

BY BARRY EICHENGREEN

Herbert Stein, economic adviser to presidents Nixon and Ford, famously quipped that “if something cannot go on forever, it will stop.” Stein was prosaically describing a fundamental concept in finance – that of sustainability. More concretely, he was describing the perilous state of U.S. federal government debt. As he went on to say in the very next sentence, “So, what we have learned about all these things is that the federal debt cannot rise forever relative to the GNP.”

Stein issued his dire warning in – wait for it – 1986, when debt held by the public was an alarming 37 percent of GDP. But no government debt default, runaway inflation or other public-debt-related calamity befell the country in the subsequent 30-plus years. To be sure, there were economic crises, but their causes lay elsewhere.

Of course, as Little Orphan Annie put it, there’s always tomorrow. Since 1986, the debt of the federal government held by the public has ballooned to 78 percent of GDP. Is the denouement of which Stein warned now on the horizon? Or are cautions that the government’s debt is unsustainable as off base now as then?

A variety of respectable analysts with no partisan ax to grind do, in fact, fear that the debt-to-GDP ratio – the widely used metric of government debt burden – is spiraling out of control. In its latest long-term budget outlook, the Congressional Budget Office esti-



mated that this ratio will approach 100 percent by the end of the coming decade and reach 152 percent in 2048 if current laws remain unchanged. And if spending and/or taxes aren’t amended thereafter, the debt ratio will explode upward without limit.

But other observers question whether budget deficits, current and prospective, would truly render the U.S. government’s debt unsustainable. These skeptics make odd bedfellows, ranging from Keynesian economists on the left to President Trump on the

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right. Implicitly, they all challenge one or more of the assumptions underlying the CBO's projections.

The Keynesians question whether the interest rates the government must pay to persuade people to hold its debt will in fact rise to the higher levels seen in crises of fiscal distress – and, specifically, whether interest rates will escalate in response to rising debt burdens. Trump and his advisers come at the issue from a very different perspective, rejecting the CBO's assumption that the potential growth rate of the U.S. economy is around 2 percent. They put the figure at 4, 6 or 8 percent, depending on the tweet.

Still other critics question the baseline CBO assumption that current law will remain unchanged, pointing to the need – and therefore the high likelihood – of tax increases and/or reductions in outlays for entitlements, including Social Security and Medicare. They invoke Stein's law to buttress their take on modern political economy.

DOING THE MATH

Why do even modestly different assumptions lead to very different conclusions about debt sustainability? Forgive me for injecting a bit of math here – I promise it will be almost painless.

This inequality shows the circumstances under which the government budget deficit will explode:

Surplus $<$ $(r-g)$ multiplied by the debt/GDP ratio.

Here *Surplus* refers to the primary budget surplus, meaning revenues minus non-interest spending, as opposed to total spending; r denotes the real interest rate (the nominal interest rate net of the rate of inflation), while g is the rate of growth of GDP net of inflation. As before, *debt* means debt held by the public only. (When debt is held by the Federal Re-

serve, the interest payments it receives from the Treasury are returned as profits, canceling out the impact.)

This equation is telling us that if the real interest rate is greater than the real growth rate, as economists generally assume it will be, then the debt ratio will rise even if the budget deficit, net of interest payments, is zero. Intuitively, when government spending on items other than interest exhausts available revenues, interest expenses will have to be met by issuing additional debt. This government borrowing will raise the numerator of the debt/GDP ratio faster than economic growth raises the denominator when the real interest rate exceeds the real growth rate.

But, of course, it will have the opposite effect if the growth rate exceeds the interest rate. Hence, different assumptions about the evolution of the difference between the real interest rate and the real growth rate yield very different implications for how one views the sustainability of the debt.

Further, the higher the debt/GDP ratio, the larger the primary surplus that the government must run to prevent the debt burden from rising. Say the interest rate is 4 percent and the economy's growth rate is 2 percent. If the debt/GDP ratio is 78 percent (as it is currently), the federal government would need to run a primary surplus of 1.6 percent of GDP – and do so forever – to keep the debt ratio from breaking away. But if the debt/GDP ratio is 152 percent, as the CBO projects it will be in 2046 under current law, the primary surplus required to prevent the debt from exploding will be more than 3 percent of GDP.

In principle, then, a low debt ratio and a high debt ratio can be equally sustainable. But the budgetary discipline required to ensure the sustainability of high debt is more demanding.

This last observation points, in turn, to a



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more sophisticated way of thinking about the sustainability of government debt. The relevant question is not whether the debt ratio is high or low. Rather, it is how responsive the primary budget balance is to the debt/GDP ratio. Will the authorities cut spending and increase taxes when the debt/GDP ratio rises? More to the point, will they increase taxes and cut spending sufficiently to manage the debt? And will they be able to maintain the needed primary surplus indefinitely, or succumb to “fiscal fatigue?”

Hence, it is not the CBO projection of a rising debt/GDP ratio that fans fears the U.S. debt ratio is unsustainable. Rather, it is the inability of Congress and the White House to agree on fiscal measures that strengthen the primary budget balance – and not just sufficiently, but at all.

Take one more look at the equation. Note that if the interest rate rises, debt sustainability can become even more tenuous because stabilizing the debt/GDP ratio will require even greater improvements in the primary budget balance. That’s bad news because one would expect the interest rate required to induce investors to hold federal debt in their portfolios to rise as the debt ratio increases. After all, the heavier the debt burden and the higher the interest rate, the more politically challenging debt sustainability becomes. Even Keynesian economists who point out that low interest rates in the teeth of big deficits have proved remarkably persistent would acknowledge that they won’t last forever.

Moreover, investor fears can be self-fulfilling. If investors decide for one reason or another to demand an interest rate bump to hold government debt, the likelihood that the government can generate the requisite primary surpluses, which are now larger, will be correspondingly reduced.

HARD – BUT NOT IMPOSSIBLE

History, in fact, does offer a number of examples of governments that have stabilized their public debts at high levels and even paid down substantial fractions of those debts by running large budget surpluses for extended periods. A classic instance is Britain after the Napoleonic Wars. British public debt in 1822 was 194 percent of GDP, almost three times the burden currently borne by the United States. Yet that debt was successfully reduced to just 28 percent of GDP over the subsequent 90 years.

A number of aspects of this debt-consolidation episode (apart from the sheer extent of the debt-ratio decline) are noteworthy. First, the very heavy debts with which Britain emerged from the wars with France did not obviously hinder economic growth; GDP per capita was higher than anywhere else in Europe on the eve of World War I. Britain did grow somewhat more slowly than some of its continental competitors over the 1822-1914 period. But this was as much a reflection of the fact that the others started out behind as it was of any burden of Britain’s debt.

Second, debt reduction was entirely a result of the government running primary budget surpluses. The primary surplus averaged 1.6 percent of GDP for fully nine decades. The only time the government ran a deficit was when it was fighting the Boer War. There was no contribution to debt reduction from inflation, Britain being on the gold standard throughout the period. This suggests that even very high debts can be sustained entirely by running primary surpluses if a government and society are truly committed to it.

There have been other instances in which high debts were brought down by governments running large and persistent primary budget surpluses – the United States after the Civil War and France after the Franco-Prussian

War come to mind. But none was as dramatic or extended over as long a period. So how did Britain do it?

In his insightful 2003 book, *A Free Nation Deep in Debt*, the historian James MacDonald explains that the commitment to debt reduction was in part a matter of the political influence of the creditor class that dominated parliamentary deliberations, and in part a re-

role and functions of government, creating pressures for public spending. Putting a substantial share of government revenues toward retiring public debt rather than paying for roads, schools and pensions becomes correspondingly harder.

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flection of belief in limited government untested by popular pressure for social welfare expenditures. William Gladstone, arguably the most influential 19th-century chancellor of the exchequer (a capacity in which he served four separate times), articulated a philosophy of "sound finance" emphasizing the virtues of budget surpluses and minimal government expenditure.

Finally, there was a role for good luck. Britain was spared from wars on the scale of the Napoleonic conflict and World War I, which bookended the long period of fiscal prudence. The Boer War, by comparison, was a mere fiscal hiccup.

Understanding the circumstances that rendered Britain's Napoleonic War debts sustainable helps to shed light on why governments find it difficult to manage much lighter debts today. In an age of mass democracy, fiscal policy is politically charged. Creditors with a vested interest in the maintenance of debt service are no longer the exclusive or even dominant voice in budget debates. Modern societies have more expansive views of the

majority of households, who are also a majority of voters, becomes impossible to resist. Finally, few governments share Britain's good luck in the century that ended in 1914. More typically, growth is disrupted and the fiscal balance is upended by a financial crisis, a major war or another calamity.

One way of understanding whether it is still possible in the age of large government and mass democracy to sustain high debt ratios by running large, persistent primary budget surpluses is by looking at the actual behavior of governments since 1970. The answer to this question, it turns out, is "yes, but only under exceptional circumstances."

Ugo Panizza and I addressed this question, using data for 54 emerging and advanced economies. We found just 12 instances of countries that sustained primary surpluses as large as 3 percent of GDP for at least 10 years. A number of these episodes reflect special circumstances, such as the double-digit surpluses run by Norway as a result of massive natural-gas revenues. Others, such as Belgium after 1994, reflect institutional reforms



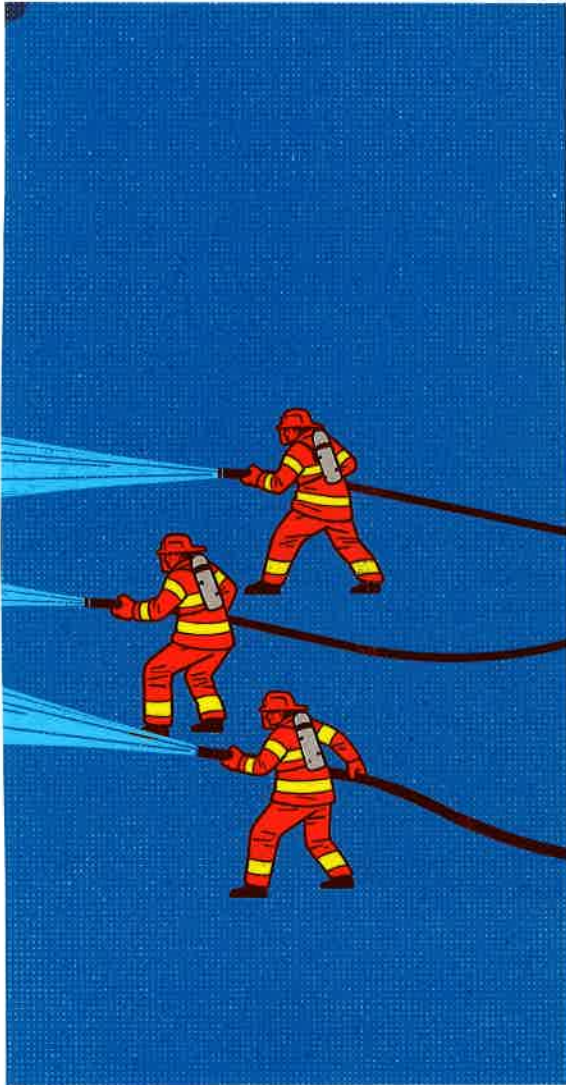
designed to strengthen the budget – the creation of a Federal Planning Bureau to issue nonpartisan, independent budget forecasts and new laws constraining spending by regional governments – which points to the importance of institutions for debt sustainability.

But as we extend the horizon beyond 10 years, the number of countries running primary surpluses of at least 3 percent of GDP tapers to a handful. Even Belgium's run of large primary surpluses ended after 15 years,

seemingly once and for all, with the onset of the global financial crisis.

These results are sobering when juxtaposed with the Greek government's recent agreement with the European Union in the wake of the financial crisis. Greece currently has a public debt of nearly 180 percent of GDP. In return for receiving a drip feed of financial assistance from its EU partners, the Greek government is committed to running primary budget surpluses of at least 2 percent

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of GDP for more than four decades – until 2060. Britain, as noted earlier, did run a 1.6 percent surplus for far longer after the Napoleonic Wars. Thus, the achievement would not be unprecedented. But under 21st-century circumstances, it would be exceptional.

PLAN B

So if it turns out to be politically infeasible for a government to run the primary surpluses needed to render its high debt sustain-

able, what might it do instead? One option is to halt payments and be declared in default by the International Swaps and Derivatives Association, which oversees trading in the credit-default swaps that investors use to insure against such events. Elected officials are understandably reluctant to default when their debt securities are held by domestic constituents. But governments have been less resistant to default when their debt is held externally by foreign banks, mutual funds, hedge funds and individuals.

That said, defaults on domestic debt are not unknown. Carmen Reinhart and Kenneth Rogoff catalog 68 cases of domestic debt de-

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fault since 1800, compared with 250 instances of external debt default. Many of these are partial defaults dressed up for domestic consumption – for example, through the conversion of old bonds into new ones – indicative of political sensitivities.

From a legal standpoint as opposed to a political standpoint, on the other hand, domestic default is easier because it can be implemented by national legislation and adjudicated by domestic courts. In 1933, when President Franklin Delano Roosevelt took the United States off the gold standard, depreciated the exchange value of the dollar, and ignored the clauses in U.S. government bonds guaranteeing investors payment in dollars of constant gold content, he was taking advantage of authorization provided by

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the Thomas Amendment to the Agricultural Adjustment Act, which had been adopted by Congress earlier that year. Some investors saw his abrogation of the gold clauses as an act of default and challenged it in court. The Supreme Court ultimately affirmed the constitutionality of the measure, bringing the dispute to a clean and decisive end.

The legalities surrounding external defaults are messier. Traditionally, sovereign governments have asserted their immunity, so they

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can be sued only in their own courts – a privilege they rarely if ever grant foreign investors. More recently, the laws surrounding sovereign immunity have been tempered, and foreign courts have sought to assert more authority over such matters. Thus, after Argentina defaulted on its external debt in 2001, a court authorized one of its investors, the hedge fund subsidiary NML Capital, to seize an Argentine naval vessel docked near Accra, Ghana.

Such incidents, which investors use as leverage, give rise to lengthy legal disputes. These are typically resolved when the government and investors reach a mutually acceptable compromise, generally involving partial repayment.

How damaging is default to the creditworthiness of the government? The injury is both serious and repairable. The government will be unable to sell new bonds so long as the default is unresolved and memory of the event is

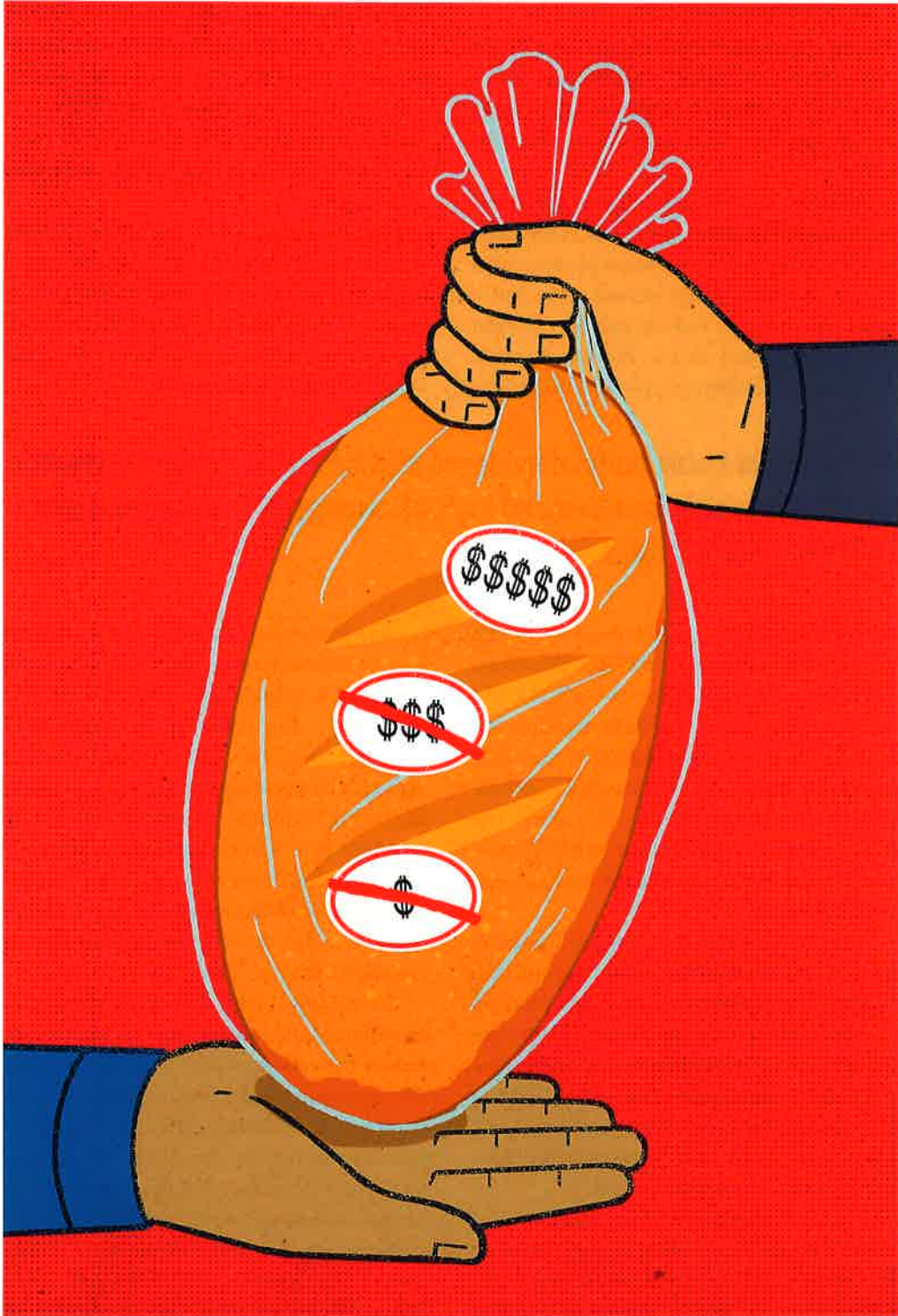
fresh. But memories fade. And a restructuring that reduces the debt burden significantly can enhance the government's perceived capacity to service new debt. Indeed, if the country puts in place reforms addressing the weaknesses that led to earlier problems, it may be able to repair its credit and get back into the market relatively quickly.

Thus, the U.S. government had no difficulty issuing additional debt after 1933 despite its abrogation of the gold clauses. FDR repegged the dollar to gold in January 1934 (at a higher price than before), affirming that the debt would not be inflated away. Meanwhile, recovery of the economy from the Great Depression confirmed that the Treasury would have the capacity to service additional obligations.

Argentina's default in 2001 was only the latest in a long series of similar instances spanning the country's history, but it was back in the market by 2016. In 2017, it was able to issue a "century bond," \$2.75 billion worth of dollar-denominated government securities with an interest rate of 7 percent and a maturity of 100 years.

PLAN C

The alternative to default is inflation. This is the more common approach when debt is held by domestic interests. For one thing, eroding the real burden of the debt through inflation can proceed incrementally, and may be less visible and disturbing to domestic investors than default and repudiation. For another, domestic debt tends to be denominated in the local currency and is not generally indexed for inflation. By contrast, bonds marketed to foreign investors have tended to be denominated in stable foreign currencies and are therefore immune to erosion by domestic inflation. Recently, emerging-market economies have had greater success at selling



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domestic-currency-denominated debt to foreign as well as domestic investors, which suggests that when debt problems again arise, issuers may be more inclined to resort to inflation.

Inflation can be used to bring down the real value of the debt only if it takes investors by surprise or if other measures prevent them from demanding higher interest rates. Those other measures can include statutory interest rate ceilings, such as the Federal Reserve's Regulation Q ceilings on the rates that banks

than relying on demand deposits) is not vulnerable to a bank run, a government that issues only long-term debt is not susceptible to a debt run. But a government that must fund itself by issuing short-term debt always faces the risk that investors will not roll over their maturing claims.

Inflation or fears of expropriation that provoke this reaction may leave only the central bank as a willing purchaser of the government's debt, leading to an explosive inflationary spiral. France in 1924-26 is a classic instance of this phenomenon.

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were permitted to pay on deposits in the United States until the late 1970s. The effects of Regulation Q spilled over to the bond market since low returns on bank accounts led households to buy government bonds, driving down yields. Parallel measures include bank reserve requirements, which create artificial demand for government bonds because commercial banks are obliged to hold government bonds.

The generic name for these policies is "financial repression." More often than not, they pop up when a government has a debt problem.

Once inflation is no longer a surprise, though, investors will respond by purchasing only short-term debt. Long-term debt is more vulnerable to erosion by inflation, since more years to maturity gives inflation more time to work its corrosive effects.

From the standpoint of financial stability, this is a negative side effect of resorting to inflation to manage debt. In the same way that a bank that funds itself by issuing CDs (rather

Moreover, once investors' enthusiasm for long-term government debt has been dimmed by inflation, it may take a long time to win them back. The Italian government developed debt problems in the 1970s, which it managed by resorting to inflation. As a result, the average maturity of Italian government debt held by investors shortened significantly. Inflation came down at the start of the 1980s, but it took until the end of the decade to persuade investors to hold longer-term debt at reasonable interest rates.

Confidence being fragile, governments sometimes take radical steps to reassure investors they will not use inflation as a debt-management tool. Argentina, with its notorious fiscal history, famously pegged its peso one-to-one to the dollar in 1991 by adopting a "currency board" – a system in which a country effectively cedes control over its money supply to the international currency market. The problem with this approach is that a pegged currency can always be un-

pegged if the debt problem becomes otherwise unmanageable, as happened there in 2001.

A more extreme case is that of Greece and other members of the euro area, which eliminated the risk of domestic inflation by eliminating the domestic currency. (In principle, that domestic currency could be reintroduced and depreciated, but experience has shown that this is unlikely.) The implications for debt sustainability have been mixed, to put an understated gloss on the point. When times were good (before 2009) the perception that Greece no longer had the option of inflating brought interest rates down and made its debt look more sustainable. But when things went south starting in 2010, the realization that Greece no longer had a central bank with the capacity to absorb government bonds by printing domestic currency – leaving only the options of generating politically demanding primary surpluses or a mega-default – caused investors to panic. Interest rates shot up, calling the sustainability of the debt into question.

The point is more general. When debt burdens are low and times are good, countries with their own central banks to backstop markets in government securities pay roughly the same interest rate as members of the euro area. But as debt burdens rise, interest rates rise faster in euro area countries, since investors fear that their governments may resort to alternatives like default that are even more painful than inflation. Moreover, as interest rates rise, debts are less likely to remain sustainable, as we've seen. That's why a country like the United States has more debt-carrying capacity than Italy or Greece.


THE 15-TRILLION DOLLAR QUESTION

So what does all this tell us about the sustainability of U.S. government debt? Most obviously, it suggests that gauging debt sus-

tainability is no simple matter. There is no magic numerical threshold – 90 percent of GDP or any other – where growth falls off a cliff and debt suddenly becomes unmanageable. But there is a considerable body of evidence that heavy debts slow economic growth. Simple supply-and-demand logic also suggests that heavy debts lead to higher interest rates.

We have seen how the interest rate-growth rate differential is a key determinant of debt sustainability. But the exact point at which interest rates begin to rise and growth begins to fall is impossible to forecast. For now, the United States remains in the happy position in which the growth rate significantly exceeds the interest rate. Whether and for how long this will remain the case is unclear.

A larger excess of the interest rate over the growth rate can in principle be offset by a larger primary budget surplus. But whether modern democracies – the United States, in particular – possess the capacity to run the required primary surpluses is fundamentally a political question. James Carville, Bill Clinton's campaign manager, famously remarked that politics are all about "the economy, stupid." One might say that the economics of debt sustainability are all about the politics, stupid.

One thing we, meaning social scientists, don't understand well are the political conditions under which countries succeed in achieving major fiscal consolidations – that is, in running large primary surpluses for extended periods. None of the obvious political characteristics of countries – left-wing versus right-wing governments, presidential versus parliamentary systems, first-past-the-post versus proportional elections – takes us very far. And until we understand the political determinants of this capacity better, the sustainability of debts will continue to be  uncertain and disputed.

