

U.S. Government Debt Revisited

Today's article is prompted by another idiotic statement from the White House coupled with a few very stupid responses on Twitter. I'm encouraged, however, by the number of intelligent, correct replies. Today I'll discuss the U.S. government debt and deficit revisited.

You can save some time by [reading this first](#). The article discusses the basic accounting relationships between a deficit, the debt, and the quantity of money in circulation. This stuff is not difficult. The fact that so few people do not understand it is a testimonial to the sad state of economic and financial literacy in the U.S. And, as always, my data is transparent. [Click here](#) to download my Excel workbook.

The Tweets and Responses

I noticed this little controversy in [the summary at Twitchy.com](#). It begins with a tweet from the White House:



White House Tweet

Twitchy summarized the readers' comments starting with this one (which is 100 percent correct):



Moy
@moyboy25

Follow

@WhiteHouse deficit and DEBT are 2 different things. We aren't all idiots and naive.

9:32 AM - 1 Feb 2015

9 RETWEETS 5 FAVORITES



First Tweet Response

But if you read to the end you'll find this (which asks for the impossible):

Identity removed

Follow

@WhiteHouse the deficit should be zero, and the debt should be shrinking.

9:16 AM - 1 Feb 2015

11 RETWEETS 3 FAVORITES



Second Tweet Wrong

A Review for Those Who Did Not Click the Link

Now I know many of you will not click the previous link. (If you did, [click here](#).) So here's an ultra-short summary. Although I've described this using the government as an example, the relationship between debt and a budget applies to individuals, businesses, and every other entity.

The government deficit is the difference between government spending and government revenue. Deficits are financed by issuing bonds. Those bonds make up the government debt. The relationship is simple. When the government runs a deficit it issues enough bonds to cover the difference between spending and revenue. Those newly-issued bonds add to the national

debt. When (if?) the government runs a surplus, revenue exceeds spending. The “excess” revenue is used to buy back some of the outstanding debt. Thus we have the fundamental relationship between debt and the budget.

$$D_t = D_{t-1} - B_t$$

where D_t is the debt at the end of year t , D_{t-1} is the debt at the beginning of the year, and B_t is the government budget during the year. If the government runs a surplus, B_t is positive and the debt falls. If the government runs a deficit, B_t is negative and the debt rises.

For example, if the government debt at the beginning of the year is \$17 trillion and the government runs a deficit of \$1 trillion during the year, the debt at the end of the year will be \$18 trillion.

Note that none of this affects the money supply. The government borrows because it needs money to spend. The money that buyers pay for the bonds is almost immediately spent by the government, leaving the quantity of money in circulation unchanged.

In developed economies there is a central bank that determines the money supply. In the U.S. the central bank is the Federal Reserve system (“the Fed”). In many European countries the central bank is the European Central Bank (ECB). The central bank attempts to control the money supply by purchasing or selling government securities. When the central bank buys securities, it pays for them with newly-created money.^[1] If the central bank decides to reduce the money supply it sells securities. Bingo, there is less money in the hands of the public.

Where does the newly-created money come from? The central bank creates it. Central banks can decide to create or destroy

money based entirely on the decisions of people assigned to make those decisions. They do not worry about gold, silver, yak butter, sharks' teeth, or the infamous stone money of Yap. They only worry about the current and future state of the economy.

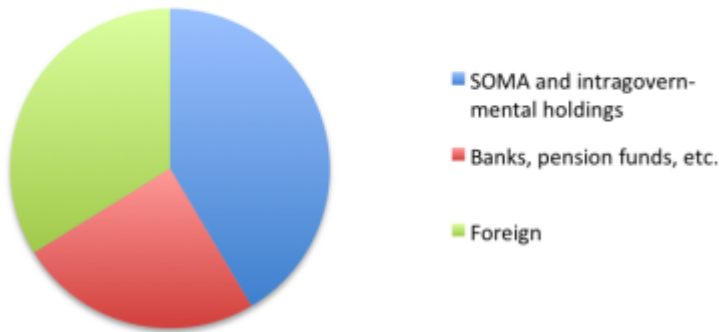
Now You're Ready for Current Data

It happens that another project led me to update the data from my 2010 article. The data is from the U.S. Department of the Treasury, Office of Debt Management, Office of the Under Secretary for Domestic Finance Table OFS-2 as of March, 2014.

Entity Owning Debt	March, 2014 %
Total public debt	100.00%
SOMA and intragovernmental holdings	41.49%
Total privately held	58.52%
Depository institutions	2.09%
U.S. savings bonds	1.01%
Private pension funds	2.84%
State and local government pension funds	1.17%
Insurance companies	1.51%
Mutual funds	6.39%
State and local governments	3.37%
Foreign and international	33.80%
Other investors	6.33%

If you're more comfortable with a chart, here it is:

U.S. Government Debt Ownership, March, 2014

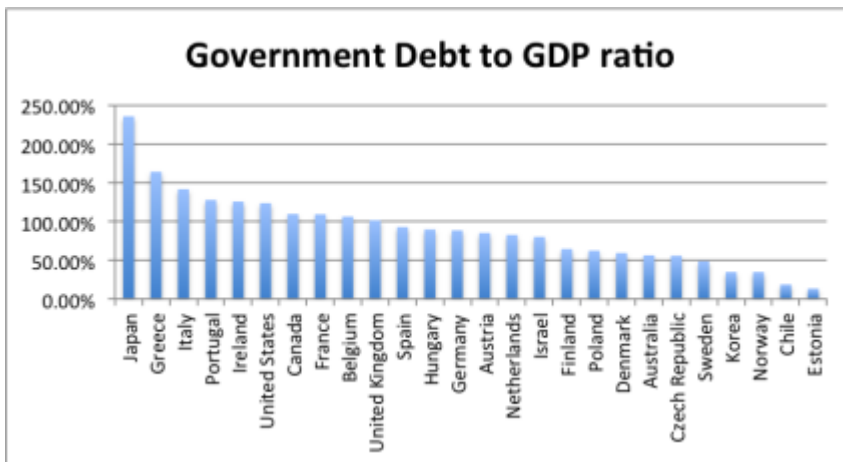


Compare the above with data from my 2010 article:

Owner (Data is as of July 24, 2010).	Percent of government debt held
Federal Reserve and inter-governmental holdings	43.11%
Depository institutions	1.43%
U.S. Savings Bonds	1.65%
Private pension funds	2.74%
State and local government pension funds	1.48%
Insurance companies	1.85%
Mutual funds	5.82%
State and local government (not pension funds)	4.42%
Foreign and international	29.83%
Other	7.67%

Foreign ownership is large and growing.

“But,” some people say, “our GDP is very large. What about the debt-to-GDP ratio?”



(click image for a larger version)

We don't need to worry about the U.S. government debt because it's mostly owed to U.S. residents.

When I first studied economics several decades back, textbooks commonly made this statement →

That simply meant that **very little debt was owned by foreign entities**. As the tables above clearly show, **that is no longer true**. About one-third of U.S. debt is owned by foreigners.

Conclusion

Honestly, **this material is not difficult and the data is readily available**. I always have trouble understanding why people don't simply look at the facts instead of trusting the media. Nearly everyone in the media, including most of those who report on economics, are illiterate about even the most basic economic concepts. Remember, their college degrees are in journalism or communications. Somewhere along the way an editor decided they knew some economics. They don't.

[1] Please don't give me a hard time about this simplification. I know the purchase actually creates bank reserves. I even understand why the money supply mechanism in the U.S. is broken today.

The Current State of the Government Debt

The total U.S. government debt subject to the legally mandated limit has been unchanged for at least a month. Some people believe that means Treasury is cooking the books. I'm pretty sure these folks should worry about something else. This brief article will discuss the current state of the government debt.

As far as I can tell, Treasury is engaging in normal portfolio reallocation as the debt nears the limit. They are selling securities held by the government to the public. This changes the composition of the portfolio, but does not change the total. However, it does provide funds for the government to continue operations as those sales of intragovernmental holdings bring cash into the treasury.

The table below shows the July 26 figures. I've added two rows that detail the changes from period to period. Find something else to be concerned about, folks.

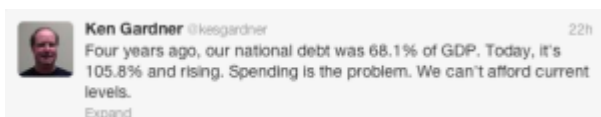
U.S. Government Debt July 26, 2013 (in millions)				
		Opening balance		
Transactions	Closing Balance Today	Today	This Month	Fiscal Year

Debt held by the public	\$11,923,849	\$11,923,178	\$11,901,292	\$11,269,586
Change	\$671	\$21,886	\$631,706	
Intragovernmental holdings	\$4,814,277	\$4,814,958	\$4,837,028	\$4,796,656
Change	-\$681	-\$22,070	\$40,372	
Total public debt outstanding	\$16,738,126	\$16,738,136	\$16,738,320	\$16,066,242
Less: Debt Not Subject to Limit				
Other Debt	\$485	\$485	\$486	\$486
Unamortized Discount	\$32,056	\$32,066	\$32,250	\$31,130
Federal Financing Bank	\$5,695	\$5,695	\$5,695	\$7,112
Hope Bonds	\$494	\$494	\$494	\$493
Plus: Other	\$0	\$0	\$0	\$0
Total Public Debt Subject to Limit	\$16,699,396	\$16,699,396	\$16,699,395	\$16,027,021

More on the Deficit and the Debt

[Update Jan. 19, 15:45 GMT-8: I added a link to my expanded Excel workbook.]

There have been a lot of numbers thrown around lately about the deficit and the debt ([including mine](#)). Apparently not enough. This article is more on the deficit and the debt. **But there's more on the deficit and the debt.** On Twitter, Ken Gardner (@kesgardner) posted this the other day:



Ken Gardner's Original Tweet

Those numbers don't align with mine, so I asked Ken for his sources. He pointed me to two websites:



Ken Gardner @kesgardner

21h

@GonzoEcon Well, I got my numbers from here: usdebtclock.org.

Explanation of components of national debt here:

treasurydirect.gov/govt/resources...

Ken Gardner Reveals His Sources

A Digression On a Misleading Treasury Definition

The second source is from the Treasury and includes a number of definitions. Here's one of them:

Why does the debt sometimes decrease?

The Public Debt Outstanding decreases when there are more redemptions of Treasury securities than there are issues.

While that is technically true, it lies by omission. The debt decreases when government revenue exceeds government spending. Only in that circumstance will there be “more redemptions of Treasury securities than there are issues.”

Enough digressions. Let's dig into the numbers.

Inside the Numbers

Ken used the [U.S. Debt Clock](https://usdebtclock.org) for his debt numbers. The clock also includes a number of other measures:



The U.S. Debt Clock (click to enlarge)

Sure enough, right there on the fourth line the Debt Clock says:



Debt To GDP Ratio from Debt Clock

No arguments about the GDP number. But **the debt as reported on the Debt Clock is gross government debt including state and local debt.** In my previous article I used two sources: Treasury and the Federal Reserve. The Fed reports on two series: *Debt Outstanding Domestic Nonfinancial Sectors – State and Local Governments Sector* and *Debt Outstanding Domestic Nonfinancial Sectors – Federal Government Sector*. On January 1, 2012 those two numbers were \$2,985.00 and \$10,810.61 respectively. (All figures are in billions of current U.S. dollars.) The total is \$13,795.61. On the same date, the Treasury reported the government debt was \$15,582.08. ([Click here to download my Excel workbook](#) with the gruesome details. Debt figures are from the FRED database at the St. Louis Fed. GDP figures are from BEA.+

GDP (current dollars, 2011 total)	Fed. Govt. debt (current dollars, Jan 1, 2012, Federal Reserve data)	State & Local Govt. debt (current dollars, Jan 1, 2012, Federal Reserve data)	Total Govt. debt summed (current dollars, Jan 1, 2012, Federal Reserve data)	Total Govt. debt reported (current dollars, Jan 1, 2012, Treasury Dept. data)
\$15,075.70	\$10,810.61	\$2,985.00	\$13,795.61	\$15,582.08

One of the main differences is that the Fed excludes holdings by financial institutions. I attributed the entire difference between the two totals to this factor, a difference of \$1,786.47. I then added that difference to the Federal Reserve's figure for federal government debt, giving a total of \$12,597.08. Using that total the debt-to-GDP ratio is 83.56%. Using federal government debt held by nonfinancial institutions, the same ratio is 71.71%. The ratio only rises above 100% when state and local debt is included.

Federal Government Debt as percentage of GDP (Federal Reserve data)	71.71%
State & Local Government Debt as percentage of GDP (Federal Reserve data)	19.80%
Government Debt as percentage of GDP (U.S. Treasury Dept. data)	103.36%

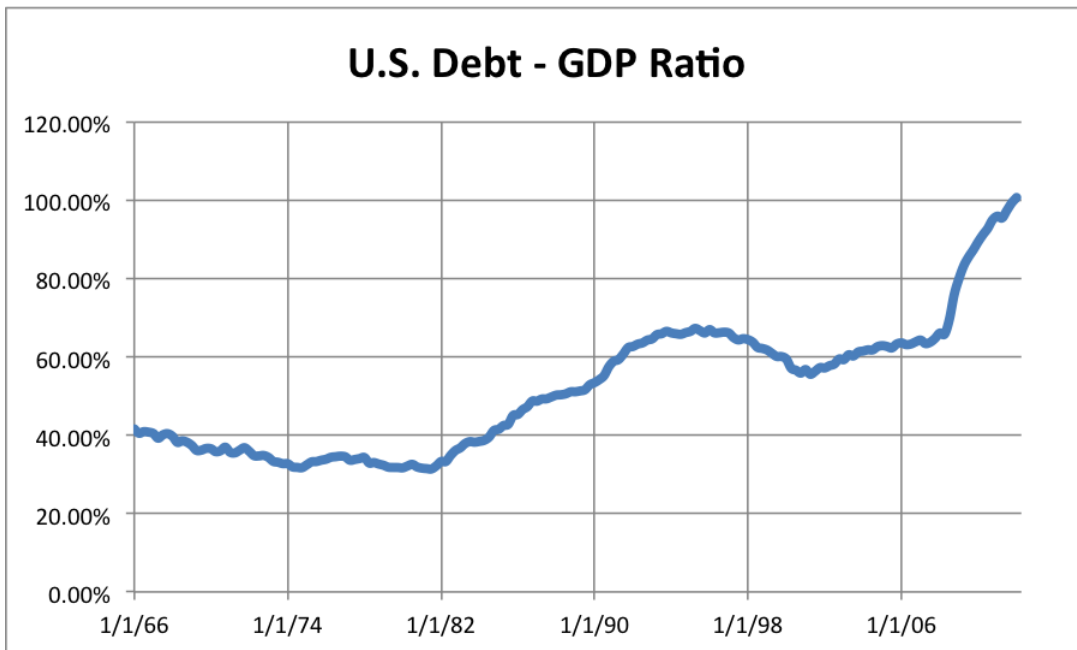
Assume Treasury – Federal Reserve = Debt Held by Financial Institutions	\$1,786.47
Federal Reserve govt. debt plus Debt Held by Financial Institutions	\$12,597.08
Total Federal Debt/GDP	83.56%

Conclusion

The U.S. federal government debt is owned by many different people, governments, businesses, and institutions. But it's important to understand at least the basic components of the debt and how they relate to each other. I hope this has been a small contribution to this discussion.

Update on the U.S. Government Debt

This is an update on the U.S. government debt. I've written about this before, but wanted to be among the first to share some bad news with you. Here it is:



U.S. Debt to GDP Ratio

Yes, you're reading that correctly. In the first quarter, the actual ratio was 100.64%. As always, my methodology is reasonably transparent. [Click here](#) to download the Excel 2011 workbook. That puts the U.S. above France and Germany but at least we're still below Italy, Greece, ... oh, wait, that isn't good news at all.

As a side note, the Obama administration continues to bury data on government web sites. The Treasury site has virtually no data except interest rates. However, the actual numbers have been replaced by some new, shiny graphs. Luckily, I can use the St. Louis Fed's FRED database to get most of what I need. The Bureau of Economic Analysis still publishes nominal GDP.

I'm gonna open a bottle of wine.

Surprise! I Agree with President Obama and Prof. Krugman

Tony Lima
July 24, 2010

On Tuesday (July 20) President Obama met with British P.M. David Cameron. Mr. Cameron stated his intention to cut British government spending by 25 percent in the next three years. Mr. Obama responded that this is not the time to reduce fiscal stimulus. Mr. Cameron's riposte was that the U.K. was in the same category as Greece when it came to the government budget deficit as a percentage of GDP.

I've argued elsewhere [\[1\]](#) that the U.S. fiscal stimulus package took way too long to start the actual spending. And in the same articles I noted that there's a lot more to fiscal policy than government spending, taxes, and transfer payments. Indeed, it's becoming apparent that the regulatory environment (current and expected future) has a potentially larger impact than any traditional fiscal policy tools. (Of course, all economists know this. When you make something more costly, people and businesses will do less of it. And when you increase uncertainty about the future, people and businesses will postpone major decisions.)

But I have to agree with Mr. Obama and Dr. Krugman on one issue. This is no time to engage in contractionary fiscal policy. Cuts in government spending, cuts in transfer payments, or tax increases should all be off the table for the next six months.

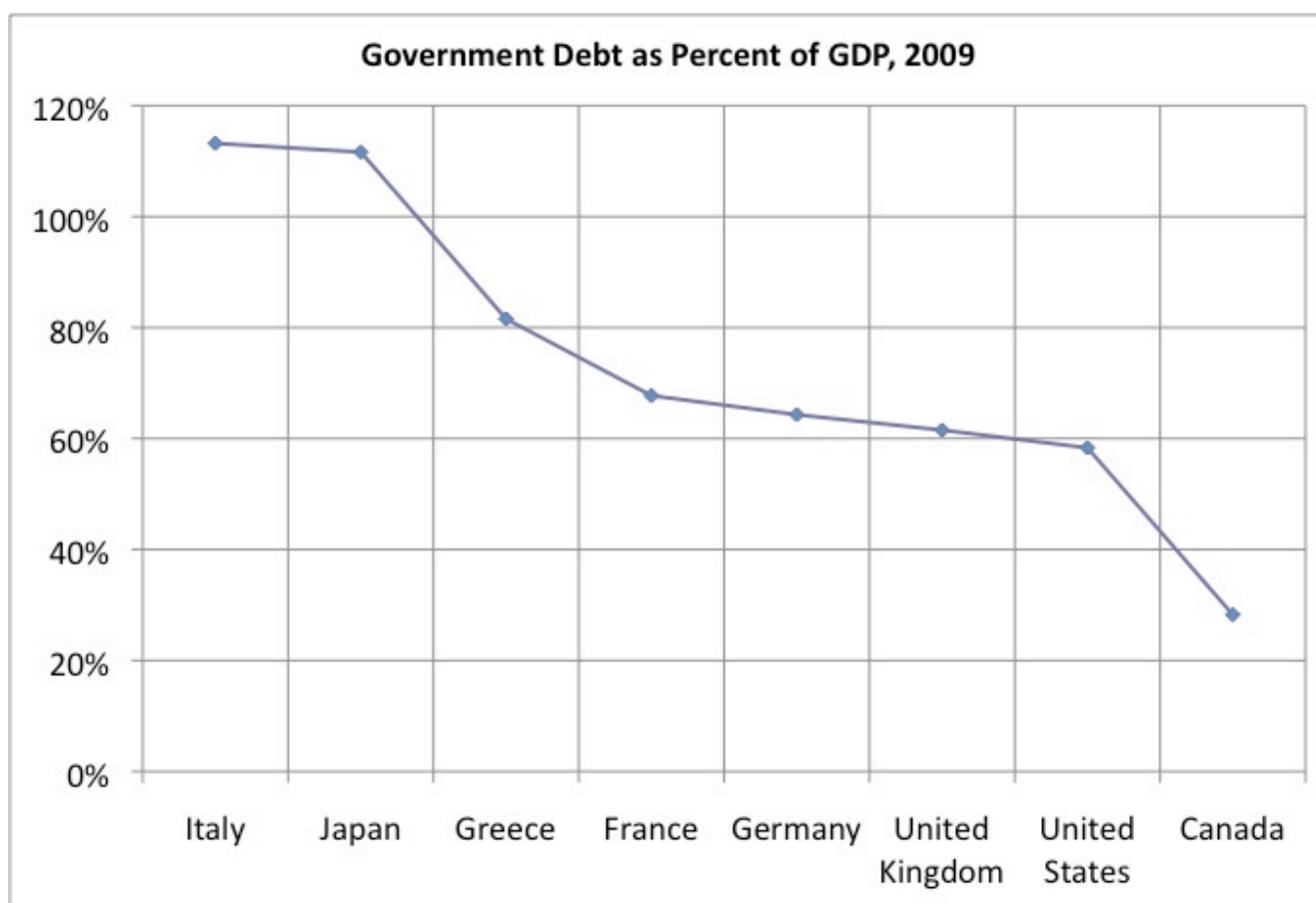
Of course, that's another reason for the sluggish U.S. recovery. Many of the Bush tax cuts expire at the end of this year. The Obama administration appears to have no desire to

extend them. Anticipating tax increases on January 1, individuals and businesses are taking actions this year to avoid higher taxes next year.[\[2\]](#)

Back to the issue at hand. How do various countries stack up on government debt and the government budget deficit?

Debt as a Percentage of GDP

Using data from the International Monetary Fund's World Outlook database,[\[3\]](#) we can find out the government debt as a percentage of GDP for many countries. One curious exception is Greece, a country of great interest lately. I approximated the government debt by adding up the Greek government budget deficits from 1980 – 2009. While I could have found more and/or better data, this is good enough for blogging. The graph below tells the tale.

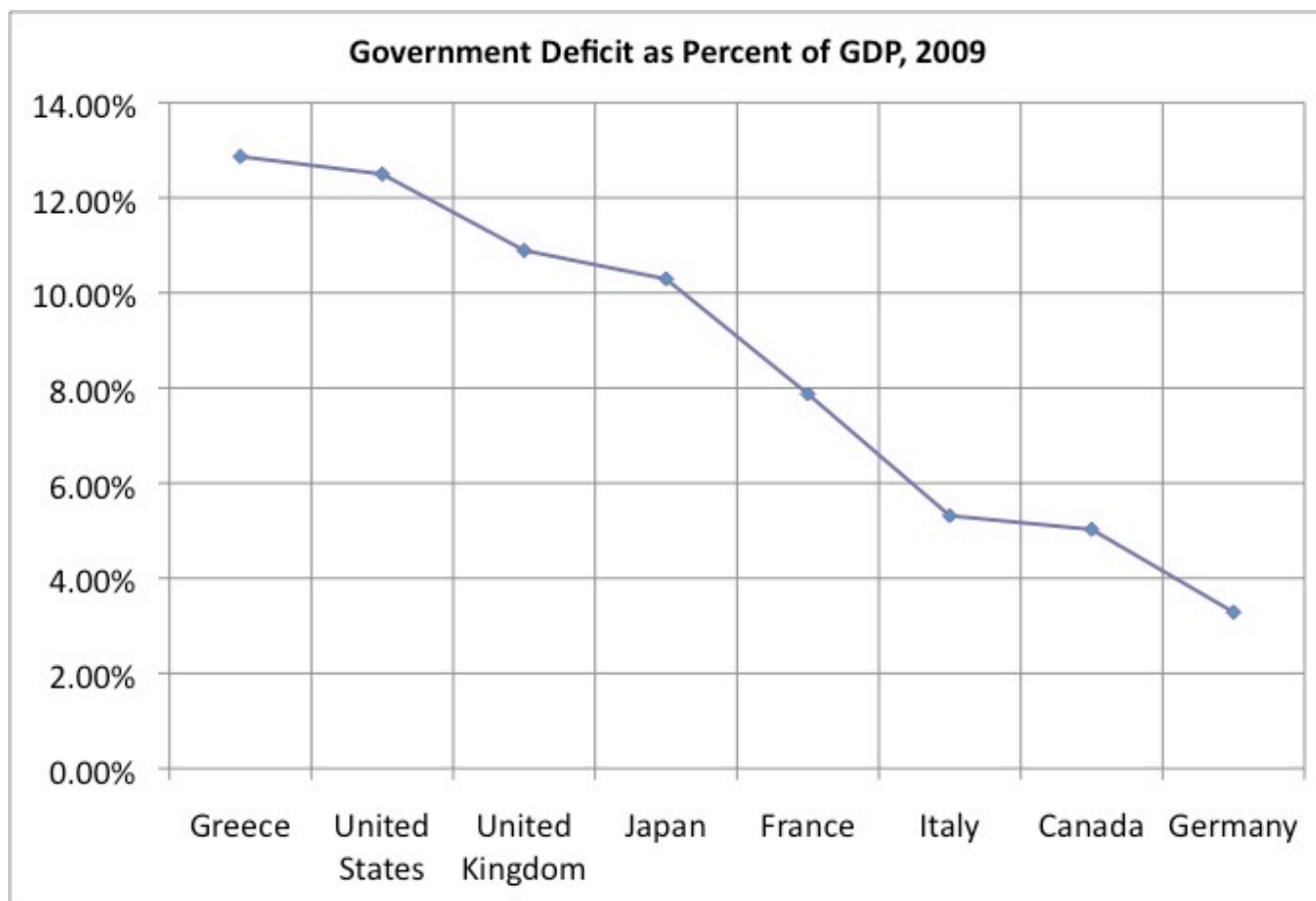


Government debt as a percentage of GDP, 2009

Mr. Cameron's remarks, however, explicitly used deficit as a percentage of GDP, not debt. And with good reason. It's clear that Italy, Japan, and Greece are in a different universe from the U.S. and the U.K. [\[4\]](#)

Deficit as a Percentage of GDP

Looking instead at the government budget deficit relative to GDP we can see what Mr. Cameron is talking about:



Government Budget Deficit as a Percentage of GDP, 2009

Actually, Mr. Cameron is guilty of overstating the case somewhat. The U.K. government deficit is around 11 percent of GDP, significantly less than either Greece or the U.S.

What Does It All Mean?

Let me repeat my original point: a recession is no time to

worry about government budget deficits or the government debt. Mr. Cameron has stated that he wants to reduce the size of the British government by 25 percent in three years. Fine – but make it four years, not three, and postpone the start for a year.

Somewhere, John Maynard Keynes (a loyal British citizen) is spinning in his grave.

[1] <http://gonzoecon.com/?p=116>, <http://gonzoecon.com/?p=90>, <http://gonzoecon.com/?p=22>

[2] If you have any capital gains that are taxable, 2010 is the year to realize them. I've sold quite a bit of stock this year, in part because I expect to have to pay a lot more in capital gains taxes next year.

[3]

<http://www.imf.org/external/pubs/ft/weo/2010/01/weodata/download.aspx>. Accessed July 21, 2010.

[4] Remember, the figure for Greek government debt is almost certainly too low.

Deficits, Debt, and Money: A Primer

Tony Lima
July 24, 2010

This entry originally began as a discussion of government budget deficits in the U.K., the U.S., and other developed countries. As I was writing, I realized that many folks first

need some basic information. There's nothing very complicated in here, but I urge you to read this before the entry on the current situation in North America and Europe.

Are there any three words more often confused in the media? In economics, the only competition is the ongoing confusion between money and income. This article will introduce basic – very basic – concepts. Frankly, no U.S. citizen should be allowed to vote unless they understand this stuff.

First, here are a few definitions. The *government budget deficit* is the difference between what the government spends during a year and its tax revenue. If the government spends more than its tax revenue, we say the government is running a budget deficit.[\[1\]](#)

When the government runs a budget deficit, the difference between spending and revenue is financed by borrowing. Economists are fond of saying, “the government issues debt to finance the difference between its spending and borrowing.” Try that phrase the next time you don't quite pay off a credit card balance at the end of the month: “I had to issue some debt last month.” Sounds a lot better than most of the alternatives, doesn't it?

The *government debt* is the total net borrowing the government has done since the beginning of the country (1776 for the U.S.). To add up the government debt, first add all the annual budget deficits. Then add all the annual budget surpluses (if any). Remember to start adding in the year in which the current form of government began. Subtract total surpluses from total deficits and you have the government debt. This is the amount the government owes those who hold its debt instruments.

The *money supply* is the quantity of money in circulation in an economy. *Money* is anything that is widely accepted in exchange for goods and services in ordinary commercial

transactions. Without going into details,[\[2\]](#) money in most economies includes currency (bills and coins) and total checking account balances.

Money is not the same as income. Consider a simple example. Chris gets paid once a month. At the beginning of each month, Chris's employer deposits \$5,000 into a checking account. Thus, at the beginning of the month, Chris's holding of money equals monthly income. But, of course, Chris doesn't just let that money sit there. It gets spent. So, over the course of a month, Chris mostly holds *less money* than the total income. And this is the point. People usually hold less money than their income.[\[3\]](#)

In the U.S. the Federal Reserve system has been delegated the power to create money. That means the U.S. government only has one option available to finance a budget deficit: borrowing. Remember, this is called *issuing debt*.

Issuing debt usually means some form of government bonds. The U.S. government issues a bewildering array of debt instruments. I'll summarize them shortly, but first you need to know something about bonds in general.

A Bond Primer

A *bond* is a promise to make one or more future payments on specified dates. Most bonds specify the money amount of the bonds. (Some bonds are indexed for inflation. The payments they make can change as the inflation rate changes.) All bonds have two components: the price you pay today (P) and the maturation value (F, also called the face value, par value, and a bunch of other names).

Let's look at a simple example. Suppose you pay \$9,750 today for a bond that promises to pay you \$10,000 one year from now. Your rate of return (interest rate, yield to maturity) on this bond is $(\$10,000 - \$9,750)/\$9,750 = 2.56\%$. Since this

is a one year bond, 2.56% is also the annual yield.[\[4\]](#)

Some bonds also make regular payments once or twice a year. These are called *coupon payments* (often misleadingly called “interest payments”). Coupon payments make the analysis of a bond more complicated, but the principal is the same.

The U.S. government issues three basic classes of debt. *Treasury bills (T-bills)* mature in one year or less. The times to maturity are 30 days, 90 days, 180 days, and one year. *Treasury notes* mature in between one and ten years. The ten-year Treasury note was once the benchmark for long-term debt in the U.S.

U.S. government bonds that mature in more than ten years are called *Treasury bonds*. The longest bond the government issues is 30 years. Today this is the benchmark bond for long-term securities in the U.S.

Not One Printing Press, But Two

There’s actually a point to all this. Think of it this way: the U.S. Department of the Treasury has a printing press. But it can only print U.S. government bonds. In the U.S. there’s a second entity that has a printing press that prints money: the Federal Reserve System (the Fed).[\[5\]](#) Contrary to popular belief, the Federal Reserve is not officially part of the U.S. government. Without going into details, let’s just say it would take an act of Congress for the government to take control of the Fed.[\[6\]](#)

So the U.S. government can’t “print money” to finance its deficit. It’s up to the Fed to decide how much of the newly-issued debt should be purchased with newly-created money.[\[7\]](#)

So what’s the government debt? Nothing more than the sum of all the previous government budget deficits. Naturally, you have to subtract government budget surpluses, but there are

only a few of those so it won't be much of a problem.

The government budget deficit for any year is the net amount of new borrowing done by the government during that year. The government debt is the total amount the government owes.

Wait – who does the government owe the debt to?

Anyone can buy U.S. government debt. China's central bank owns more than \$1 trillion of it.[\[8\]](#) The table below shows ownership in 2009.[\[9\]](#)

Owner (Data is as of July 24, 2010).	Percent of government debt held
Federal Reserve and inter-governmental holdings	43.11%
Depository institutions	1.43%
U.S. Savings Bonds	1.65%
Private pension funds	2.74%
State and local government pension funds	1.48%
Insurance companies	1.85%
Mutual funds	5.82%
State and local government (not pension funds)	4.42%
Foreign and international	29.83%
Other	7.67%

Who Owns U.S. Government Debt?

The reason the Fed owns so much government debt is simple.

When the Fed wants to increase the money supply, they usually purchase government debt using newly-created money. But the number that catches your eye immediately is “foreign and international.” Part of that is owned by foreign central banks, including China’s.

Conclusion

Now that you have some understanding of how the U.S. government’s budget works, you’re ready to handle the debt problem in euro-land. Read the next blog entry here. There are two key, related issues. The first is the total amount of government debt relative to GDP. The second is the government’s budget deficit relative to GDP. For the U.S. and U.K. the government debt is about 60 percent of GDP. For Italy and Japan, debt exceeds 100 percent of GDP. Looking at the deficit as a percentage of GDP for 2009, Greece, the U.S., the U.K., and Japan were all above 10 percent of GDP.

What does this mean? Both more and less than you think. First, looking at the debt relative to GDP is a kind of payback period analysis that answers this question: “If all the productive resources of our society were used to pay off the government debt, how long would it take? If the debt to GDP ratio is 50 percent, it would take 6 months (half a year) to pay off the debt. The deficit as a percentage of GDP gives us some idea of how fast the government is adding debt relative to the growth rate of GDP.

[\[1\]](#) Once upon a time, the U.S. government ran a budget surplus. That’s what we call the case when the government’s tax revenue exceeds its spending. Unfortunately, like the unicorn, government budget surpluses are very scarce these days. Norway remains an interesting exception.

[\[2\]](#) Credit cards are part of the details. If you really want

to know about how credit cards affect the money supply, send me an e-mail. Warning: most, if not all, money and banking textbooks get this wrong.

[3] There are, of course, those exceptional individuals who save part of their incomes. Saving will be placed in non-money instruments (like bonds).

[4] Note that interest is earned on the purchase price, not the face value. This is consistent with the rest of the theory of the time value of money.

[5] Don't confuse the Fed with the Feds. The latter are Treasury Agents. They carry guns and badges. Most of the folks at the Fed don't carry guns.

[6] The Federal Reserve Act of 1913 explicitly makes the Fed independent. Congress would basically have to repeal this law to get control of the Fed.

[7] This is emphatically *not* true in many other countries. Central bank independence from government turns out to be a significant factor in keeping inflation rates low.

[8]

<http://www.nytimes.com/2009/01/08/business/worldbusiness/08yuan.html>. Accessed July 21, 2010.

[9] http://www.fms.treas.gov/bulletin/b2010_2ofs.doc. Accessed July 21, 2010.