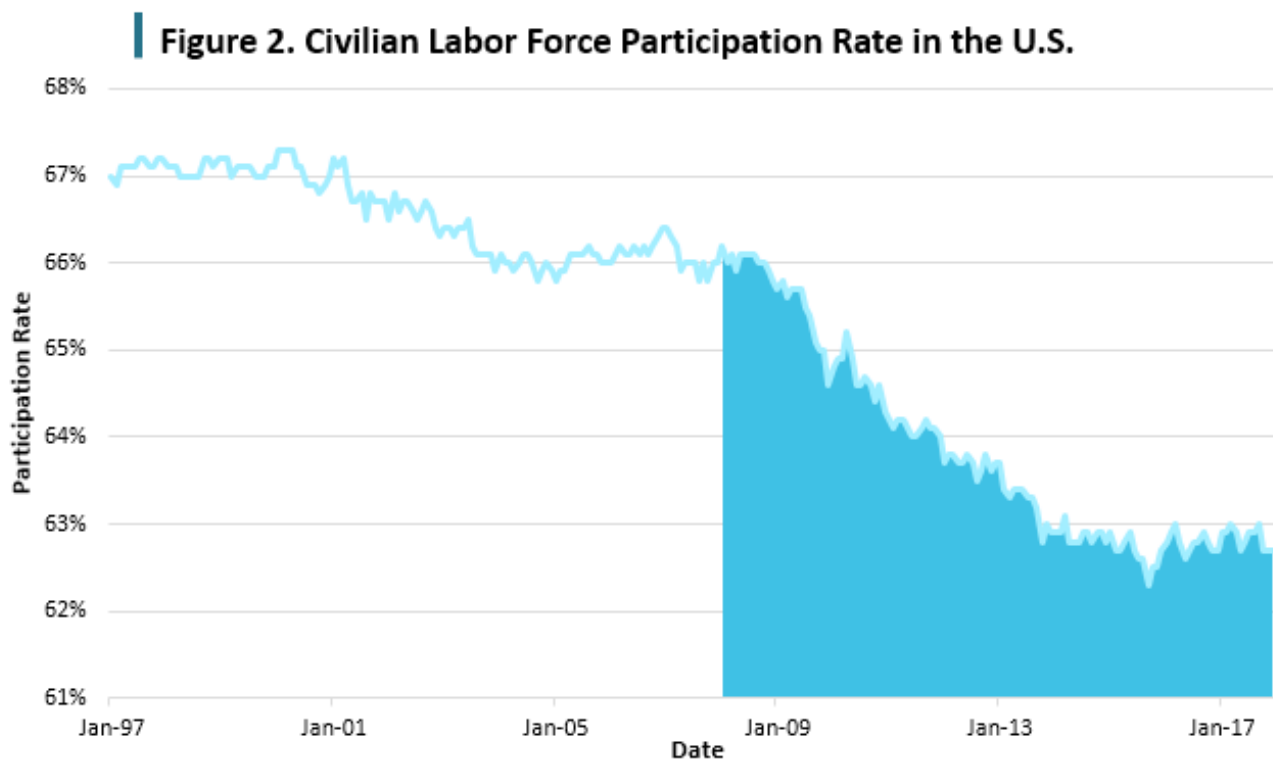
These changes in potential RGDP estimates indicate how the CBO’s conceptions of the recession changed: the economy stagnated instead of bouncing back to pre-recession levels. The National Bureau of Economic Research claims that the Great Recession ended in 2009, but the data suggests that effects of the recession, mainly slow and tepid growth, and a permanent loss in the level of RGDP, were felt years later, even to today. This lost output is far from trivial -- in the 2007 CBO projection, potential RGDP at the end of 2017 would have been \$19,595 billion not \$17,272 billion, an economic loss of \$2,323 billion. This represents a decline in per-person RGDP of \$8,340 in today’s dollars. It is clear from this that not only was the severity of the recession underestimated, but the ability of the U.S. economy recover from the recession was overestimated. Even using the potential RGDP projections from 2011, \$18,552 billion, the economic loss is \$1,280 billion. It is only when using potential RGDP projections from 2017 that the CBO indicates that actual RGDP at the end of 2017 equals our potential.

WHAT CAUSED THE DECREASE IN FORECASTS OF POTENTIAL GDP?

The potential GDP of forecasted for 2017, made in 2014, was 7.3% lower than the potential RGDP forecast for 2017 that was made in 2007. In February 2014, the CBO published a report titled “Revisions to CBO’s Projection of Potential Output Since 2007” in which they attribute the change in forecasted potential GDP to several factors. The 7.3% change is attributed as follows: 1.8% to unforeseen cyclical weakness, 4.8% to reassessments made to pre-recession economic trends, 0.1% to revisions of historical data, and 0.7% to changes made to federal policy. Surprisingly, the CBO assigns the majority of the disparity between forecasts not to the recession, but to inaccurate estimation of trends. Within this reassessment of trends category, the CBO further quantifies 3 percentage points of the adjustment to “unforeseen changes in the labor market.”

What are these unforeseen changes in the labor market? Figure 2 illustrates the large decline in the labor force participation rate that started from the end of 2008 or the beginning of 2009. The labor force participation rate is the fraction of the civilian population that is participating in the labor market. Participating in the labor market means either currently working or unemployed but looking for work. During recessions the labor force participation rate typically does not much change. Changes occur in the composition of the labor force between those working and those unemployed. This is reflected by an increase in the unemployment rate during recessions. Thus, the cyclical movements in the economy typically impact the unemployment rate, the fraction of the labor force that is not working. Longer run trends typically impact the labor force participation rate and the growth of the labor force itself.

Unfortunately for the CBO, the Great Recession seemed to lead not just to an increase in unemployment, but also to a mass exodus from the labor market. The CBO now wants to claim that this was going to happen in any case, and their 2007 and 2009 and 2011 and 2013 estimates of potential RGDP were continually wrong because they missed this trend, a trend not 'caused' by the Great Recession.



Source: Federal Reserve Bank of St. Louis, Civilian Labor Force Participation Rate

The labor force is an important factor in generating RGDP, and the labor force participation rate is an important factor in determining the size of the labor force. The labor force participation rate, multiplied by the relevant population, is an indication of the amount of labor available for producing goods and services. Increases in the labor force lead, other factors remaining the same, to increases in RGDP. Reductions in the labor force, other things equal, lead to decreases in RGDP. Usually changes in the labor force occur because the population increases, or because of changes in the age structure of the population, and these are long run demographic factors that are relatively easy to forecast. However, the labor force can also change because of fluctuations in the labor force participation rate, which indicates the choices made by individuals to seek work or to not seek work.

The labor force participation rate changes over time. The USA benefited tremendously from increases in the labor force participation rate that occurred in the 1970s and 1980s. This increase is due to the large numbers of women who previously did not work that joined the labor force, creating an increase in the labor force over and above the increase from population growth.

Figure 2 clearly shows reduction in the labor force participation rate, from 67% to 66%, between 1997 and 2007. This reduction was concentrated between 2001 and 2004, following the recession of March through November of 2001. The stark reduction in the labor force participation rate from 2009 through 2013 is even greater: a decline from 66% to 63%, following the Great Recession of December 2007 to June 2009. This decline in the labor force participation rate would lead to a similar decline in the labor force itself, and other things equal, to a reduction in RGDP. The CBO seems not to credit this unforeseen decline in the labor force directly to the recession. According to the CBO, before the recession, its forecasts of the labor market were heavily influenced by the behavior of the market in the past, and the CBO was only able to recognize the significant changes in these trends after 2007 was recognized as a business cycle peak. It is clear from the nature of the ongoing revisions that the CBO's ability to recognize these changes in trends prior to 2007 was an ongoing process in 2009, 2011 and 2013.

If the problem was caused by the CBO misreading previous trends, it did so in a rather dramatic fashion. Missing a decline in the labor force participation rate by 3% on a 66% base is not an error to make lightly. The cause of this mistake is debatable. Some agree with the CBO that the decline is due to demographics and the CBO apparently erred in forecasting these demographics correctly. Others claim that demographics are only part of the explanation. The Federal Reserve Bank of Atlanta claims that "Shifts in the demographic composition of the population account for about half of the decline in participation since 2008—primarily the aging of the population. The other half is due to the effect of changes within demographic groups."¹

These changes within demographic groups can be partially attributed to technological change, i.e. the automation of the manufacturing economy displacing blue collar workers, and the mismatch of skill sets of these workers to new jobs being created.² The Brookings Institute attribute this increase of workers leaving the labor market not only to the lack of skills of the aforementioned workers, "but also [to] high reservation wages, poor health, and the availability of disability insurance or other forms of unearned income." Simply put, these dislocated workers are characterized by their inability to work new jobs, due to illness or disparate skill set, and an unwillingness to work the jobs they are qualified for because they pay too little. The Brookings Institute brings attention to a large increase in disability rates, noting that whether this is a cause or a result of workers leaving the labor force has yet to be determined.³

Errors in calculating potential RGDP are not just problems for interpreting past data. These errors have real-time implications for monetary and fiscal policy. Monetary policy, in particular, aims to provide an appropriate level of stimulus when the economy falls below potential RGDP and when unemployment is high. Monetary policy is not aimed at trying to change potential RGDP itself. During the Great Recession, the CBO reported that the gap between actual RGDP and potential RGDP was very large which this led to a certain response, especially from monetary policy makers. Now, the CBO states that the gap was not as large as originally thought, and if true, this implies that monetary policy makers could have provided the wrong level of stimulus.

Economic doctrine suggests that monetary policy and certain fiscal policies should react to a decline in RGDP below potential RGDP. Countercyclical monetary and fiscal policies are not the solution to a decline in potential RGDP itself.⁴ Using the 2007 potential RGDP forecasts, potential RGDP in 2009 Q2 was \$15,783 billion, and actual RGDP was \$14,356 billion, a \$1,428 billion shortfall. If, in fact, potential RGDP in 2009 Q2 was \$15,286 billion as estimated by the CBO in 2017, then the shortfall would have been substantially less - \$931 billion. While still substantial, the CBO's original estimate of the shortfall from potential would require quite a bit more countercyclical policy action corrections compared to their current assessment of the situation in 2009. Thus, errors in estimating potential RGDP is fraught with difficulties for monetary and fiscal policy makers, leading to inappropriate responses, and costly to the economy.

¹ See <https://www.frbatlanta.org/chcs/labor-force-participation-dynamics.aspx>

² Bradley and Jansen (2018) examine the decline in employment during the Great Recession and the jobless nature of the subsequent recovery.

³ See <https://www.brookings.edu/research/what-we-know-and-dont-know-about-declining-labor-force-participation-a-review/>

⁴ Certain fiscal policies might well help address changes in potential RGDP, including tax policies and certain labor market policies, but these are not countercyclical policies directed at mitigating the impact of business cycles.

CONCLUSION

Policymakers and others use estimates of potential RGDP and its relationship to actual RGDP as essential instruments in evaluating the state of the economy. These measures serve as a guide to monetary and fiscal policy makers and indicate the nature and magnitude of policy responses to cyclical movements in RGDP away from potential. Errors in forecasts of potential RGDP can lead to substantial policy errors and harm the economy. In particular, the CBO severely overestimated potential RGDP after the Great Recession and continued to do so for quite a number of years. This would in turn lead to policymakers overestimating the extent of the recession. Instead of attributing the decline in output to a decline in potential RGDP, as the CBO now estimates, the entire decline in output was attributed to the business cycle, potentially leading to over-stimulus of the economy.

AUTHORS

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