

## Looking at data

Sometimes it is nice to take a breather from creative thought and look at what others have done. One form of relaxation is to look at someone else's data. That someone else has made conclusions from the data that if correct can be verified. The hike today will not be in the lower hills of the math world but in the swamps. The data of interest on the trip is that which leads to the monthly unemployment rate. The data was collected by the wealthiest and largest collector of data in the world, the US Federal Government. That entity can afford the best people to take and analyze the data. That being the case it could be assumed that conclusions made from the data are of the highest reliability. It would seem any effort here by a lone mathdrooler would be a waist. Continuing will then just be in the name of an academic exercise.

It is this mathdroolers experience having worked in the Federal Government that the quality of data taken is to be buried in the quantity of data taken, the verbiage used to describe the data and the redundancy of both. The only number the person on the street wants to know is the unemployment rate. That is given in the data, but a closer look may yield soon insight into what is being presented.

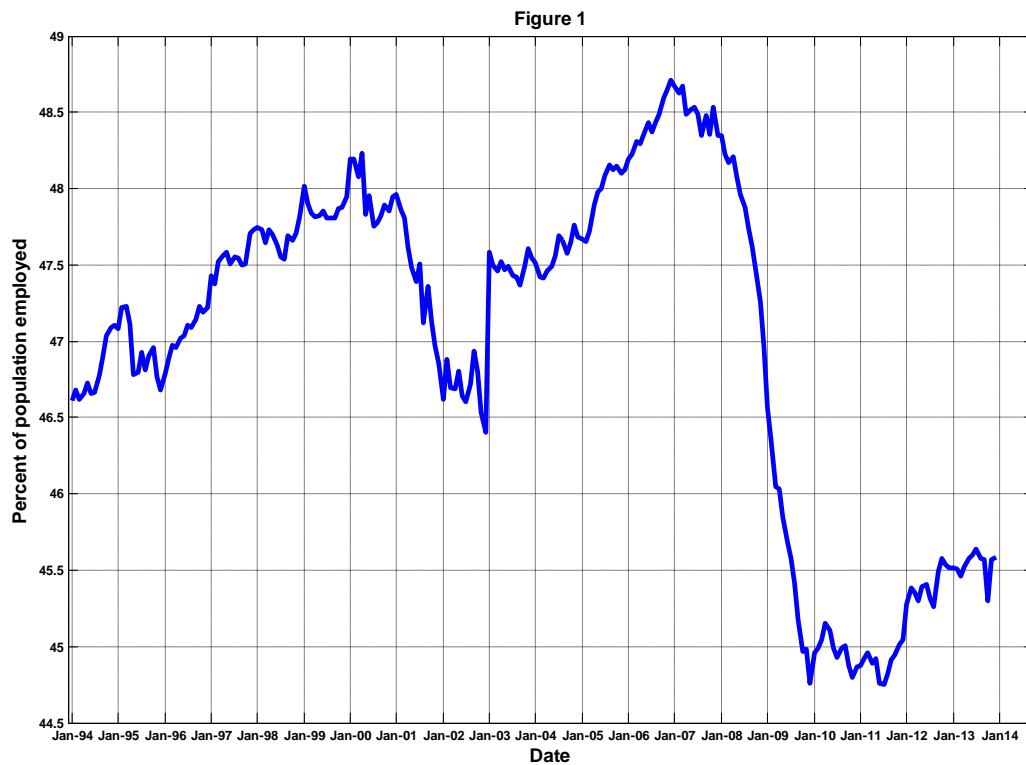
Below is shown the Government's data for each month of 2013. The top row is "Civilian noninstitutional population". Civilian must mean nonmilitary. It may mean something else as well. An institution is not defined. One can guess that institutions are prisons, retirement centers and maybe hospitals. The noninstitutional population for Dec 2013 as given was 246,745,000. The total population, found on the internet, was 317,200,000. That means 70,455,000 are in institutions or the military. So 22%, a little over 1 out of 5, of the people in the country are in institutions or the military. That is somewhat suspicious. The next row is "Civilian labor force". We are told "The civilian labor force is the sum of employed and unemployed persons. Those persons not classified as employed or unemployed are not in the labor force." So if one is not employed or unemployed they are not in the labor force. The next row is a percentage made from the two previous rows. Below that is "Employment". This should be the most solid data presented. Everyone who gets paid has a Social Security number and pays social security or federal retirement with each paycheck. The Social Security Administration and Federal Retirement Administration will know to the person how many people are getting paid, i.e. employed. The Internal Revenue Service will also likely know. The next numbers are calculated from those above them. The number of unemployed is the number in the civilian labor force minus the number employed.

Notice the circularity in the data. The civilian labor force is the sum of employed and unemployed, while the number unemployed is the difference of the civilian labor force and those employed. Something better is needed.

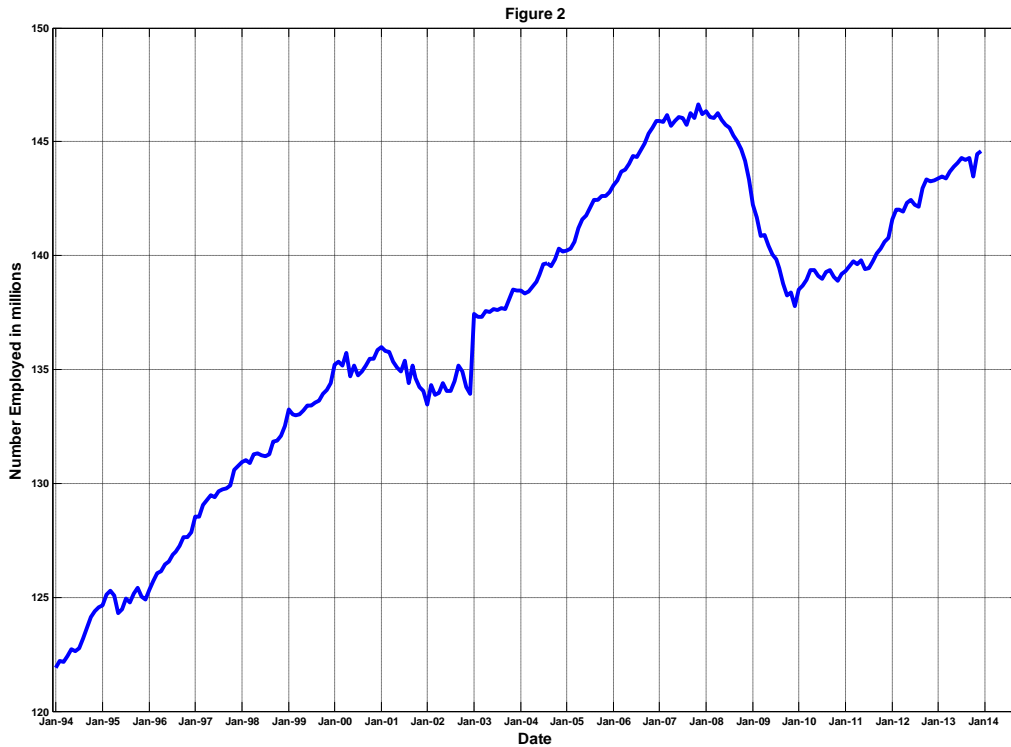
[Numbers in thousands]													
Employment status, sex, and age	2012	2013											
	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<b>TOTAL</b>													
<b>Civilian noninstitutional population(1)</b>	244,350	244,663	244,828	244,995	245,175	245,363	245,552	245,756	245,959	246,168	246,381	246,567	246,745
<b>Civilian labor force</b>	155,485	155,699	155,511	155,099	155,359	155,609	155,822	155,693	155,435	155,473	154,625	155,284	154,937
<b>Participation rate</b>	63.6	63.6	63.5	63.3	63.4	63.4	63.5	63.4	63.2	63.2	62.8	63.0	62.8
<b>Employed</b>	143,212	143,384	143,464	143,393	143,676	143,919	144,075	144,285	144,179	144,270	143,485	144,443	144,586
<b>Employment-population ratio</b>	58.6	58.6	58.6	58.5	58.6	58.7	58.7	58.7	58.6	58.6	58.2	58.6	58.6
<b>Unemployed</b>	12,273	12,315	12,047	11,706	11,683	11,690	11,747	11,408	11,256	11,203	11,140	10,841	10,351
<b>Unemployment rate</b>	7.9	7.9	7.7	7.5	7.5	7.5	7.5	7.3	7.2	7.2	7.2	7.0	6.7

The number employed is solid data, or should be, that is available each month. What is proposed here is that the total population is another piece of available solid data that can be used to get a feeling for the employment health of the country. Population increases at a fairly steady rate. That rate may not be linear but any deviation from linearity is small and smooth and can be easily accounted for. Arguments against using the total population would be that those under 16 years old, those retired, those in the military and those institutionalized should not be considered in any employment statistics. That portion of the population cannot be employed. So why consider them in any discussion of the employment health of the country.

A country is an aggregate of people. Within that aggregate wealth is created and wealth is destroyed. Wealth is destroyed by consumption, decay, waste and corruption. Wealth is created by the work of man's labor or the work of his ingenuity. Wealth is not created out of nothing. If for every dollar everyone in the country has, the government gave them two dollars, the money supply would double but no wealth would be created. Government does not create wealth. The entire population consumes wealth. The question is what percent of the population is producing wealth assuming that everyone working is producing something in the way of services or goods for his/her pay. That percentage may not tell much about the average wealth of the country because it does not take into account how efficient people are working, however the change in the number will give an indication of where the country is heading economically. Figure 1 shows the Government's statistics for the percent of the population that is employed from January 1994 to the present day, December 2013.



There appears to be at least two anomalies in the figure. An obvious anomaly is Jan-03. A less obvious one is Jan-12. Both the population data and employment data was thought to be quite solid. So there should be no anomalies. Figure 2 shows just the employment data.



There is a definite problem for January 2003 and one for January 2012. Reading through some of the verbiage on the Governments site one finds:

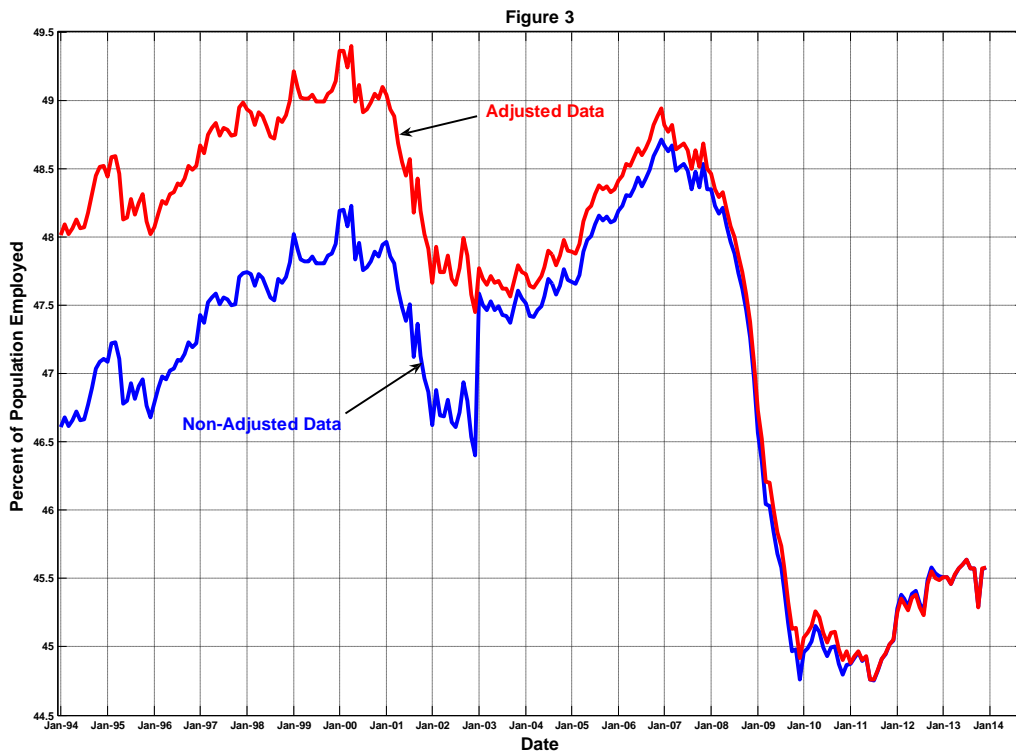
"The household survey and establishment survey both produce sample-based estimates of employment, and both have strengths and limitations. The establishment survey employment series has a smaller margin of error on the measurement of month-to-month change than the household survey because of its much larger sample size. An over-the-month employment change of about 100,000 is statistically significant in the establishment survey, while the threshold for a statistically significant change in the household survey is about 400,000."

"Effective with the release of The Employment Situation for January 2014 on February 7, 2014, new population controls will be used in the Current Population Survey (CPS) estimation process. These new controls reflect the annual updating of intercensal population estimates by the U.S. Census Bureau. In accordance with usual practice, historical data will not be revised to incorporate the new controls; consequently, household survey data for January 2014 will not be directly comparable with data for December 2013 or earlier periods. A table showing the effects of the new controls on the major labor force series will be included in the January 2014 release."

"At the end of each calendar year, BLS routinely updates the seasonal adjustment factors for the labor force series derived from the Current Population Survey (CPS), or household survey. As a result of this process, seasonally adjusted data for January 2009 through November 2013 were subject to revision."

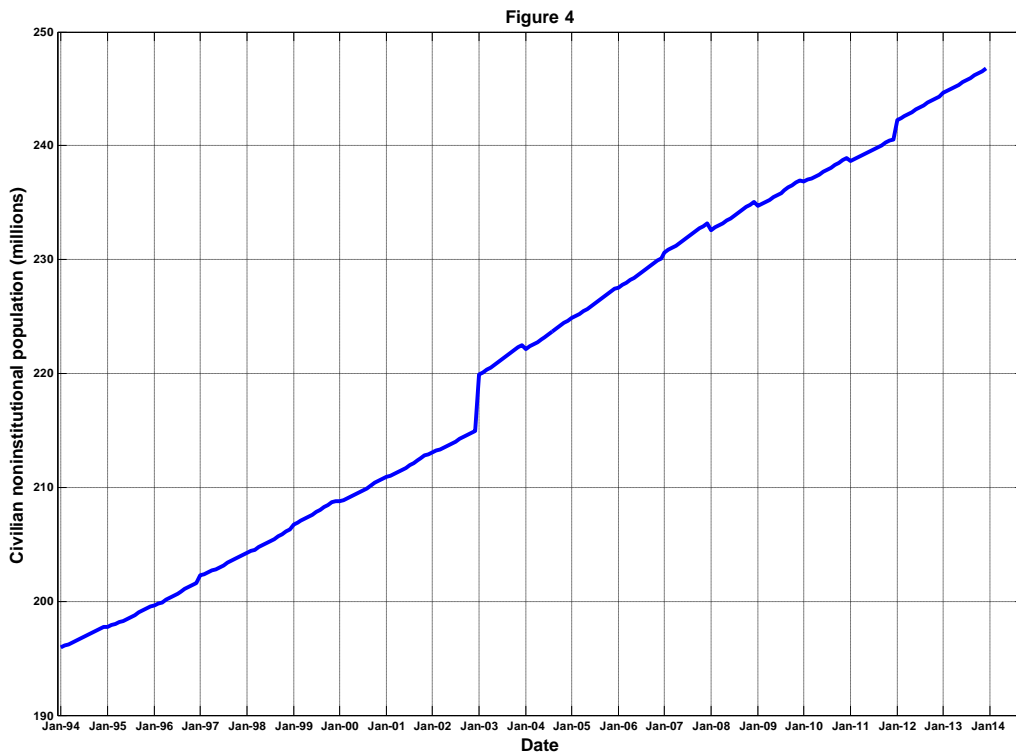
The data is being adjusted at the beginning of each decade owing to the census. It is being adjusted yearly and maybe monthly and at odd times, the basis not being well understood. Why would employment data need to be adjusted? Everyone who gets a paycheck pays Social Security and tax. The number of employed should be exactly known. The Social Security Administration and Internal Revenue Service is not where the number of employed is obtained by the Bureau of Labor Statistics. It is obtained from something called the "Household Survey" and "Establishment Survey". It can be assumed that these are telephone surveys. The number of samples is not known. The statistical reliability is not known. It must not be very good seeing all the adjustments made. Can one work through the adjustments to find the health of employment in the country?

The data for say December 2006 gives the number employed from December 2005 to December 2006. The data for December 2005 from the 2006 data set is the corrected data for December 2005. The uncorrected data for the same month can be found in the December 2005 data set. From these two sets of data the degree of correction can be found. This can be done through all the years and the corrections can be accounted for. The employment numbers will most likely not be the actual number of employed but hopefully any error will be the same for all data sets. If not the true number employed, one should find the true trend in the number employed, which is what one really wants to know. Figure 3 is the data with the corrections smoothed out.



In Figure 3 the word adjusted is used instead of correction. The way the data is taken and presented it is most likely that none of the data is correct and none of the adjustments led to correct data. What one is looking for is trends in the data. If errors in taking the data and presenting it are made in a consistent manner then one can be confident in the trend. In the adjusted data the anomaly at January 2003 is removed. The apparent anomaly at January 2012 remains. It is not clear that all adjustments have been accounted for. There may be monthly adjustments. There is even something called "Seasonal Adjustments" whatever that may be. If the adjustments are applied to all the data, then possibly a better picture can be found.

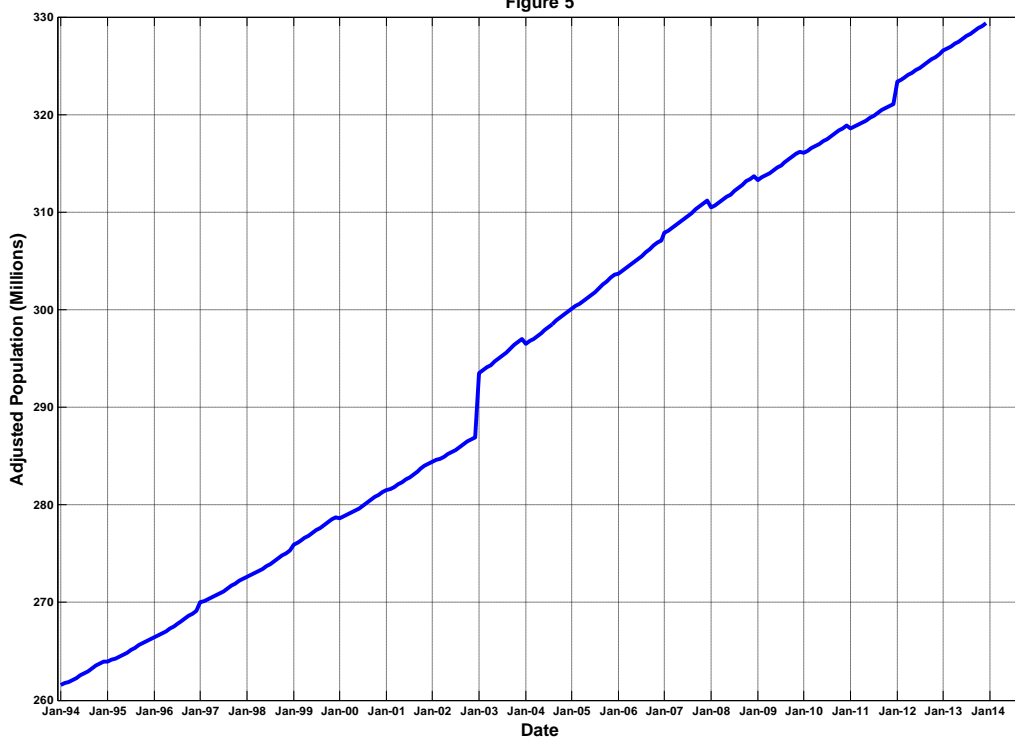
It was mentioned about that there was something called "Civilian noninstitutional population". Figure 4 is a plot of this data.



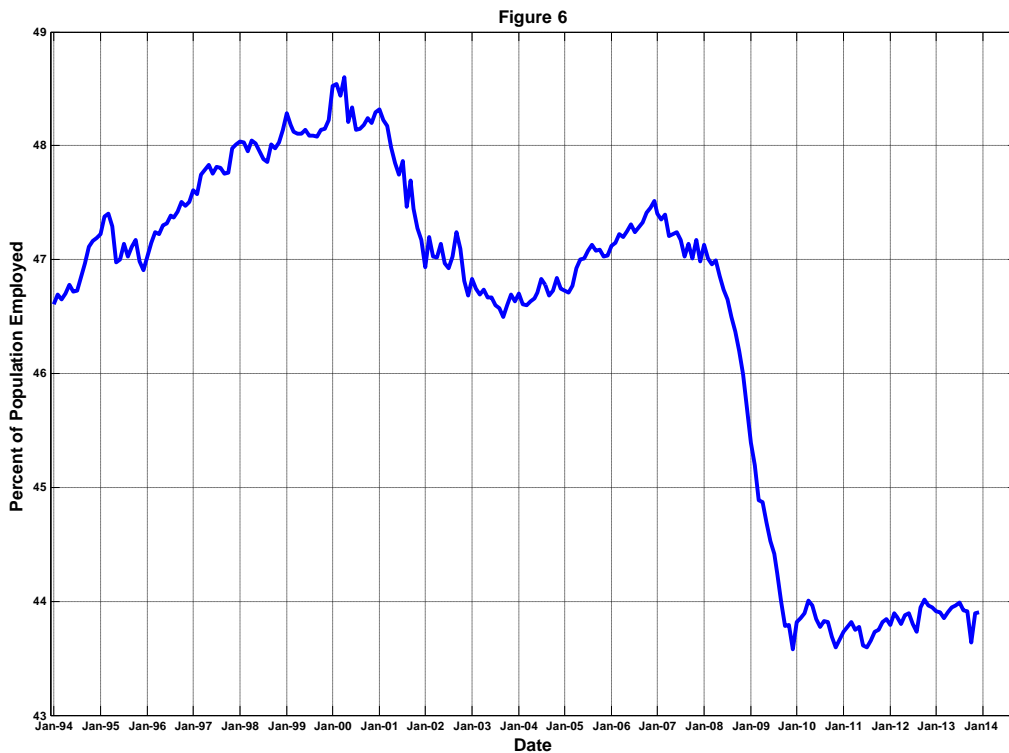
This should be a smooth upward curve. The areas where adjustments are made are obvious. Figure 4 can be used to account for the adjustments in the employment data. For each date there is an adjustment, that adjustment must be removed from all the data previous to it. To do so is very tedious. Instead the adjustment to the "civilian noninstitutional population" will be applied to the population and the percent employed calculated from the adjusted population and the number employed as given. Hopefully, all the adjustments will cancel out giving an accurate trend. The assumption is that the same adjustments are made to the "civilian noninstitutional population" as to the employment data. That may seem rational, but being rational does not mean it is necessarily the case. It is the best that can be hoped for here. Figure 5 shows the population data with the same adjustments as made to the "Civilian noninstitutional population".



Figure 5

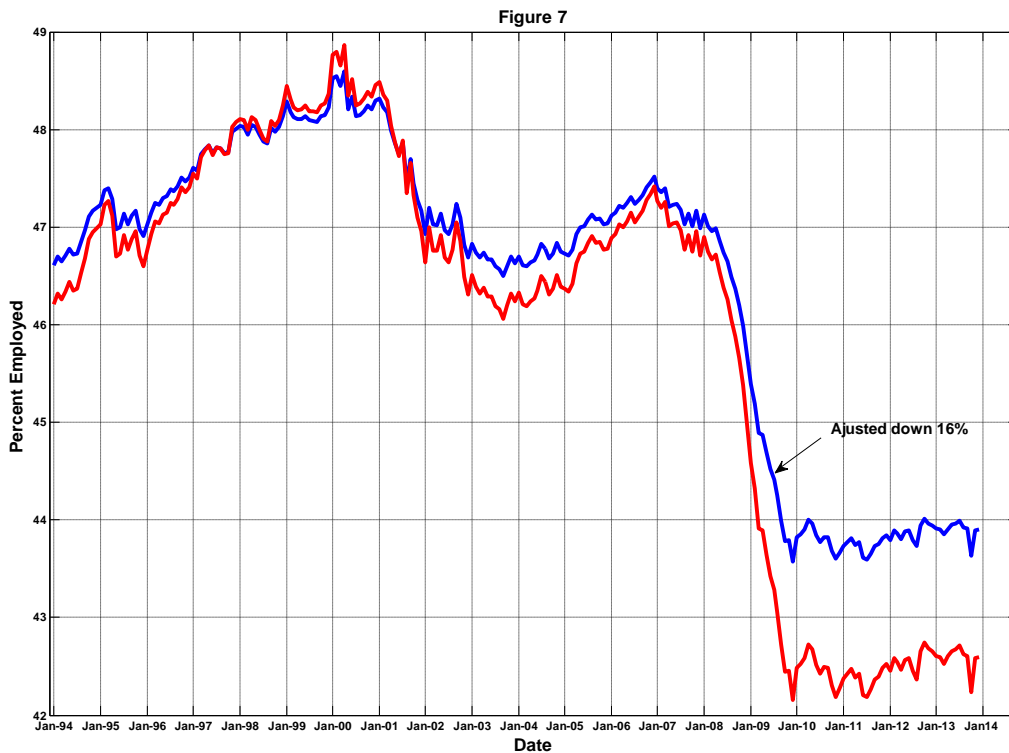


Using the adjusted total population data from Figure 5, Figure 6 is the percent of the population employed as best determine from the data given by the US Federal Government.



The data is jittery but the anomalies appear to have been removed. The trend of the data matches what those who lived through the times experienced. From 1994 to 2001 employment increased owing to the policies of the 1980's and the advent of the so-called dot-com industry. Owing to the policies of the 1990's and 911 employment decreased. The Bush tax cuts and loose regulation of the financial industry resulted in a resurgence of the economy. In 2007 the high lending and high spending of the past twenty years came to a head with a sharp drop in employment. The drop bottomed out in 2010 and has remained at the bottom.

A graph can also be made of the percent of the "civilian noninstitutional population" that is employed. That percentage is given in the labor statistics but no one looks at it. Figure 7 shows that data. The percent of the "civilian noninstitutional population" employed was decreased 16% in the graph to better see the comparisons with Figure 6, the percent of the total population employed.



After overlaying the Government results (red) with those calculated above (blue), one sees that there is a good match up to 2009. From 2009 onwards the Government data shows a less percentage employed. In any case the data above 2009 shows what some have called “the new reality”. Is it reality?

None of the numbers from the Bureau of Labor Statistics can be trusted. They can at best give indications of trends. What was wanted is the percent of the population that was employed over the past 20 years. Actually the past 50 years would have been better. The number of people that make up the population is fairly well known. The number of people paying taxes or paying into Social Security and Federal Retirement should be even better known. The task should have been easy and accurate. The government says that the unemployment rate is going down and at the same time saying the employment rate is unchanging being at the lowest level in 20 years far below any previous low in those 20 years. What is to be believed?

Do we live in a democracy? Or is it a republic or a democratic republic or a representative democracy? Or is it a veiled totalitarian government. We only vote for a few people. Thousands or tens of thousands of people make decisions and regulations that affect common people's lives. But what does a mathdrooler know about politics, economics and society. He only knows numbers and as it is said numbers don't lie but...

In the 1950's when one said America they meant the land and the people. That is no longer the case. Today when one speaks of America they mean the three legged beast that devours nations: big government, big business and big finance that conspiring together make up socialism with its elite upper class controlling its dependent and weak peasantry through various levels of persuasion – and misinformation.

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