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Wednesday, May 18, 2011

Some Simple Deficit Reduction Arithmetic

Here's a short lesson about something that every policy-maker should have learned in Macro 101, but apparently has been forgotten by many of them.

Suppose we are in a country that is running a large budget deficit but, for whatever reason, decides that it needs to dramatically reduce it. Take your pick of examples, because there are plenty to choose from: Greece, the UK, the US...

Suppose that the country – let's call it Austerityland – has a GDP of $100/year, and a budget deficit of $10/yr, or 10% of GDP. And suppose that the government decides it wants to get the deficit down to 5% of GDP. How can it get there?

No, the answer is not "cut spending by $5/yr". Nor is it "raise taxes by $5/yr". And last but not least, it is also not "enact a combination of tax increases and spending cuts that total $5/yr". To see why, let's do just a bit of arithmetic.

To keep things simple (and to make it particularly relevant to the three examples mentioned above), let's focus on the strategy of trying to halve the budget deficit primarily through spending cuts. So the government of Austerityland decides to cut spending by $5/yr. What happens?

Recall that GDP is the sum of spending on final goods and services by domestic consumers, domestic businesses, and the government, along with net exports: $GDP = C + I + G + (X - M) = Y$. Recall as well that GDP is, for our purposes, the same thing as income (Y).

If G is reduced by $5 in Austerityland, the first thing that happens is that GDP falls by $5. But then a bunch of secondary effects kick in, including:

- C falls, since individuals in the economy have seen their income drop by $5. This makes GDP fall even further. This is called the "multiplier effect", and it means that the total fall in GDP is likely to be substantially greater than $5. (Empirical research seems to usually show that the government spending multiplier is in the neighborhood of 1.5, implying that the net fall in GDP will be around $7 or $8.)
- If interest rates are positive, they will tend to fall as demand diminishes, which could boost spending by businesses. But if interest rates are already at zero (as they are effectively are in the US), they will not fall, and we get no boost to private investment.
- Tax revenues fall as income falls. If the effective marginal tax rate on income is 25% and income falls by $4, for example, then tax collections will fall by $1.

So, what is the budget deficit in Austerityland after a $5 reduction in government spending? If we assume a relatively modest multiplier of 1.5, and a tax rate of 25%, then we get:

$\Delta G = -\$5$
$\Delta Y = -\$7.5$
$\Delta T = -\$1.875$

And the new deficit is now $6.875, which is 7.4% of the new level of GDP. Wait, I thought we were trying to get the deficit down to 5% of GDP? What happened?

What happened is that we’ve missed our target, by quite a bit, due to the multiplier effect and the fall in tax revenues that resulted from the shrinking economy. In fact, just a bit of simple algebra allows us to figure out that government spending in Austerityland will have to be cut by about $9 in order to reach a budget deficit target of 5% of GDP. In other words, the government will have to cut spending by almost twice as much as it initially thought it would in order to reach its deficit target.

(When that happens, by the way, GDP will fall from $100 to around $86. Yes, that’s a 14% drop in output. But hey, at least we’ve hit our deficit reduction target!)

Somehow, this simple exercise in macroeconomic math seems beyond the reach of policymakers around the world.

- Many Republicans (and some Democrats) in Washington continue to believe that they can close a $1 trillion deficit by simply cutting $1 trillion in spending, and are apparently hoping to use the debt ceiling vote to do exactly that.
- The Cameron government in the UK embarked on an austerity program last year to try to reduce its budget deficit, and now mysteriously keeps missing its deficit reduction targets as the UK economy shrinks.
- The Greek government was forced into enacting a number of austerity measures last year, and... surprise, surprise... is now missing its deficit targets.

Why do people keep getting surprised that austerity doesn't work as well as hoped to reach budget deficit targets? I know, I know, there are people who argue that basic Macro 101 has it all wrong. Even people who know better (ahem, Douglas Holtz-Eakin) somehow allow ideology to get them to make the bizaare claim that when income goes down, people will actually *increase* spending. Confidence fairies and all that.

But when basic Macro 101 both makes good theoretical sense and also fits what we actually observe, it's really time to start looking for your handy Occam's Razor. I wish I could take more satisfaction from the fact that mainstream macroeconomics, as it has been taught to first-year college and university students around the world for decades, does such a good job explaining what we see happening across the globe today...

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Wednesday, March 23, 2011

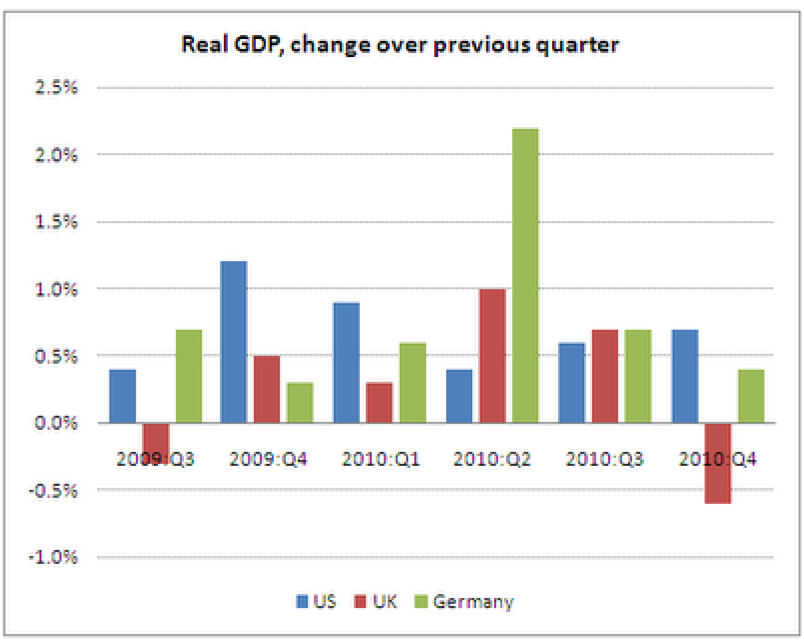
The Effects of Austerity in the UK

The Conservative government in the UK has just released an update on its budget plans for the next several years. Ryan Avent comments:

> **Still Cutting**
>
> YESTERDAY, we learned that British Chancellor George Osborne has a harder task ahead of him than he'd been envisioning. Inflation continues to come in ahead of forecasts; that's no surprise. But it also seems that the government is borrowing more than it had planned to, largely because tax revenues have come in lower than expected. That probably has something to do with the weakening British economy.
>
> Mr Osborne's new budget makes no bones about the likely near-term trajectory for growth. Projected output growth for this year has been revised down to 1.7% from 2.1%, and growth next year may be just 2.5%. Even so, inflation projections are higher. Prices are expected to rise between 4% and 5% this year, though the government reckons the increase will drop to 2.5% in 2012.

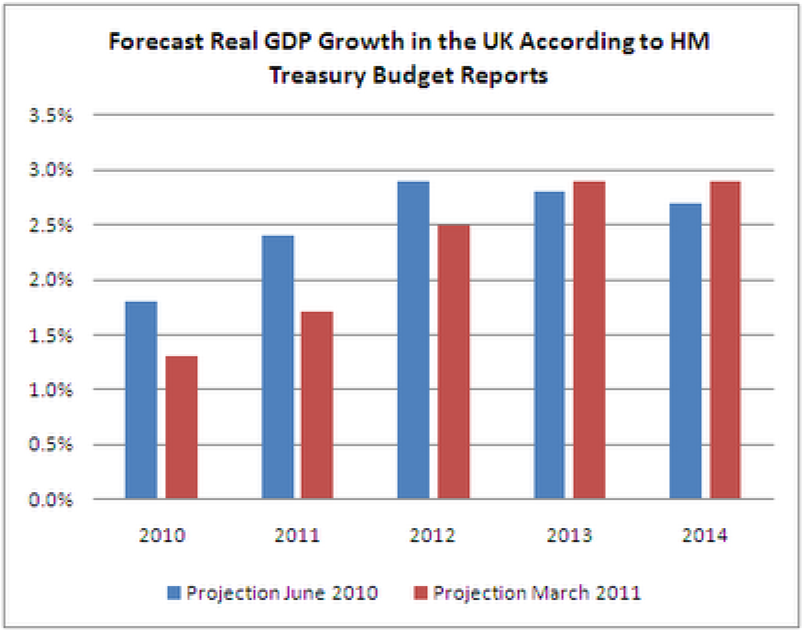
Last year the Cameron government announced that it would pursue an austerity drive in an effort to reduce the budget deficit, cutting government spending and increasing taxes by about £9bn in 2010, £41bn in 2011, and £66bn (about 4% of forecast GDP) in 2012. Because of this sharp and determined fiscal contraction, it forecast that the budget deficit would fall from about 10% of GDP in 2010 to around 3.5% of GDP in 2013.

That turns out to have been a bit optimistic. Unsurprisingly, raising taxes and cutting government spending by a couple of percentage points of GDP over the past year has contributed to a recent sharp slowdown in the British economy, as shown below.

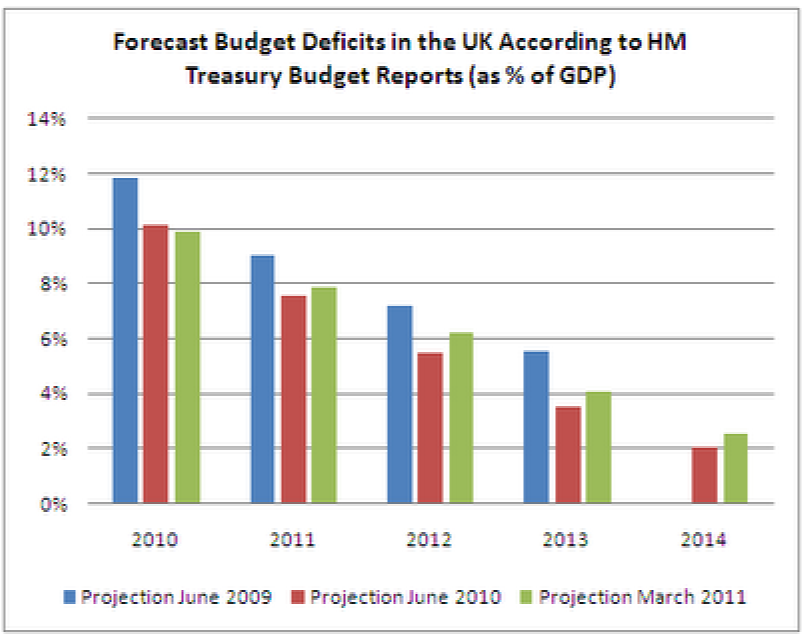


This recent decline in economic activity in the UK is reflected in the forecasts on which the government's new budget is based. The next chart shows how the slowdown in the British economy has forced the

Cameron government to lower its forecasts for GDP growth compared to 9 months ago.



Naturally, reduced economic activity in the UK means that the budget deficit will not fall by as much as hoped. The budget just released indicates that the sharp spending cuts and tax increases will lead to only about half the hoped-for deficit reduction in 2011 and 2012, thanks primarily to the slowdown in the economy caused in large part by... sharp spending cuts and tax increases.



All of this is unsurprising. But it bears keeping in mind as the fiscal clown show in Washington continues, because it provides yet another piece of evidence that mainstream new-Keynesian macroeconomic theory does an excellent job of explaining and predicting real economic events. Which is why we can be fairly sure that efforts to cut government spending during a tentative and rather delicate economic recovery will have a strong negative impact on the economy, and will probably end up failing to meet deficit reduction goals as a result.

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Friday, May 27, 2011

Comparing Two Approaches Toward Deficit Reduction

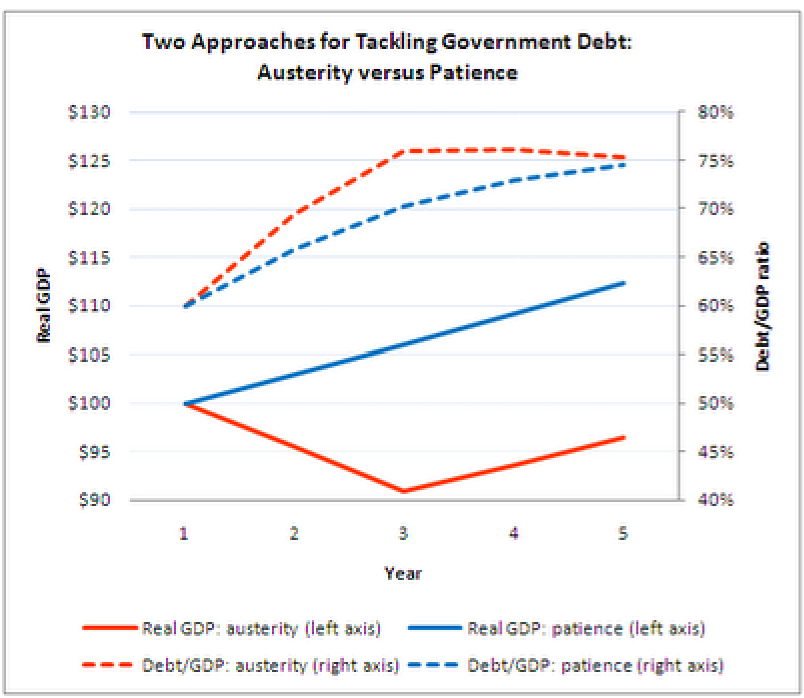
In response to my point that severe austerity is a difficult, costly, and largely counterproductive way to solve a government deficit problem during a time of economic weakness, several readers have asked me what the alternative is. In a word, it's patience.

Economic growth is the single best cure for budget deficits. When the economy does well, tax revenues rise and the deficit falls. A major cause of the budget deficit in the US is the economic downturn. (The other principal culprit is the tax cuts of 2001 and 2003.) And as the economy recovers, the deficit will fall substantially on its own accord, just as it did during the recoveries of the 1980s and 1990s.

To illustrate my point, let's go back to Austerityland. Recall that GDP in Austerityland was $100/year and the budget deficit was $10/year, or an unacceptably high 10% of GDP. Let's also assume an initial debt/GDP ratio of 60%. Suppose that the Austerity Party proposes addressing the budget deficit problem by cutting $5 from government spending in their first year in office and another $5 in their second year in office. (They incorrectly believe that cutting $10 over two years will be sufficient to erase the $10/yr budget deficit.)

Now suppose that there is a rival party: the Growth Party. (Maybe we could call them "The G Party"?) They propose addressing the budget deficit problem through patience. Let the economy grow, they argue, and skip the sharp austerity measures. Instead, just keep government spending constant for a few years, so that spending is gradually brought more in line with tax revenues but a sharp fiscal contraction is avoided.

The results of these two approaches for addressing the country's deficit and debt problem may surprise you. Making a few reasonable assumptions (which are specified below, for those of you who are interested), we can compare the effects of these two alternatives on real GDP and on the debt/GDP ratio. The results are summarized in the chart below.



At the end of the fifth year, the country will still be running budget deficits under either approach (though they'll be somewhat smaller under the austerity program). It will also have a roughly similar amount of debt under either scenario, at approximately 75% of GDP. But the path the country followed to get there will be very different depending on which policy they pursued.

Under the austerity program, the country will have experienced a sharp recession (and possibly deflation), so that by the fifth year the average family will still have less real income than they did before the austerity program. Under the growth program, on the other hand, income will have increased steadily, so that after five years the average family's annual income will be almost 20% higher in real terms than under the austerity program -- while the government's debt burden is no greater. (Of course in year 6 the government may decide to change its policies under either scenario.)

Given this choice, which policy would you vote for?

Note that this exercise assumes the following:
1. The tax rate is 25% and fiscal multiplier is 1.5.
2. The real (i.e. inflation-adjusted) interest rate on government borrowing is 2.0%.
3. The inflation rate averages 0% per year under the austerity scenario and 2.0% per year under the patience scenario.
4. The economy experiences a real growth rate of 3.0% per year in both scenarios (not including the effects of fiscal policy).