Levy Economics Institute of Bard College

Policy Note

2011 / 2

IS THE FEDERAL DEBT UNSUSTAINABLE?

JAMES K. GALBRAITH

By general agreement, the federal budget is on an "unsustainable path." Try typing the phrase into Google News. When I did it, 19 of the first 20 hits referred to the federal debt.

But what does this mean? The phrase is often stated, but rarely defined clearly. One is led to suspect that some who use the phrase are guided by vague fears, or even that they do not quite know what to be afraid of. After a brief discussion of the major worries, this note will attempt to clarify one, and only one, critical issue: the actual behavior of the public-debt-to-GDP ratio under differing economic assumptions through time.

Some people fear that there may come a moment when the government's bond markets would close, forcing a default or "bankruptcy." But this betrays nonunderstanding of both public finances and debt markets. The government controls the legal-tender currency in which its bonds are issued and can always pay its bills with cash. Apart (possibly) from the self-imposed politics of debt ceilings, a US government default on dollar bonds is impossible, and the word "bankruptcy"—which is a court proceeding to protect *private* debtors from their creditors—also does not apply.

A more plausible worry is inflation, alongside depreciation of the dollar, either of which would reduce the real return on government bonds.[1] There are reasons to fear inflation: notably, the threat of rising energy prices in an oil-short world. And a lower dollar is not only happening at the moment, it's actual US government policy, at least with respect to one major currency: the

Senior Scholar JAMES K. GALBRAITH holds the Lloyd M. Bentsen Jr. Chair in Government/Business Relations at the LBJ School of Public Affairs, University of Texas at Austin.

Chinese renminbi. But neither oil-price inflation nor dollar devaluation constitutes default, and neither would be intrinsically "unsustainable."

Runaway inflation actually generated by the budget deficits is harder to worry about. Except for commodities, the economy remains depressed, with nearly 9 percent unemployment and falling home prices. Medical costs are a problem—but they're not a problem caused by budget deficits. So far as I can tell, the "runaway inflation" scenario is based on a fringe fear—that the money deficits create will magically translate into price increases without first having any effect on real activity. Or perhaps that the world will someday suddenly panic and dump the dollar for the euro, yen, or renminbi. That would mean selling US bonds en masse to buy (say) Italian bonds. It could happen, maybe, on some political planet far from this one.[2]

A more prosaic problem with the runaway-inflation scenario is that the "nonpartisan, professional" economic forecasters of the Congressional Budget Office (CBO), whose work is often cited as the benchmark proof of an "unsustainable path," do not expect it to happen. The CBO baseline resolutely asserts that inflation will stay where it is now: around 2 percent. So one can't logically cite the inflation threat and the CBO baseline at the same time. So far as I know, the CBO does not trouble itself to model the exchange value of the dollar.

What the CBO does warn is that, under their assumptions, the ratio of US federal debt (held by the public) to GDP will rise relentlessly, passing 200 percent by 2035 and 300 percent by midcentury. Correspondingly, net interest payments on that debt would rise to exceed 20 percent of GDP. This certainly *seems* worrisome, and the CBO warns about "investor confidence" and "crowding out" without actually building these things into their model. Indeed, in their model this remarkable and unprecedented ratio of debt to GDP goes right along with steady growth, full employment, and low inflation, world without end! Why one should care about mere financial ratios if they produce such good—and, according to the CBO model—"sustainable" results is another mystery the CBO does not explain.

A commonsense definition of an "unsustainable [policy] path" would be: one that eventually must be changed. An unsustainable path is not necessarily bad policy; in a crisis, you take temporary measures (stimulus programs, tax cuts, QE2) that you would not wish to keep up forever. Conversely, a sustainable policy is not necessarily desirable. Our concern here is simply to define sensibly when a "path" is "sustainable" and when it is not. In a 2010 paper for Citigroup, the economist (and former Bank of England adviser) Willem Buiter spelled out the arithmetic of a rising debt-to-GDP ratio. The key formula is the following:

$$\Delta d = -s + d * [(r - g)/(1 + g)]$$

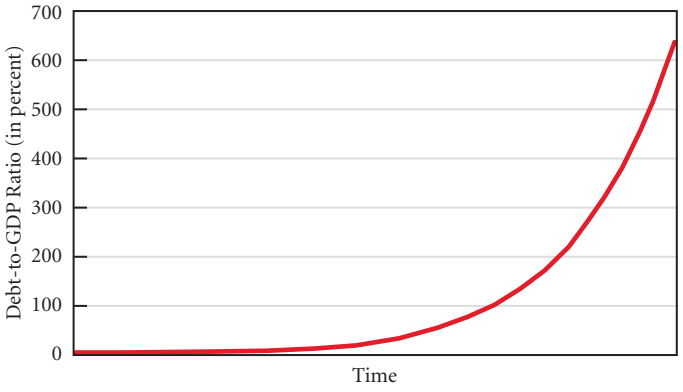
Here, d is the starting ratio of debt to GDP, s is the "primary surplus" or government budget surplus after deducting net interest payments (as shares of GDP), r is the real interest rate, and g is the real rate of GDP growth.[3] This formula permits us to put the discussion of debt sustainability on a much clearer foundation. We can say that a path that leads to uncontrolled and explosive increases in the ratio of debt to GDP is "unsustainable"—in the precise sense that the path will have to be changed to prevent the explosion from occurring. We can say this without having to specify what the bad consequences actually are, as these may vary according to institutional context, from hyperinflation to debt default.

By the same definition, anything that can be reproduced year over year has to be considered sustainable. Any path that eventually stabilizes is sustainable, even if the debt-to-GDP ratio that finally results seems high to us. Again, we can say this without being forced to specify the economic conditions that would pertain. All that matters, for the question of sustainability, is whether a path stabilizes, or not. (For a comprehensive treatment of this issue, including the full literature, see Fullwiler 2007.)

Applying Buiter's formula to Greece in 2009 gives a plain example of an unsustainable dynamic. Greece had a debt-to-GDP ratio of .86 in 2009. It faced a real interest rate on public debt of 4 percent, and a growth rate of -2 percent. Buiter's formula thus stipulates that Greece would have had to shift a large primary deficit to a primary surplus of 5.27 percent of GDP simply in order to keep the debt-to-GDP ratio stable. This was, of course, impossible, especially since attempts at fiscal consolidation would bring on (and did bring on) a further decline in real GDP. The Greek public debt rose by 15 percent of GDP in 2010, according to one recent report.

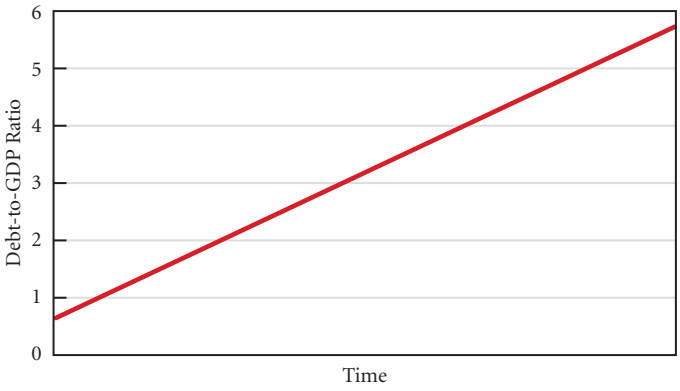
However, even without the effects of fiscal tightening on growth, Greece was (and is still) on an explosive path. Figure 1 shows the growth of the debt-to-GDP ratio for Greece should Buiter's assumptions be prolonged for a century. They won't be;

Figure 1 **An Unsustainable Path: Projected Debt-to-GDP Ratio for Greece Using 2009 Conditions**



Source: Author's calculations

Figure 2 **A Second Unsustainable Path: Projected Debt-to-GDP Ratio for the United States Using Modified CBO Long-Term Baseline Projections**



Source: Author's calculations

with a sustained negative real growth rate Greece would disappear as a country before a century was out. Greece will default or restructure, long before this happens.

Next, let's apply the same analysis to the United States, using the long-term CBO baseline projections, or something close (Figure 2). The CBO appears to call for a real interest rate on US public debt to rise from present negative values to around 3 percent—that is to say, the CBO expects average nominal interest rates on the US debt to run about 5 percent and for the inflation rate to run about 2 percent. A real growth rate of around 2.5 percent is also expected, though I'll modify that to 3 percent to match the long-term average from 1962 through 2010. The starting point is a debt-to-GDP ratio of .74; let's assume the primary surplus is about -5 percent of GDP (and that it stays at that high level, indefinitely).

The path shown is, by our definition, plainly unsustainable, though (by a factor of 100!) not so dire as that of Greece. The projected debt-to-GDP ratio rises steadily, reaching about 300 percent at midcentury, which is about what the CBO's own model would project. It continues rising thereafter.

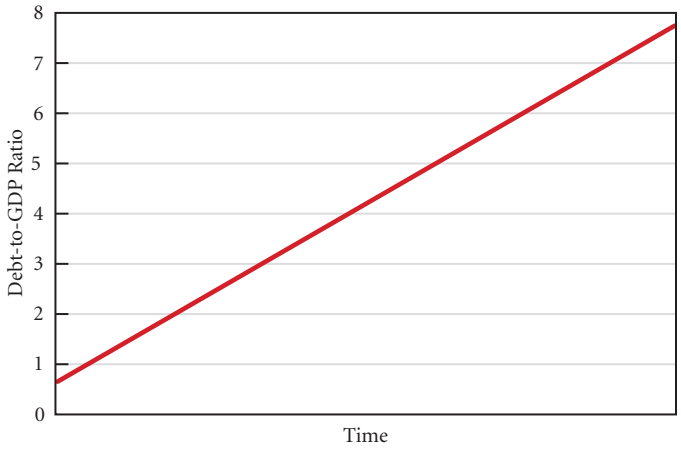
It's worth noting that the big primary deficit is not the dominant source of "unsustainability." If I raise the projected (permanent) primary deficit from 5 to (say) 7 percent of GDP, I get the result shown in Figure 3. Now the increase reaches eight times GDP rather than six, but the pattern is the same. Similarly, if I lower the primary deficit, to any value greater than zero, the path remains unsustainable. Because the growth rate and the real interest rate are assumed to be about equal, my modified CBO baseline requires a primary budget balance for sustainability. *So long as interest rates exceed growth rates, any primary deficit is "unsustainable."*

But are the assumptions reasonable? In particular, how reasonable is it to assume a 3 percent real interest rate on US public debt? Buiter just asserts that governments in the advanced countries will face positive real interest rates on their public debt. He does not explain why this should be so—especially for the United States.

In economic terms, it normally should not be so for a sovereign borrower who controls her own currency and therefore cannot default. Why not? Because to an investor safety is valuable, and because under capitalism making money ought to require taking risk. There is no reason why a 100 percent–safe borrower should pay a positive real rate of return on a liquid borrowing! The federal government doesn't need to compensate for risk. It isn't trying to kill off a high and intractable inflation. It also doesn't need to lock in borrowing over time; it pays the higher rate on long bonds mainly as a gift to banks.[4] Moreover, it controls both the short-term rate and the maturity structure of the public debt, and so can issue as much short debt at a near-zero rate as it needs to.

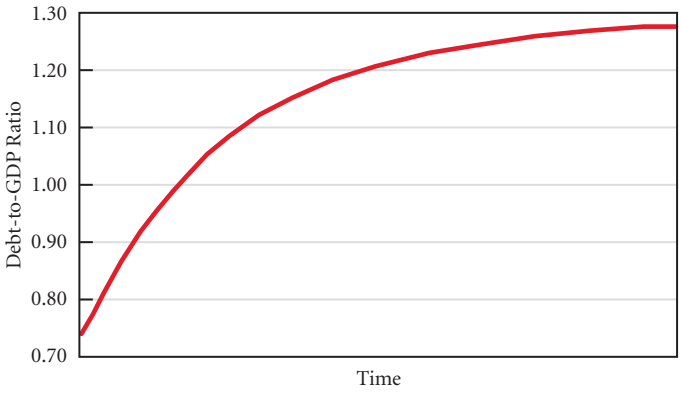
Average real returns on the public debt were in fact negative in 18 of 36 years from 1945 through 1980 (measuring against the realized inflation rate). They were slightly negative on average over that entire period, even if one excludes the postwar inflation of 1946–47. They became highly positive only in the 1980s and 1990s, first because of the Volcker anti-inflation

Figure 3 **Projected Debt-to-GDP Ratio Using CBO Long-Term Baseline Projections but with a Larger Primary Deficit**



Source: Author's calculations

Figure 4 **A Sustainable Path: Projected Debt-to-GDP Ratio with a 1 Percent Average Interest Rate on the Public Debt, 2 Percent Inflation, 3 Percent Real Growth, and a 5 Percent Primary Deficit**



Source: Author's calculations

campaign in 1981 and later because long rates stayed high long after inflation disappeared. Interest rates finally fell in 2000 as the markets slumped and in response to 9/11. By the mid 2000s, average real rates on public debt were back below 2 percent, and were even below 1 percent in some years. Today, with inflation low, consistently negative average real rates on all public debt are again possible, especially if the government stops propping up bank earnings by issuing long-term bonds.

In its baseline forecasts, the CBO simply assumes that short-term interest rates will rise to around 4.5 percent nominal—or 2.5 percent real, given their low-inflation forecast—within five years. This by itself makes their projected debt/GDP path "unsustainable." It's a bizarre assumption. It would also be economically disastrous, since rising rates would clobber the stock, bond, and what remains of the housing markets. The CBO just assumes the disaster wouldn't happen—but it obviously would, and it's plain that their interest rate assumptions are inconsistent with everything else in their forecast.

What happens if, instead, we allow an average interest rate on the public debt of (say) 1 percent or so—to be sustained? Then real rates are modestly negative: -1 percent with a 2 percent rate of inflation. The effect of making that one change in the assumptions is shown in Figure 4.

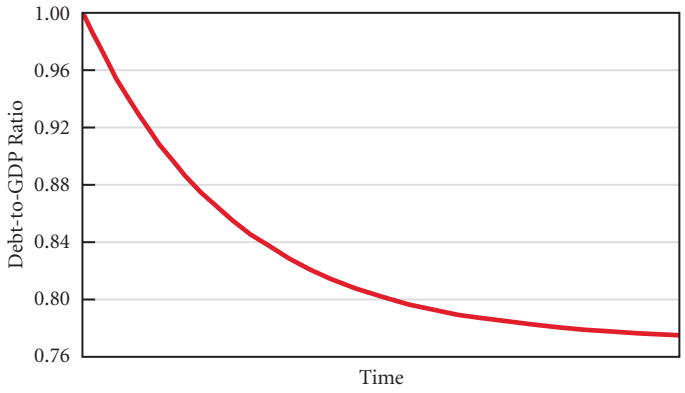
Even if the primary deficit stays at a "shockingly" high 5 percent of GDP, every year, *forever*, the debt-to-GDP ratio no longer rises without limit![5] Instead, it stabilizes at below 130 percent of GDP. This is not far above the highest historical value, 122 percent, reached in 1946. That's a high value, and it may be unattractive. But it is *stable*—that's the point of the calculation—and therefore, by definition, it is not "unsustainable."[6]

Now, suppose we wanted to avoid the increase in debt to GDP represented by this situation. The only other change required is to reduce the primary deficit from (say) 5 percent to the sustainable rate. At the present debt/GDP level of .74 percent, with the given interest and growth assumptions, the required value is a primary deficit of about 2.8 percent of GDP (roughly $420 billion in current dollars). Though that is still a large deficit, it would be very difficult to get there soon, because cuts in public spending and tax increases depress the real growth rate, making stability unattainable.

But, with a (modestly) negative real interest rate, there is no need to get there soon. If we waited for (say) 18 years, running 5 percent of GDP in primary deficits the whole time, the model tells us that the debt-to-GDP ratio would have barely exceeded 100 percent. And, at that time, the required maximum *primary deficit* required to stabilize it would be *higher* than it is today: about 3.8 percent of GDP. That is, waiting would make it easier, not harder, to stabilize the ratio. If a return to high employment should happen between now and then, the required primary deficit would be easily achieved, because tax revenues would rise.

Figure 5 shows the effect of running a 3 percent primary deficit over a century, after first reaching a debt-to-GDP ratio of 100 percent. Notice that the steady state returns, over about 50 years, roughly to where we are today.

Figure 5 A Sustainable and Declining Path: Projected Debt-to-GDP Ratio with a -1 Percent Real Interest Rate, 3 Percent Real Growth, and a 3 Percent Primary Deficit, after Having Reached a Debt-to-GDP Ratio of 100 percent



Source: Author's calculations

Conclusion: It's the Interest Rate, Stupid

The significant conclusion is that there is a devil in the interest rate assumption. If the real interest rate on the public debt is assumed to be greater than the real growth rate, unstable debt dynamics are likely. The offsetting primary surplus that is required for stability is an onerous burden for most countries, and to achieve it in the United States would be practically impossible, since the required cuts would undermine GDP growth and tax revenues. *This is why the various budget plans now in circulation will not work out, if they are ever implemented.* However, where the real interest rate is below the growth rate or even slightly negative, the fiscal balance required for stability is a *primary deficit*, and the sustainable deficit gets larger as the debt "burden" grows. This is why big countries with big public debts can run big deficits and get away with it, as the United States has done almost without interruption since the 1930s.

Compared to other large industrial countries, the position of the United States is even better, because of the global role held by the dollar. For us, it is possible to run a low and even modestly negative real interest rate on the public debt at a *low* rate of inflation, and therefore to sustain quite a large primary deficit, essentially indefinitely and trouble free, so long as we provide a liquid, safe market for the world's monetary assets. Exorbitant privilege that may be—but there are reasons why the United States is not Greece.

At a reasonable interest rate for risk-free liquid bonds, moreover, the present debt/GDP path of the United States is (or would be) sustainable, especially following modest economic recovery. The CBO's assumption, which is that the United States must offer a real interest rate on the public debt higher than the real growth rate, by itself creates an unsustainability that is not otherwise there. It also goes against economic logic and is belied by history. Changing that one assumption completely alters the long-term dynamic of the public debt. By the terms of the CBO's own model, a low interest rate erases the notion that the US debt-to-GDP ratio is on an "unsustainable path."

The prudent policy conclusion is*: keep the projected interest rate down. Otherwise, stay cool.* There is no need for radical reductions in future spending plans, or for cuts in Social Security or Medicare benefits, to achieve this. Do not change the expected primary deficit abruptly. Let the economy recover through time, and do not worry if the debt-to-GDP ratio rises for a while. If we follow the present fiscal *and monetary* path for 15 or 20 years—and if that path achieves an acceptable rate of growth and return to high employment, with positive but low inflation—we'll see a debt-to-GDP ratio higher than now but still within our own postwar experience and that of other wealthy, stable, prosperous countries. At that time, it may well be that the primary deficit will *already* be below the value required for a stable debt-to-GDP ratio, since the threshold will be higher, and tax revenues rise as incomes recover.[7]

And in that case, the ratio of debt to GDP, having risen, will start a gradual decline, as it did consistently from 1946 to 1980. It did this, back then, for exactly the same reasons: a high initial ratio and a low real interest rate. The present panic over this issue will be proven groundless.

Many decades hence, the entire kerfuffle over "unsustainable paths" for the debt-to-GDP ratio will be remembered as today we remember the grand old Duke of York:

The Grand old Duke of York,
He had ten thousand men.
He marched them up to the top of the hill
And he marched them down again.

Notes

1. When Standard & Poor's issued its "downgrade warning" against US government debt, many people assumed that the warning referred to inflation or devaluation risk. Logically, though, this cannot be the case. Inflation and a falling dollar would affect the real return not only on US government bonds, but also on every long-dated asset issued in dollars: corporate bonds, municipals, and even bonds issued in dollars by foreign governments and firms. A downgrade warning due to these causes should have applied equally to all (rated) dollar bonds, regardless of who issued them or what their default risk. But S&P only mentioned US government bonds.
2. The gold enthusiasts think otherwise, but fortunately, their influence is limited to one thin and volatile market.
3. I follow Buiter here, although it seems to me that the growth rate in the denominator should be nominal rather than real. With low inflation, it makes only a minor difference to the calculations.
4. For details, see "Banks Play Shell Game with Taxpayer Dollars" (2011).
5. The CBO's baseline actually shows a declining primary deficit over five years, but then pushes it back up with a series of ad hoc policy and economic assumptions, such as extension of the Bush tax cuts and runaway health care costs. For simplicity, I ignore these compositional details and assume a constant, continuing high primary deficit indefinitely.
6. If the primary deficit is larger, or the growth rate a bit lower, the path still stabilizes eventually. For example, a growth rate of 2.5 percent (the CBO's own value) yields a stable debt-to-GDP ratio under 150 percent. The logic is that with the real interest rate below real growth, the primary deficit that is consistent with stability slowly gets larger over time, until, eventually, it equals the actual primary deficit. At that point, and thereafter, the debt-to-GDP ratio is stable.
7. If not, modest progressive tax increases *effective at that time* will do the job.

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