Fiscal Sustainability Issues and Their Implications for Monetary Policy

Introduction

John F. Cogan

Good afternoon. I'm John Cogan. I'm pleased to moderate this discussion of Fiscal Sustainability Issues and Their Implications for Monetary Policy.

US fiscal policy has been on a dangerous path. For more than half a century, the US government has run annual budget deficits. The only exception to the unprecedented string of deficits is a brief period during the dot-com boom.

Unfortunately, recent Congresses and presidents have worked particularly hard to make sure we continue down this perilous road. When the Treasury closes its books at the end of this fiscal year, it will report that federal spending, excluding interest on the debt, will be about $6 trillion. This amount is 50% larger than federal spending in 2019, the year before the COVID-19 pandemic. Add in interest payments, and it's 60% larger.

That temporary surge in government spending during the pandemic is now in the process of becoming a permanent fixture in the budget. The outcome, absent fiscal restraint, is primary deficits of $1 trillion that will soon become $2 trillion, then $3 trillion.

It would be one thing if the deficits were used to finance investments in the future. But in the United States, only about 5% of federal spending is for nondefense infrastructure projects, research and development, and education programs. Most expenditures consist of transfer payments.

The United States, of course, is not the only country running deficits. Most advanced countries are also experiencing large deficits.

Both history and economics teach us that the path we are on will ultimately have serious adverse economic consequences. What are the likely consequences? How will they manifest themselves? Can they be avoided? Is there a way off this fiscal path? What are the consequences for monetary policy? How should the Fed conduct monetary policy in the face of the fiscal challenge?

Our panel of outstanding scholars will provide definitive answers to these questions, many of which will surely come from our audience. Our panelists are Alan Auerbach from the University of California, Berkeley; Michael Boskin from the Hoover Institution; Hanno Lustig from the Stanford Graduate School of Business; and John Cochrane from the Hoover Institution.

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Fiscal Unsustainability and the Risk of Inflation

Alan J. Auerbach

I have been concerned about US deficits for about thirty-five years, and over this period, I have warned about the dangers of continuing to run them. During this period, projections of bad economic effects have seemed off base as interest rates fell, inflation (until recently) was modest, and the dollar remained the world's reserve currency. I may have lost credibility at this point, but I am here to argue that this time is different. There are several reasons.

First, the debt-to-GDP ratio we currently have—about one—is substantially higher than what it was when my concerns about deficits first arose, and about three times what it was before the Global Financial Crisis. Also, the evolution of the ratio over time has taken on a different pattern. In the past, the debt-to-GDP ratio tended to ebb and flow, with no obvious trend. Since the beginning of the Global Financial Crisis, however, we have experienced two big jumps in the debt-to-GDP ratio: one associated with the financial crisis itself and the other associated with the pandemic. Notably, these jumps—unlike, for example, the jump during World War II—were not succeeded by any reversal in the recoveries that followed. The United States had an all-time high debt-to-GDP ratio of slightly over 100% at the end of World War II, and it fell quite rapidly after that. But the big

jumps we had during and after the financial crisis, as well as those arising from the pandemic-induced recession, have not reversed. In each case, we reached a new plateau of the debt-to-GDP ratio. As a consequence, we have less room to maneuver than we had in past periods of large deficits.

The second thing that's different now is that we have larger projected primary deficits than in the past. For the last three fiscal years (2022, 2023, and 2024), we have had primary deficits of over 3% of GDP. That is unprecedented in the postwar period. Since 1962, we have had primary deficits this high only in fiscal years 1983, 2009–12, and 2020–21—all years during and immediately following recessions. Only once, during and after the financial crisis, did we have such high primary deficits for three successive years. It is true that the most recent Congressional Budget Office (CBO) projections for the coming years (CBO 2025) indicate primary deficits will fall below 3%. But there is a big asterisk next to these forecasts, because they are based on current law, which includes the expiration of virtually all the 2017 tax cuts. Given the current activity in Washington, it is likely that those tax cuts will be extended. Incorporating these extensions drives the forecast for primary deficits above 3% again.

According to recent calculations in Auerbach and Gale (2025), extending the 2017 tax cuts and modifying other assumptions to align more closely with likely policy results, rather than with the CBO baseline, would result in a projected 2035 debt-to-GDP ratio of 134%. This move would take us far into uncharted territory. Indeed, this estimate is conservative because it does not incorporate the higher costs of debt service that would result if the higher debt level increased interest rates beyond those included in the baseline CBO forecast. Not only would the debt-to-GDP ratio be far higher than its previous peak,

but, unlike in 1946, there would be no prospect of a sharp fall in the debt-to-GDP ratio thereafter, as there would be no peace dividend on the way.

The third thing that makes this time different is that Congress has stopped responding to budget conditions. In Auerbach and Yagan (2024), my colleague Danny Yagan and I extended the estimates of fiscal feedback rules, first presented in Auerbach (2003) for the period 1984–2003, to 2024. In the 2003 paper, I found that there were strong legislative reactions to larger projected budget deficits. In particular, larger budget deficits led to legislation that adopted fiscal consolidation on both the tax and spending sides. But according to more recent estimates, this responsiveness has entirely evaporated during the last couple of decades, to the point where Congress no longer responds to projected fiscal conditions. No matter how large projected deficits are, there is no policy response.

To see that the erosion of fiscal responsibility continues, one only has to compare the tax policy process in 2017 and now, under the same president and with the same party in control of Congress, so it is not attributable to political differences. In 2017, there was some concern about the deficit increases that the tax cuts would cause, and the legislation included some notable tax increases, in particular, the cap on state and local tax deductions. In 2025, Congress adopted a so-called “current policy” baseline, which says that tax cuts that extend previous tax cuts have no effect on the deficit and, therefore, are not cause for concern. It has also added additional tax cuts rather than simply extending the 2017 provisions. At this point, we can’t have any confidence that the very large tax cuts will be offset in any significant way by reductions in federal spending. All of this suggests that we will have a very large debt-to-GDP ratio in the near future.

A fourth thing that is different now is that, rather than relying on the low interest rates associated with being the supplier of the world's safe asset, US Treasury securities, we have an administration that is actively challenging this status. The administration appears to view our status as a curse rather than a benefit. To the extent that this change in perspective spooks foreign investors, it will increase the cost of debt service.

Finally, there is unprecedented pressure being put on the Federal Reserve to provide monetary accommodation through interest rate cuts, which may increase the possibility that we are entering a period of fiscal dominance, where not only is fiscal policy increasingly unsustainable, but monetary policy is also giving way.

As a consequence of all these factors, the risks of higher inflation seem elevated relative to the recent past. Regarding this possibility, it is important to add one further point: a surge in inflation will not solve our fiscal problems. We tend to think otherwise, because most of the national debt is not indexed for inflation. A sudden burst of inflation will help our fiscal picture somewhat by reducing the real value of government debt. Indeed, the debt-to-GDP ratio did go down a bit during the run-up of inflation associated with the pandemic, even though we were running large deficits during that period.

But even with a substantial reduction in the debt-to-GDP ratio, we will still face a daunting fiscal challenge due to the very high primary deficits that extend out into the future under any realistic projections. The problem is that these primary deficits are basically determined in real terms. We have an indexed tax system that prevents taxes from increasing in real terms due to inflation. Our major expenditure categories, such as old age entitlement programs and national defense, are also effectively indexed for inflation. Social security benefits are explicitly indexed to the price level. Healthcare spending is based on the

delivery of services, not on nominal budgets, and defense spending is determined by the cost of providing national defense, which increases with inflation. In short, we may face strong pressure on monetary policy, and as a result, we may see additional inflation due to that pressure. But even if we do see inflation, we will still face massive fiscal challenges that we are currently nowhere near addressing.

References

Auerbach, Alan J. 2003. "Fiscal Policy Past and Present." *Brookings Papers on Economic Activity* Spring: 75–122.

Auerbach, Alan J., and William Gale. 2025. "The Fiscal Outlook at the Beginning of the New Administration." Working paper. February.

Auerbach, Alan J., and Danny Yagan. 2024. "Robust Fiscal Stabilization." *Brookings Papers on Economic Activity*, Fall 2024, 239–293.

Congressional Budget Office (CBO). 2025. *The Budget and Economic Outlook: 2025 to 2035*. January 17.

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Comments on Fiscal Policy and Its Interactions with Monetary Policy

Michael J. Boskin

I want to emphasize several points. First, looking at the historical data, there are some very important things to consider. Specifically, that what governments actually do in the real world, in advanced democracies, has changed markedly over time.

Governments are primarily redistributors of income through transfer payments and social insurance, not purchasers of goods and services, like defense, or builders of roads, among other things. That still goes on. However, during the Eisenhower administration, while those expenditures may have accounted for 80% of noninterest spending, today they make up a minority of noninterest expenditures.

Second, a large fraction of the US budget is on autopilot. We, with an anodyne phrase, call them entitlements, but they are not just that. They continue and are scheduled to grow. We need—we badly need—to have a debate about whether we want them to continue growing, and if we want to continue guaranteeing a real level of income or, for example, whether real social security benefits should rise by 25% in every generation.

We have not really engaged in that kind of conversation in many, many years, which makes things more difficult. When we look at post–World War II history, as Alan Auerbach

alluded to, and specifically at every presidency since World War II, President Barack Obama ran the largest cyclically adjusted deficits until President Donald Trump 1.0, who held the title until President Joe Biden. And now, President Trump 2.0 may wind up taking the crown.

We are facing a fiscal trifecta. I think it's really important to emphasize how difficult this will be. And this fuels my sense of urgency more than anything other people have said about the impending financial crisis they foresee. That is, I believe we have an urgent need for substantially increased defense spending.

Real defense spending this year is $100 billion less than it was twelve years ago, when we were not as worried about Russia and China. Yes, we were still somewhat involved in Iraq and Afghanistan. But we obviously also need a much bigger bang for the buck from the US Department of Defense as soon as possible.

In a few years, we face what you might call the cliff of unfunded liabilities. The Social Security and Medicare programs are becoming politically salient, as the current law would result in more than a 20% reduction in social security benefits according to the schedule.

There will be immense pressure, and the longer we wait to take action, the more likely it is we'll be raising taxes. This includes the possibility of eliminating the taxable income cap on social security taxes or raising it to a much higher level, which would add a very large discrete increase in marginal tax rates on a very productive part of the population and on small businesses.

Depending on which projections you look at, we have seven, eight, or maybe ten years before the Social Security and Medicare programs reach a true state of "imminent"

crisis. And the longer we wait to address this, the more difficult it will be. The sooner we can take steps to get our fiscal house in order, the better. Then we'll be able to deal with defense and nondefense spending.

The more time we have to make reforms in Social Security and Medicare, the less disruptive they'll likely be, and probably the better the ultimate combination of solutions for addressing the inevitable shortfalls will be. Again, Alan alluded to this when he shared that he had been warning about this for some time, but not much has happened.

Many economists and policymakers have been surprised that we haven't had an overt fiscal crisis yet. [Former Treasury Secretary Robert] Rubin warned of it all the time—and still does—as have many others (Bloomberg TV 2024). Yes, we did experience a big increase in the price level and a surge in inflation following the Biden spending splurge in 2021, as the economy rapidly approached full employment from the brief, sharp COVID-19 recession and lockdown. Whether that is John Cochrane's fiscal theory of the price level at work, we can debate (see the chapter by John H. Cochrane in this volume).

But in any event, we have not experienced what some thought was the fairly likely outcome from the large run-up in debt. I think the main reason we have not goes back to the old debate between Arnold Harberger and Martin Feldstein on how open our capital markets were and whether we needed domestic saving to finance our domestic investment or whether we could have foreign capital finance at least some of them for a considerable length of time (see Feldstein 1983).

Basically, the supply of capital to the United States has proven far more elastic over a significantly longer period than previously thought possible, back when people thought in

closed-economy terms. Whether that will continue, whether we'll remain innovative enough, have high enough returns, and be safe enough, remains to be seen.

The United States accounts for approximately 40% of the global bond market and 40% of the global equity market now. We have the government's intertemporal borrowing constraint, the present discounted value of future primary surpluses available to cover the debt, and I would say net of assets, which is something that is starting to gain attention in Washington. But it is unclear where or when these constraints will show up, or what happens if we don't take action and we just wait.

So it has become very convenient to use the insipid phrase "unsustainable." And then we have the debt dynamics, the difference equation, and how the debt-to-GDP ratio evolves based on the relationships among the after-tax interest rate paid by the Treasury, the growth rate, and the primary surplus. In any event, we have had this discussion of it being unsustainable, which I view as less than a rallying cry. Then again, economists and policymakers have been crying wolf, and policymakers have found it convenient to kick the can down the road, shifting the burden to future voters, taxpayers, and elected officials to make the tough decisions.

I won't go over my discussion. You'll have to ask for my slides that outline the real effects the debt and the intellectual history of that trend in economics over the last several decades, tracing back to Robert Mundell and Franco Modigliani saying that there was a debt illusion; Jim Buchanan saying that it made people vote for bigger spending because they only perceived the tax cost; Jim Tobin saying that there were many different features of government debt as an asset that made it have real effects relative to other assets available; and so on. And the counterrevolution: Robert Barro reinstating Ricardian equivalence into

people's thinking; the debates about whether and to what extent such equivalence holds and how; and then Olivier Blanchard's presidential address, basically claiming that we could roll over the debt forever and that there was big welfare improvement by a debt expansion (Blanchard 2019). I've deconstructed that in the next year in the papers and proceedings, if you're interested (Boskin 2020).

I think both of those approaches are not fully descriptive. I think Barro offers a more fundamental question: Ricardian equivalence is incorporated in a lot of macro models now. I don't view it as completely compelling, but I do believe that we'd have to shave the traditional estimates of deficit-financed spending's crowding out investment dollar for dollar to something like 50 to 60 cents on the dollar, and the remaining 40 cents, perhaps, in round numbers, coming from imported capital and private saving.

With that in mind, I would like to turn to a few additional points. The first being that we shouldn't just look at the deficit and the debt. We need to look at what they are composed of. It makes a difference what the spending is on, whether the spending is on consumption or on productive government investment.

Let me emphasize "productive." We don't have a market test for much government investment, and we can call lots of things "investments" that have produced very poor returns. But we do have a large government capital stock, and we have a need to build it up further, especially in the military, as needs can fluctuate sharply.

After all, we did finance World War II and much of President Reagan's military buildup with debt. And that was probably very wise from a standard public-finance perspective. Furthermore, I'd say it's not just the level of taxation but the structure that makes a big difference—for example, whether we're taxing saving and investment, whether

that's reflected in effective marginal rates or doing things that are inframarginal in raising revenue, or taxing consumption.

This leads to my next point. There is a lot of data and many studies that suggest sizeable increases in the debt-to-GDP ratio will slow long-term growth. The International Monetary Fund has studies, and there are many others.

We can go on and on with standard production functions, plus the usual analysis of the extent to which government debt substitutes for tangible capital in portfolios, and arrive at a conclusion. But the basic story is that such a high debt-to-GDP ratio is probably deleterious, and the last thing we would want to do is to address public debt using measures that would defeat the main purpose, which is to slow the growth of that debt.

One of the main purposes of slowing the debt-to-GDP ratio is to keep economic growth going. I think that we really have to pay attention to what the tax structure is. And that brings me to my final point before I say a word or two about monetary policy.

And it's simply this: The best way out of a debt dilemma is strong growth. I don't think we will be able to totally grow out of it. But the best thing we can do is to maintain a strong, growing economy over the longer term. There is much public policy improvement needed to achieve that goal.

Tax structure, spending and debt, entitlement, labor market, and regulatory reform—all these things can help. How much they'll be able to help makes a very big difference. The standard current estimates of our long-term productivity growth and long-term GDP growth potential are very low compared to our history.

These differences are partly due to demographics and a slower labor force growth, if we don't continue to have a lot of immigration into the United States. The Congressional

Budget Office's forecast of long-term real GDP potential has been below 2% for some time, compared to 3% or so for much of the post–World War II period.

At a very slow rate of productivity growth, we are unlikely to see much of an improvement in living standards for our population, and it's going to be harder still to deal with our more existential needs that H.R. [McMaster] pointed out earlier. We need to increase our defense spending, and we need to take other measures, both publicly and privately. Thank you.

References

Blanchard, Olivier. 2019. "AEA Presidential Address—Public Debt and Low Interest Rates." American Economic Association 2019 Annual Meeting webcast lecture, January 5.

Bloomberg TV. 2024. "Rubin Warns of 'Terrible' US Fiscal Situation." *Wall Street Week*, January 25. Video, 20 min., 31 sec.

Boskin, Michael J. 2020. "Are Large Deficits and Debt Dangerous?" *AEA Papers and Proceedings* 110 (May): 145–48.

Feldstein, Martin S. 1983. "Domestic Saving and International Capital Movements in the Long-Run and Short-Run." *European Economic Review* 21.

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Fiscal Sustainability and Price Discovery in Government Bond Markets

Hanno Lustig

In March 2022, in the wake of the COVID-19 pandemic, the Federal Reserve announced that it would stop expanding its balance sheet to absorb the issuance of Treasury securities. Central banks in other advanced economies followed suit. As the price discovery process in government bond markets has resumed since then, we have seen several instances in which government bond yields in advanced economies spiked in response to fiscal and macro shocks.

In July 2022, the eurozone saw large increases in spreads between core and peripheral bond yields. The most dramatic example was the announcement of the Truss budget in the United Kingdom in September 2022, which included large tax cuts. France experienced a bout of bond market volatility after Prime Minister Michel Barnier's fiscal consolidation plan ran into trouble in December 2024. More recently, in March 2025, Germany released its constitutional debt brake to increase defense spending, which triggered a roughly 30-basis-point increase in the 5-year German Bund in the following twenty-four hours. Just a few weeks ago, in early April 2025, in response to the reciprocal tariff

announcements, US long-term interest rates rose significantly between April 4 and April 14. The yield spread between 10-year US Treasury bonds and 10-year German Bunds increased by 50 basis points.

In most of these cases of bond market turmoil, market observers and policymakers have suggested that there is a problem with the functioning of the bond markets that calls for central bank intervention. In July 2022, the European Central Bank (ECB) rolled out the Transmission Protection Instrument, designed to suppress spreads that are not driven by fiscal fundamentals. In September 2022, the Bank of England (BoE) briefly resumed its bond purchases only a week after announcing the end of large-scale asset purchases.

Policymakers and market observers have adopted the "*safe debt view" (*Gomez-Cram et al. 2024). If the debt is safe or has a zero beta, then these large-yield spikes are not supposed to happen if markets function well, even when there are large fiscal shocks.

In this safe view of government debt, one would expect to see a flight to the safety of government bonds, especially US Treasuries, when an adverse shock, like the COVID-19 pandemic in March 2020 or the tariff announcements in April 2025, hits the economy. If that happens, the yields on US Treasuries would decline, as they did, for example, in the last quarter of 2008, during the worst months of the Great Financial Crisis, as investors bid up the price of US Treasuries (Gomez-Cram et al. 2024). But that is not what happened in US Treasury markets in March 2020 or in April 2025. The last two tests of the flight-to-safety mechanism have failed.

When you adopt the safe debt view, these yield spikes are the signature of market dysfunction. There is a plumbing problem in the bond market. In the United Kingdom, in September 2022, the liquidation of highly levered gilt positions by pension funds was

blamed. Similarly, in April 2025, some market observers blamed the unwinding of the Treasury basis trade in which hedge funds buy US Treasuries and short futures on Treasuries to earn the cash-futures basis. Central bankers have invoked with increasing frequency these types of plumbing problems in the bond market as reasons for intervention. Central banks are unconstrained, and they can use their balance sheet to provide liquidity to the bond market by buying underpriced securities.

However, there is an alternative view, the "*risky debt view.*" When governments implement large spending increases or tax cuts that are unfunded—i.e., they are not offset by future tax increases or spending cuts—the market value of all outstanding debt will have to be marked down, and yields will increase. That happens through increases in term premia, increases in expected inflation, decreases in the convenience yields on government bonds, or even increases in default risk premia, all of which occur in response to the fiscal shock.

The United Kingdom's budget crisis in 2022 offers a compelling case study. On September 22 of that year, the BoE's Monetary Policy Committee announced that it was done purchasing gilts. On Friday, September 23, 2022, Chancellor Kwasi Kwarteng delivered a statement to the House of Commons. The statement commenced at 9:30 a.m. British Summer Time. It announced the Growth Plan, introducing a sweeping package of tax cuts, betting that reducing marginal tax rates would stimulate long-run economic activity. This package represented the largest set of tax cuts announced in the United Kingdom in fifty years and was to be funded through significantly increased government borrowing.

Figure 20.1 shows the 30-year and 10-year nominal gilt yields on September 23, 2023. The budget statement, including the subsequent debate, lasted for three hours. During the initial part of the opening statement and debate, starting at 8:30 a.m. Central European

Summer Time (CEST), there was a sharp rise in bond yields, with the 10-year nominal yield increasing from around 3.5% to 3.7%. The 30-year yield also rose significantly, adding 27 basis points on the day.

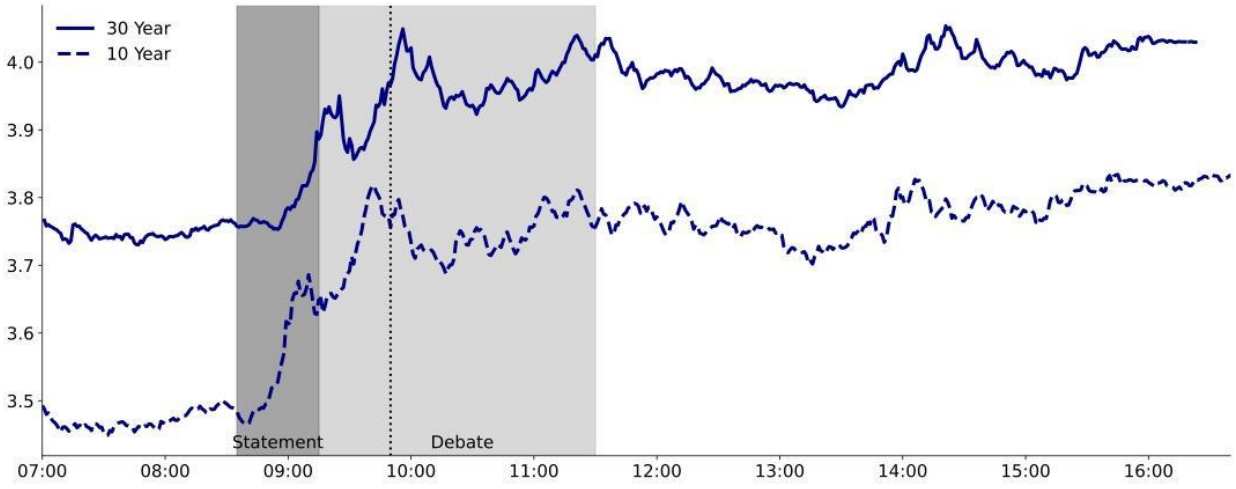


Figure 20.1. UK mini budget announcement on September 23, 2022.
Note: This figure shows the 30-year and 10-year nominal gilt yields on September 23, 2022. The dark, shaded area represents the opening statements by Chancellor of the Exchequer, Mr. Kwarteng, and Shadow Chancellor Rachel Reeves. The light gray shaded area marks the debate, with a dotted line separating the first part, which focused on debt implications and the absence of Office for Budget Responsibility forecasts, from the second.
Source: Gomez-Cram et al. 2025.

This happened well before there were any plumbing problems in gilt markets. Subsequently, in the following days, a real plumbing issue did materialize. The sharp rise in long-term gilt yields following the mini-budget triggered a crisis in liability-driven investment (LDI) strategies used by UK defined-benefit pension funds. These strategies rely on leverage and derivatives, making them highly sensitive to gilt price declines. As yields surged, LDI funds faced large mark-to-market losses and urgent collateral calls, often requiring cash. To meet these, funds were forced to sell assets. The plumbing problem merely amplified what was a fiscal shock.

LDI funds were not prepared for such a sudden shock. While pension fund administrators typically plan for gradual moves in yields, the market reaction—over 130 basis points in just a few days—overwhelmed the funds' liquidity buffers. Although the BoE's intervention addressed the immediate instability, the episode exposed structural vulnerabilities in the pension system, which had been brought to light by the collapse in confidence following the government's fiscal announcement. This highlights another problem. If policymakers signal to market participants that the debt is safe, this may incentivize them to take on too much risk in bond markets. The Silicon Valley Bank crisis in the United States in March 2023 was another example of this.

On September 28, 2022, at 10:00 a.m. CEST, the BoE announced a temporary program to purchase long-dated UK government bonds, effective immediately, reversing the monetary policy committee's earlier decision from September 21 (see figure 20.2). In early October, the tax plan was abandoned and the prime minister was forced to resign. After that, gilt yields permanently came down. But what would the BoE have done if the tax plan had not been abandoned?

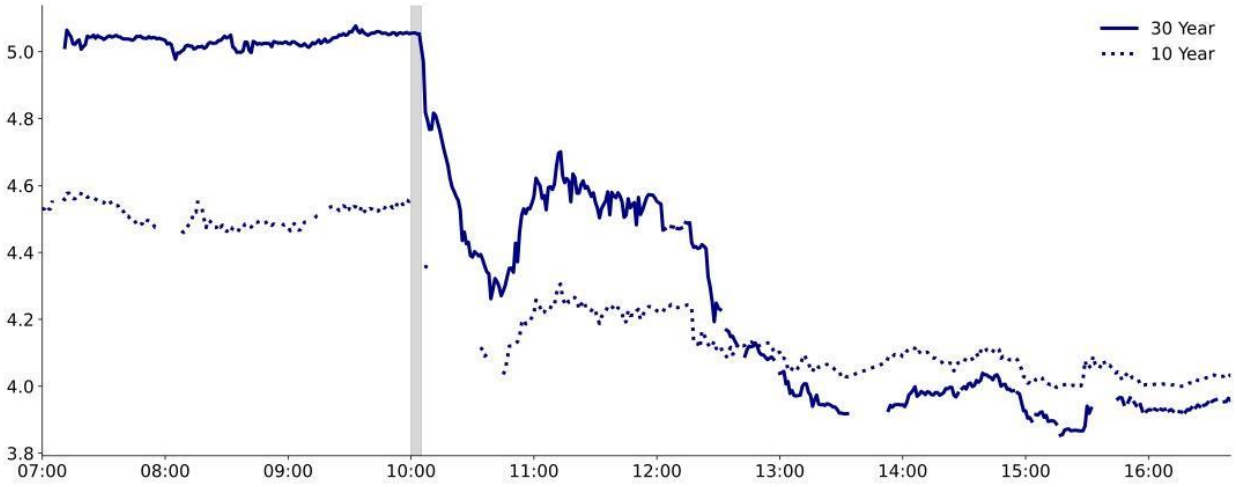


Figure 20.2. The UK 30-year and 10-year nominal gilt yields on September 28, 2022.
Note: This activity occurred on the day of the Bank of England announcement referenced in this chapter.
Source: Gomez-Cram et al. 2025.

The COVID-19 pandemic in the United States provides a cautionary tale in this regard. Between March 9 and March 18, 2020, the 10-year US Treasury yield increased by 68 basis points as bond markets were slowly starting to digest the largest postwar fiscal shock. Some economists pointed out that primary dealers in the United States may have been running out of balance sheet capacity in March of 2020. The United States was not an outlier. Yields in Germany, France, the United Kingdom, and other advanced economies increased by about 64 basis points, in line with US yields.

These events triggered massive intervention by the Federal Reserve and central banks around the world. On March 15, 2022, the Federal Reserve Open Market Committee (FOMC) held an unscheduled meeting. To support the smooth functioning of Treasury markets, the FOMC announced that it would purchase at least $0.5 trillion in Treasury securities and another $200 billion in agency mortgage-backed securities.[1] In the event, the Fed absorbed all of the subsequent massive issuance of US Treasury notes and bonds between March 2020 and March 2021, as shown in figures 20.3 and 20.4. The Fed started its intervention to fix a temporary plumbing problem but ended up buying all the issuance, excluding T-bills, during the largest fiscal expansion in US postwar history.

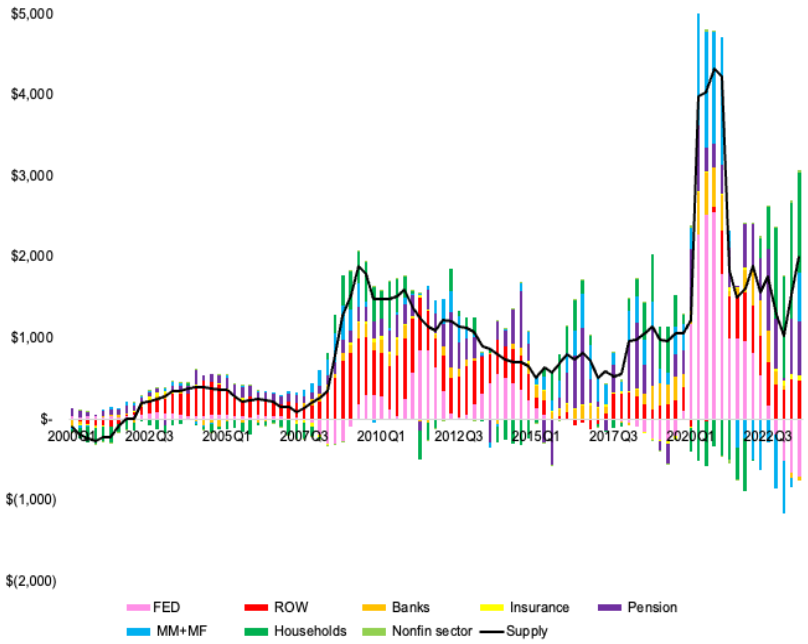


Figure 20.3. Purchases of all Treasury Securities (including T-bills) by different sectors.
Note: The figure plots 4-quarter moving averages with annualized flows in billions of dollars.
Source: Flow of Funds.

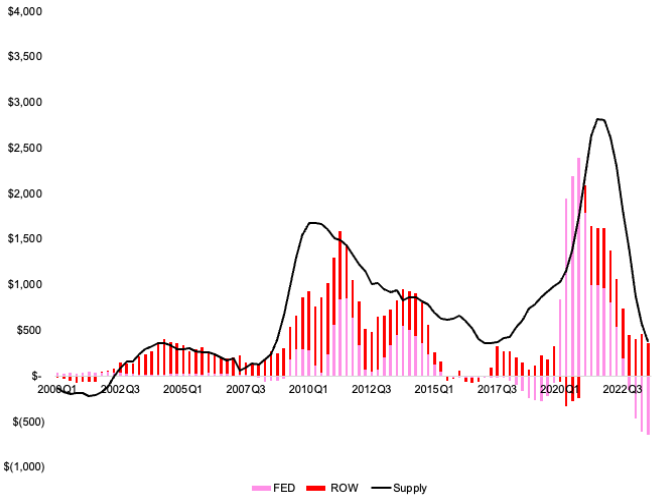


Figure 20.4. Purchases of notes and bonds (excluding T-bills).
Note: Annualized flows in billions of dollars. The figure plots 4-quarter moving averages.
Source: Flow of Funds.

Ultimately, central banks and governments can coordinate on a safe debt regime in which bondholders are protected from fiscal shocks but taxpayers then bear the burden. That

rules out unfunded spending and tax cuts. Alternatively, they can coordinate on a risky debt regime that protects taxpayers but exposes bondholders to this fiscal risk. But they cannot do both, i.e., they cannot protect both taxpayers and bondholders.

It is important that central bankers, including the Fed, use the right model of government debt when judging whether the bond market is functioning and whether sustained intervention is called for.

The US federal government is not on a sustainable fiscal trajectory. In the baseline case, the Congressional Budget Office (CBO) projects that the federal government will be running primary deficits, i.e., deficits excluding interest expense, until 2053. The federal debt held by the public in the baseline scenario is projected to hit 153% of GDP in 2053. However, if the 2017 Tax Cuts and Jobs Act is extended, the debt-to-GDP ratio would hit 214% of GDP, 47 percentage points higher than in the CBO's baseline scenario.

The price discovery process in Treasury markets ensures that fiscal fundamentals are accurately reflected in prices. This imposes discipline on fiscal policy. If government debt really is risky, then large yield increases in response to adverse fiscal news may be appropriate as part of the price discovery process. If central banks use the wrong model of government debt, they may end up using their balance sheet to continue absorbing most of the issuance, as in the case of Japan, thus impairing the price discovery process, potentially at a great cost to taxpayers and to savers.

References

Gomez-Cram, Roberto, Howard Kung, and Hanno Lustig. 2024. "Government Debt in Mature Economies: Safe or Risky?" Symposium Sponsored by The Federal Reserve Bank of Kansas City.

Roberto Gomez-Cram, Thilo Kind, Howard Kung, and Hanno Lustig. 2025. *Fiscal Discipline Through Bond Markets*. Unpublished manuscript.

[1] On March 17, the Federal Reserve extended overnight and term funding to primary dealers (the Primary Dealer Credit Facility). Investment-grade corporate bonds could be used as collateral. The Fed hoped this would keep dealers from shrinking their inventories. On March 23, the Federal Reserve announced that it would set up a special vehicle to buy corporate bond ETFs that was capitalized by the Treasury: Secondary Market Corporate Credit Facility.

21

Fiscal Constraints on Monetary Policy

John H. Cochrane

Inflation is always and everywhere a *joint* monetary-fiscal phenomenon. This much is universally acknowledged, with the fiscal part only omitted when people don't feel it is particularly important in order to understand a particular episode. It is important today.

Let us remember the mechanisms. Most obviously, monetary authorities can finance deficits with new money or hold down interest rates to lower the interest costs on the debt. These actions are often portrayed as pressure from fiscal authorities that monetary authorities resist, but monetary authorities often cooperate voluntarily. The Fed and Treasury cooperated this way during World War II and again in the 2020 pandemic.

Less obviously, monetary policy has fiscal consequences, which in turn can cause inflation. If the central bank raises interest rates to fight inflation, this action leads to greater government spending or lower tax revenues. Most obviously, higher real interest rates raise interest costs on the debt. This is a potent interaction today. With a 100% debt-to-GDP ratio, each one percentage point rise in the real interest rate results in a 1% of GDP increase in government spending. If the central bank is successful in lowering inflation, then the Treasury has to pay off debt in more valuable dollars. Equivalently, reduced inflation lowers nominal tax payments but does not lower nominal promises to bondholders. Moreover, the

point of anti-inflationary monetary policy, in the usual reading, is to soften the economy or even induce a recession, in the belief that a Phillips curve then pushes inflation down. A softer economy occasions automatic stabilizers such as unemployment insurance, as well as bailouts, stimulus, and other sources of spending, and lowers tax revenues.

Through all these channels, unless taxes rise to offset this additional spending, higher interest rates raise deficits. Deficits are inflationary, unless people confidently expect future primary surpluses to rise to pay off the debt. One way or another, for higher interest rates to lower inflation, either current or future tax revenue must rise or spending plans must fall.

All current economic theories describe a joint monetary-fiscal contraction in which fiscal policy tightens to pay these costs. That fiscal support is often relegated to a footnote, but it is there. Moreover, *in all current economic theories, if fiscal policy cannot or does not tighten to pay these costs, higher interest rates cannot durably lower inflation*. ("Durably" refers to the "unpleasant arithmetic" possibility I highlight below, that monetary policy alone may be able to reduce inflation now by increasing it in the future.) That statement includes New Keynesian models, Old Keynesian IS-LM models, adaptive-expectations models, and, of course, the fiscal theory of the price level (see Cochrane 2024).

Fiscal Foundations of Monetary Policy in Three Models

To demonstrate concretely the proposition that in all current models, higher interest rates must come with fiscal contraction to lower inflation, figure 21.1 presents two simulations from a New Keynesian model. This is a pure New Keynesian model, solved by the standard method, with no fiscal theory of the price level funny business. The model is an IS and Phillips curve plus Taylor rule in continuous time:

$$\frac{dx}{dt} = \sigma(i_t - \pi_t)$$

$$\frac{d\pi_t}{dt} = r\pi_t - \kappa x_t$$

$$i_t = \phi\pi_t + u_t.$$

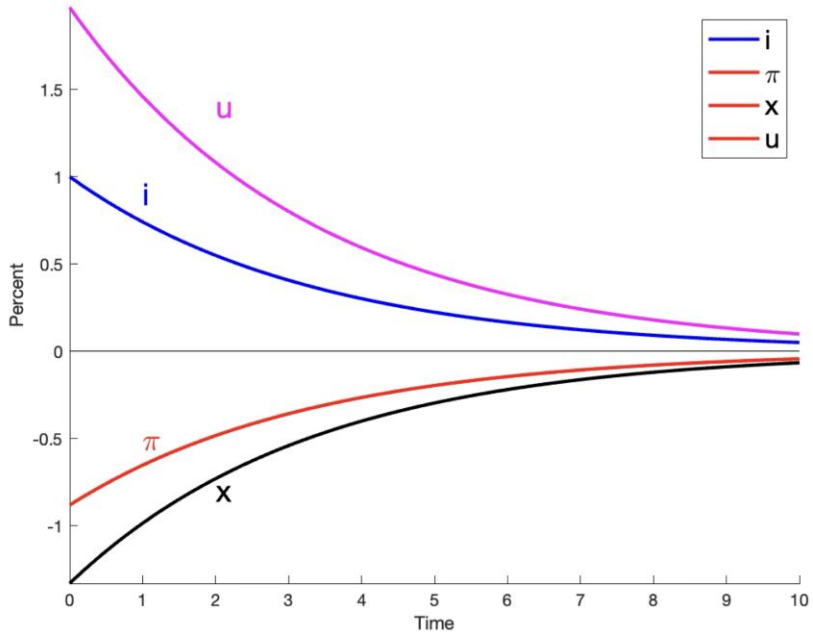
See Cochrane (2025) for details and the solution method. In the top panel of figure 21.1, I plot the response to an AR(1) monetary policy shock, $u_t = u_0 e^{-\eta t}$. You see the standard result: Interest rates rise, inflation and output decline.

But wait a minute. There is a long period of interest rates higher than inflation, higher real interest rates, and thus higher interest costs on the debt. Also, lower inflation means government debt is repaid in more valuable dollars. Who pays all these costs? Answer: Taxpayers. Tighter fiscal policy pays the extra costs. If you look carefully, New Keynesian models include an assumption that fiscal policy "passively" tightens to pay these fiscal costs. "Passive" does not mean automatic. Taxes must rise, spending must fall. Congress must consciously decide to take those actions.

In this case, I calculate that fiscal surpluses must rise by 5.6% of the value of debt. To make that calculation, I use the identity that surpluses now or in the future must pay for higher or lower interest costs. In this model, and with short-term (overnight) debt,

$$\int_{j=0}^{\infty} e^{-rj}\, \tilde{s}_j dj = \int_{j=0}^{\infty} e^{-rj}(i_j - \pi_j) dj \qquad (1)$$

where $\widetilde{s_t}$ is the real primary surplus divided by the initial value of the debt. 5.6% is the left-hand side of this equation.



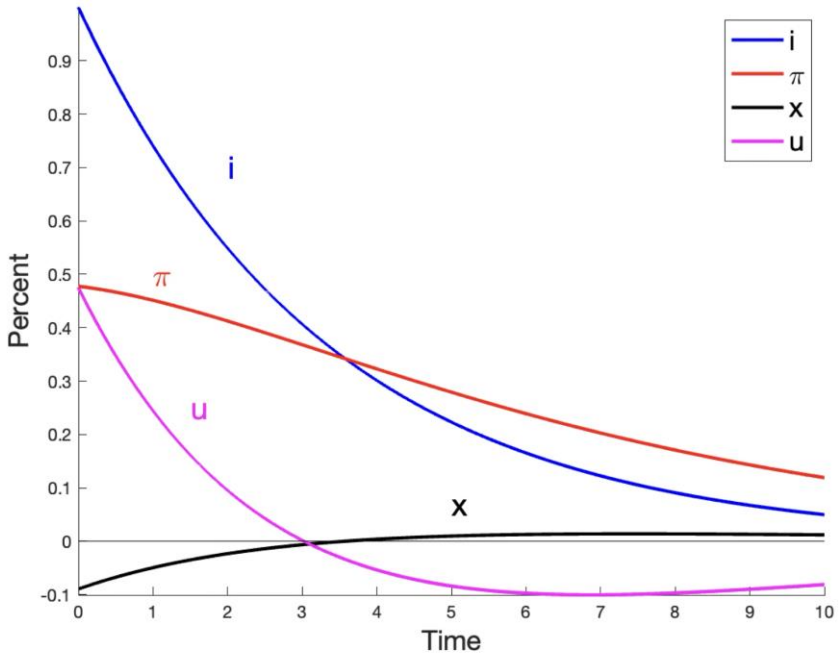


Figure 21.1. Disinflation needs fiscal tightening: New Keynesian model.
Source: Author calculations.

The bottom panel of figure 21.1 asks, instead, "Suppose the central bank is constrained in its monetary policy to actions that do not require higher fiscal surpluses?" Let the central bank still pick a Taylor rule disturbance, u_t, from the set of disturbances that produce the same interest rate path. The interest rate path is the same in the top and bottom panels. Yes, it turns out that many disturbances produce the same interest rate path. But now, the central bank is constrained to pick a disturbance that produces an equilibrium that requires no change in fiscal surpluses. The bottom panel of figure 21.1 answers this question. Again, the interest rate that we observe is exactly the same (the vertical scale is different). However, now inflation is *higher* throughout. You can eyeball that the average interest cost on the debt is zero, as it must be.

In this perfectly standard New Keynesian model, *higher interest rates without fiscal tightening do not lower inflation*.

This result also extends to old-fashioned adaptive expectations models. For higher interest rates to lower inflation, taxes must rise or spending must fall.

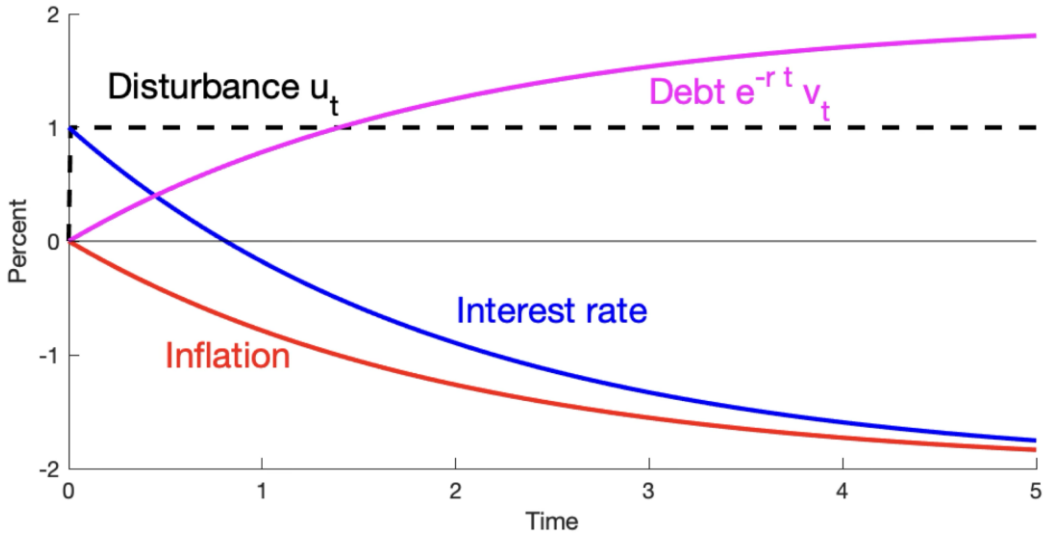


Figure 21.2. Inflation and interest rates in an adaptive expectations model.
Source: Author calculations.

Figure 21.2 presents a disinflation in a standard adaptive expectations model. The model includes a static IS curve, an adaptive-expectations Phillips curve, and a Taylor rule. It is the continuous time equivalent of the following:

$$x_t = \sigma(i_t - \pi_{t-1})$$

$$\pi_t = \pi_{t-1} + \kappa x_t$$

$$i_t = \phi\pi_t + u_t.$$

I plot the response to a permanent rise in the disturbance u. The interest rate rises. That pushes inflation down going forward. As inflation goes down, the Taylor rule pulls the interest rate down as well, and we end up at a new lower value of inflation. This is the standard story for the disinflation of the 1980s.

But again, note that the interest rate is still above the inflation rate. The real interest rate rises. Interest costs on the debt rise. Who pays for that? I also graph the value of the debt, discounted by the steady state interest rate, under the assumption that there is no increase in surplus. The transversality condition requires that $e^{-rt}v_t \to 0$. The transversality condition is violated. Equation (1) is an identity. It applies to this model as well. This outcome needs fiscal and monetary coordination, too.

In the adaptive expectations model as well, with no change in surplus, higher interest rates cannot durably lower inflation. Cochrane (2024) provides a proof. Essentially, higher real interest rates push inflation down, but without surpluses, higher real interest rates drive the debt up. The central bank must then lower real interest rates to bring the debt back. But lower real interest rates bring inflation right back up again. So "unpleasant interest rate arithmetic" applies to this model as well. Without fiscal tightening, the central bank can only lower inflation today at the cost of raising it even more in the future.

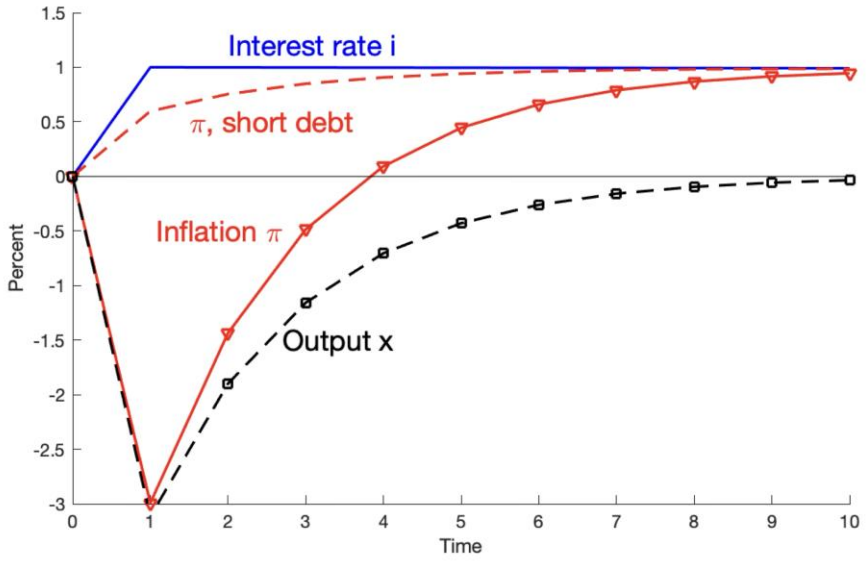


Figure 21.3. Unpleasant interest rate arithmetic in a New Keynesian model with long-term debt.
Source: Author calculations.

Figure 21.3 presents unpleasant arithmetic in a New Keynesian model. With long-term debt but no change in surplus, the central bank can lower inflation now, but again at the cost of raising inflation in the future.

These unpleasant arithmetic results are positive as well as negative. Policy observers typically focus only on the short run. It would be easy to live in an unpleasant arithmetic world yet be fooled into thinking that the central bank alone has complete control over inflation. Policy observers also may not notice that fiscal policy usually reacts to the same events that provoke monetary tightening. We likely did see coordinated monetary-fiscal policy in the past. That does not mean we will always see it again in the future.

Fiscal-Monetary Policy in the Great Disinflation

What about the 1980s?

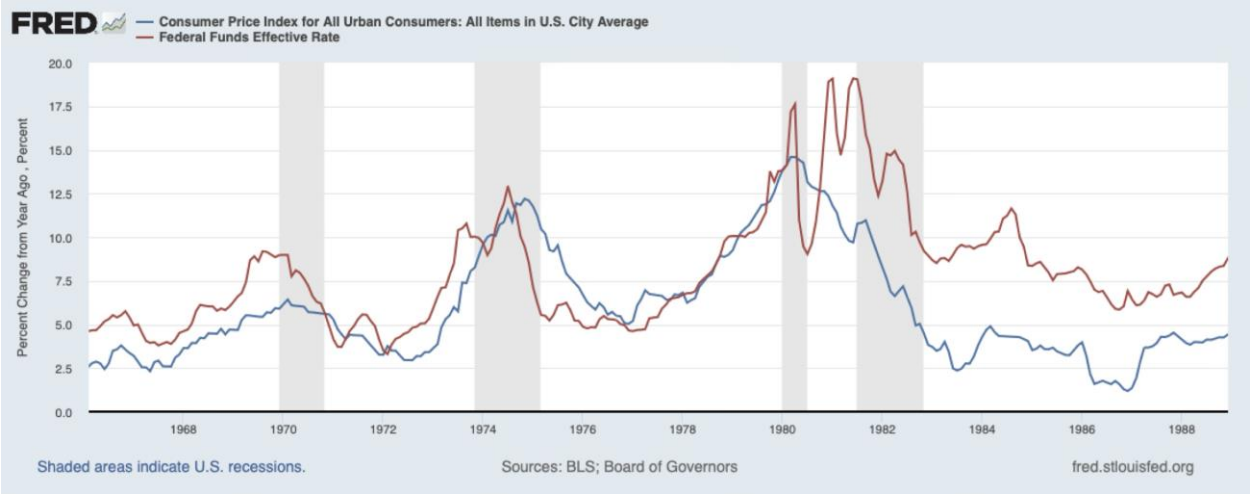


Figure 21.4. Inflation and CPI in the 1970s and 1980s.
Source: Federal Reserve Board of St. Louis (FRED), using data from the Bureau of Labor Statistics (BLS) and Board of Governors.

Figure 24.4 plots inflation and the federal funds rate in the 1970s and 1980s. You see the three great waves of inflation. Today looks alarmingly similar to 1977, just ahead of a supply shock; oil prices then, perhaps tariffs today. You also see the high interest rates of 1980, which coincided with the end of inflation. With figure 21.3 in mind, it looks like a classic monetary disinflation.

But wait. We already realized that figure 21.3 was a joint monetary-fiscal disinflation. Figure 21.4 shows a prolonged period of high real interest rates, equal to high interest costs on the debt. Who paid for those interest costs?

In fact, the rest of the government was not asleep in the 1980s. The 1980s included fundamental tax reform, spending reform, and growth-oriented deregulation. The 1980s tax reforms lowered the top marginal rate from 70% to 28%, eliminating many. Especially relevant in a fiscal theory interpretation that emphasizes long-run surpluses, Social Security reform put that program on a sound fiscal footing for several decades. Higher economic growth also raised tax revenues.

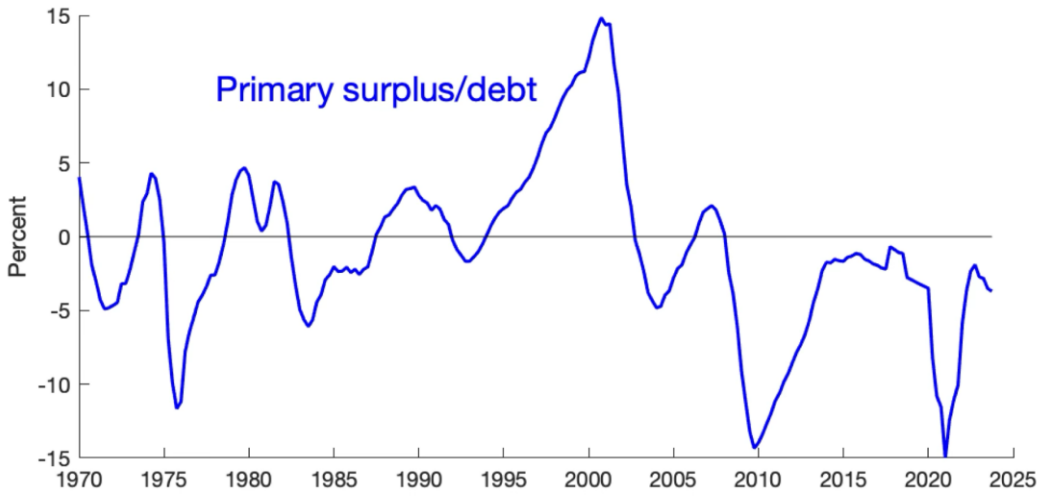


Figure 21.5. Primary surplus divided by value of debt

Source: Author calculations,

Figure 21.5 plots the primary surplus divided by the value of debt. 1975 had bigger deficits than you may remember, and 1982 smaller ones. Most of all, following the 1980s reforms, the primary surplus did take off, to the point that by 2000, economists were worried about what would happen when all the debt was repaid. The surplus on the left side of (1) did pay the higher interest costs of the 1980s disinflation. Of course, the period after 2000 doesn't look so great, and we will see how that works out.

This lesson has played out across the world. Monetary tightening does not always lead to disinflation. Many monetary tightenings without fiscal support have led to short-run disinflation, followed by even larger inflation when the fiscal support was found lacking. Successful disinflations are (always, as far as I know) joint fiscal, monetary, and usually microeconomic reforms.

The Future

To repeat the central lesson of theory and history, all current models of disinflation describe joint monetary-fiscal contraction. Without fiscal policy to pay interest costs, a bondholder windfall, financial bailouts, stimulus, and automatic stabilizers, higher interest rates cannot durably lower inflation.

We currently have a debt-to-GDP ratio of approximately 100%. More importantly, unreformed spending implies a primary surplus of about 5% of GDP going forward. This is already unsustainable, and everyone knows it. There will be lots of opposition to fiscal tightening should the Fed wish to fight a new inflation with high interest rates. And without that tightening, higher interest rates will fail to reduce inflation.

There is good as well as bad news in this fiscal analysis, as captured by equation (1). Both the good and the bad news flow from the fact that the *present value* of surpluses matters.

The good news is that the government can run additional deficits imposed by monetary policy without inflation if there is confidence of higher long-run surpluses. Bondholders will lend extra money if they are confident of decades of small primary surpluses to repay debt. With that confidence, short-run fiscal "austerity" to complement monetary tightening is not necessary. Conversely, however, without that long-run confidence, short-run austerity is insufficient. A few periods of positive surpluses in equation (1) cannot outweigh decades of unreformed negative values.

Long-run structural surpluses come most easily from growth, spending reform, and microeconomic liberalization, not higher marginal tax rates. Indeed, the long-run Laffer curve is likely much more stringent than the short-run Laffer curve. In response to higher marginal tax rates, most people don't work that much less. This is the conventional calculation, which suggests that the United States is below the revenue-maximizing Laffer limit on taxation. But lower incentives to save, invest, start businesses, invest in hard education, and take risks lower economic growth. Those lower incentives then lower income and tax revenue appreciably over the following decades. The surpluses that matter to the present value are beyond even the conventional 10-year budget windows. In the end, the ability to issue debt without causing inflation depends on confidence in the government's ability to eventually return to a sober fiscal policy. That confidence is not much affected by the usual Beltway budget shenanigans. But once confidence is lost, the usual shenanigans will not bring it back.

Europe

My topic is monetary-fiscal interactions, and so far, I have focused on the Fed's ability to contain future inflation by raising interest rates. A second deep set of monetary-fiscal issues is unfolding across the ocean in the structure of the euro. Luis Garicano, Klaus Masuch and I have just finished a book on the fiscal foundations of the euro (Cochrane et al. 2025). A quick summary follows:

A monetary union without fiscal union leads to an obvious temptation: Member states might borrow and spend more than they can repay, and then call on the central bank for a bailout using newly printed money.

The architects of the euro understood this danger well. They designed an independent European Central Bank (ECB), whose mandate was exclusively price stability. The ECB did not buy sovereign debt. Countries would follow debt and deficit limits. But the founders were understandably a bit vague about what would happen if countries got into trouble anyway.

Already in the early 2000s, France and Germany breached the debt and deficit limits. Then a series of unimagined crises hit: The financial crisis, the sovereign debt crisis, the pandemic, and Russia's invasion of Ukraine. To meet these crises, the ECB lent much more freely to banks, against riskier collateral, including sovereign debt. The ECB began, unintentionally, to finance a large share of balance of payments deficits via TARGET2 balances. And the ECB started buying bonds on a grand scale and suppressing sovereign yield spreads, as encapsulated in former president of the ECB Mario Draghi's famous "whatever it takes."

Europe is now in a vulnerable state. Overregulation and bureaucracy stifle innovation and growth. Member states are deeply in debt. The ECB holds large portfolios of sovereign bonds. Banks remain stuffed with sovereign debt, so any sovereign crisis has the potential to become a bank crisis. The next crisis may be bigger than even the ECB can handle without chaotic defaults, financial meltdown, or sharp inflation. Moreover, the incentives for governments to tax and spend wisely and for investors to evaluate and monitor sovereign risks are reduced.

Reform is necessary. There must be a strong European fiscal institution that can quickly offer support, subject to conditionality, to help member states in trouble, allowing the ECB to avoid that inherently political and fiscal task. Sovereign default must remain a possibility. Banks and their regulators must treat sovereign debt as risky and hold less, or at least diversified portfolios, of that debt. The ECB must reduce its bond portfolio, its lending against weak collateral, and its aversion to letting any sovereign spread rise.

Tariffs

The next supply shock may already be upon us in the form of tariffs. Tariffs are a classic supply shock, raising inflation while reducing the economy's productive capacity. The Fed is caught between a rock and a hard place, made harder by the fact that demand stimulus can't do much to fight a supply (reduced potential GDP) shock.

I offer only one not-so-obvious observation on tariffs and their relationship to our fiscal and monetary policies. Remember that the capital account and current account always balance. If goods flow in, dollars or dollar securities must flow out. We have been financing deficits through debt sales to foreigners. The United States, like Greece in the early 2000s,

went on a consumption binge, largely fueled by federal debt. Foreigners bought the debt and put goods on boats in return. Tariffs are not just a trade shock; they are a capital account financial shock.

Imagine that we eliminate all trade deficits, as our tariff advocates seem to want. Then foreigners cannot get the dollars they need to buy US Treasury debt. And they must stop buying that debt. The United States must return to saving an amount equal to our investment, immediately. It must return to no budget deficit, immediately. More saving means less consumption, so the government has to stop writing a lot of checks that support consumption, immediately. Interest rates must spike to incentivize saving, immediately. These changes are not unwanted side effects. They are what those who want trade to stop as part of capital "rebalancing" have explicitly in mind. To them, "exorbitant privilege" has been a cost. And even on trade, when the day comes that Americans work long hours to put goods on boats to get our paper back, trade surpluses might not seem like such a great idea.

Be careful what you wish for. You just might get it.

References

Cochrane, John H. 2024. "Expectations and the Neutrality of Interest Rates." *Review of Economic Dynamics* 53: 194–223.

Cochrane, John H. 2025. "Inflation Dynamics with a Generalized Lucas Phillips Curve." Manuscript, available at https://www.johnhcochrane.com/research-all/sticky-phillips-curve.

Cochrane, John H., Luis Garicano, and Klaus Masuch. 2025. *Crisis Cycle: Challenges, Evolution and Future of the Euro*. Princeton University Press.

General Discussion

John F. Cogan: I'll gather a batch of questions.

Laurence M. Ball: So I think there's a pretty persuasive case that we're on an unsustainable path.

The debt-to-GDP ratio is 100%. It will be 134% in 10 years, then 168%, then 200%. And there's a political deadlock that means we'll never get off that path. Assume, actually, there isn't any special mistake like a Mar-a-Lago accord, or we hit the debt ceiling and default. Suppose we just plod along, with 3% primary deficits a year. We all know that at some point before the debt-to-GDP ratio reaches infinity, there will be a sudden flight from Treasuries, an unimaginable financial crisis, and the world economy will collapse. So in between 100% and infinity, is there any way to have informed speculation about whether 134% is going to do it, or does it have to be 500%, or is there any way to think about at what point we fall off the edge of the earth if we keep going?

Sebastián Edwards: I'm tempted to answer Larry Ball's question and say the number is 260%, which comes from Japan, but the panel knows more than I. I have a question based on Hanno's [Lustig] presentation. Hanno said there is a plumbing problem, and we hear this all the time. The equity market crashed, and bond yields went up. Hanno added that the dollar went down, but then there was nothing on the dollar in your presentation after just mentioning it. Now, if I look at the dollar, it lost 3.3% which is nothing, and it's still 11%

higher than before the pandemic. I think that you are badmouthing the dollar for no reason. That's the question.

Mickey D. Levy: In this whole discussion about debt sustainability, the notion is that eventually something really bad is going to happen. Higher inflation, higher interest rates. But for all the reasons that Michael Boskin described to us, the negative effects are unfolding now.

We do not have to wait for the future when somehow we're going to fall off a cliff. The deficits and high debt are influencing how we're allocating national resources, with significant effects. If we had much lower debt-to-GDP, like pre-financial crisis, we would have already allocated more for defense, infrastructure improvements, and R&D.

This is very likely reducing labor supply and economic growth. Let me just toss out two statistics. We've tremendously broadened the eligibility for Medicaid to include seventy-three million recipients, which costs $880 billion a year right now.

Forty-two million people are on the SNAP program (food stamps), which cost $113 billion last year. To what extent is this affecting labor supply now, particularly at a time when some of us are concerned about the Trump administration's efforts to curtail immigration?

The compounding of the inflation-indexed entitlement programs has overwhelmed tax collections. Even during the 1990s, Gramm–Rudman–Hollings legislation and other initiatives to reduce deficits, [had limited effectiveness since they] only addressed nondefense discretionary spending, while entitlement programs were off the table.

"Entitlements" in the budget process evolved into "mandatory spending." The whole budget process needs to be changed. It's time to acknowledge that eventually, debt sustainability matters.

Patrick Kehoe: I guess this is for Mike [Boskin] and Alan [Auerbach]. Some states, like Utah, have done a particularly good job of following close to a balanced budget rule by separating their budgets into operating expenses and general investment funds. And you can pay with bonds if you can make the case that it's seriously a useful investment. Otherwise, it's closer to pay-go. Obviously, you couldn't get the US government to go for that right away, but could you at least redo the accounting principles for how government budgets are broken down and explained, shooting toward the principle that if it's a normal government expenditure, it's supposed to be close to pay-go. If it's an infrastructure et cetera investment, and you don't play games with what's an investment and what's not, you can fund it with debt. You have to be very careful about it. It could even be presented as a desired goal and then move toward it. Some of the Latin American countries that got out of their problems worked their way into reforms by explaining to the people, and then later, did a hard transition. Is that too hopeful, or is there any chance?

Isabel Schnabel: Thank you very much for a fascinating panel.

I have one comment on Hanno's presentation and one on John's [Cochrane]. Hanno, you had this slide on the different market dysfunctions, and you included the episode of March of this year [2025] when Germany announced its fiscal package.

But I would argue that that is a very different type of episode because what you saw there was no market dysfunction. In fact, it was seen as positive that Germany was taking up

more debt, and it was seen as fostering German growth prospects. So I think that's a very different type of episode. Therefore, I wouldn't include it in that type of list.

And then on John, you've written this fascinating book, certainly a bit controversial, but very important for the debate. I think we have to acknowledge that the euro area is a very complex structure because we have a single monetary policy, but we have twenty sovereign states with separate fiscal policies. And that makes it quite complicated.

And when there are shocks, what has happened many times is that sovereign spreads have moved in a destabilizing fashion. And that for us as a central bank is a very complicated situation because it immediately has implications for monetary policy transmission, because you immediately get very different interest rates in different parts of the euro area.

And this is why we have, over time, designed different tools in order to deal with this. And these tools are not perfect, but they also shouldn't be portrayed as tools that are there simply to compress the spreads. Actually, they have quite a few safeguards. So you have the OMT [Outright Monetary Transactions policy] with ex post conditionality, and you have the TPI [Transmission Protection Instrument] with ex ante conditionality. There are many things that we do in order to deal with the issues that you raise.

And then, of course, we also shouldn't forget that there is a fiscal framework. Again, it's not perfect and it's not always working. But if you look at the French episode, you see that when there are fundamental issues in particular countries, you do see movements in spreads. It's not correct that we've kind of ironed out all the spread movements. So there is market discipline. Maybe not as much as there would have been otherwise, but market discipline is actually there.

Cogan: So we've had a good set of questions. Why don't we go from the end, John? It's a smorgasbord. Take your pick.

John H. Cochrane: I'll quickly address Larry's [Ball] question, because I think it's one of the most important. Isabel's [Schnabel] is the most important for Europe. Larry's is most important for the United States.

What's unsustainable will not happen. The CBO [Congressional Budget Office] projection is not going to happen. The only questions are, how is it not going to happen, and is that going to be easy or hard?

Put another way, if we see these projections, why is the bond market still holding US debt? Why don't we face Argentinian or Greek levels of interest rates? Well, I think the bond market figures that the United States is a great country. Sooner or later, after we've tried everything else, we'll do the right thing again, because this is not hard. A commission made up of five randomly chosen people in this room could come up with a program to solve the fiscal problem in about ten minutes flat.

That's especially true if you cross out a requirement that any change must be "politically feasible in today's political environment." The minute there's a crisis, the political environment changes completely. I think our government will eventually reform. We have to be a little optimistic.

I think Alan pointed out the government doesn't seem respond to the debt. But I venture that our government does respond to interest costs. The government is like a typical Joe and Jane. The credit card company says, "You can borrow at 2%"—or for governments, –2%. Joe and Jane say, "Great, let's buy the new car, buy the new house." When interest costs rise to 5%, they say, "We've got to cut back."

So I am hopeful that, once again, there will be a time of reform before a debt crisis comes and our government will not shoot itself in the foot. Because there is no external shock. Our debt problem is entirely an internal issue. We're not fighting World War II. We're sending checks to voters.

Isabel, you're exactly right about the euro. But sometimes spreads are fundamental default spreads. Those market signals need to go back to governments to say, "Hey, you have to watch yourself a little bit." Corporate spreads are sometimes default spreads. Country spreads are sometimes default spreads. I think the ECB [European Central Bank] is a little too quick to diagnose "fragmentation" and "dysfunction" in bond markets, and then silence the signal from markets that fiscal and microeconomic reform is needed.

And there isn't really a mechanism for resolving European sovereign debt problems. The banks are still loaded up with sovereign debt, so that it's very hard to have a sovereign default. There's still a big problem.

You're doing your best, but I think the ECB, together with other European institutions, need to get together to fix the structural problem, so the ECB isn't always the only game in town, sitting on the printing press.

Hanno Lustig: Thank you. Let me start by taking a stab at Sebastián's [Edwards] point, which I think is an interesting one. You were sort of saying, at the end of the day, between March, April 4, and April 14, [2025] the dollar only depreciated by, say 3% or 4%. That's not a big deal.

But it happened when, at the same time, US long-term interest rates were rising a lot relative to, say, German interest rates. I think the increase in the debt spread was about 50 basis points. And so based on standard economics and recent history, what you would have

expected was a strong appreciation of the dollar, just on the basis of what was happening to the interest rate difference.

I've done some work recently with Arvind Krishnamurthy and a bunch of other co-authors where we attribute this to the decline in convenience yields. The United States is the world's safe asset supplier. The dollar is the reserve currency. One measure of this phenomenon is that if you take a German Bund, a ten-year German Bund, and you hedge it into dollars, historically the yield on that synthetic US Treasury was always higher than the real thing. That's not true any longer. And I think, and this perhaps is the beginning of an answer to Larry's question, I think that's concerning. You can do this at the one-year, five-year, and ten-year horizons.

Take German yields hedged to dollars compared to US Treasury yields. The US Treasury yields are now higher at all tenors. That's a completely new development even at the one-year horizon. I think that's concerning because it suggests that it's no longer true that European investors are willing to pay a little bit extra for the safety of dollar-denominated US Treasuries. That change has big implications for fiscal policy as well. I think that's an important fact.

I agree with Isabel. In the German episode, I was showing that to show that there are lots of examples recently where bond markets respond to fiscal shocks. I think that in a lot of cases, that is exactly what should happen. To your broader point, I'm more skeptical than you are about whether in the eurozone we're really letting markets dictate what happens to spreads.

When you see that in equilibrium, a large price-inelastic investor (the ECB) is absorbing a lot of the issuance. And this is not just true in the eurozone; it's true here, as well, to some extent. That is one reason that I'm skeptical about those market prices.

The example that I always revert back to is Japan. The Bank of Japan for the last decade has absorbed almost all of the government debt issuance. Do I think that until recently, the long end of the yield curve was particularly informative there about fiscal capacity? True fiscal capacity? No, not really. I think it was a giant exercise of financial repression, which is very costly for Japanese depositors who are saving at the short-term interest rate.

Michael J. Boskin: A few comments. First of all, while we've all worried about what the deficit and debt may do and how it evolves and the pressure it might put to inflate, et cetera, we haven't ever mentioned that the Fed has adopted a lot of fiscal policies that, to be generous, stretch that Section 13 authority, that now it's been assigned to do that, et cetera.

But there's a question of what makes sense for the Fed to be doing as an institution, whether that's jointly in concert with the fiscal authorities. But just FYI, we should not let that go unmentioned. On the question of where we're going to hit the fan, the most famous forecast, the most famous person who went out on the limb and said there was a big cliff, was at 90% of GDP.

That was Ken Rogoff at Harvard. And that came and went, and it turned out there was a programming mistake in the calculations. But in any event, nobody knows for sure. However, we do know—I mean, simple analysis tells you there's got to be an upper limit on the fraction of wealth people will be willing to hold, say in dollar-based securities, for example. Okay, they're not going to hold all of it for diversification reasons.

All right, and there are many other things that would be way under 100% what's going on in their economy with the need to transact. So the key is before we get there, you know, the supply of capital to the United States is going to become more inelastic. So interest rates are going to rise more rapidly.

Real interest rates are going to rise more rapidly. So we have to pay close attention to that. I think anybody who tells you they think they know where that is or that it's independent of every other country having analogous problems in greater or lesser degree, I think, has probably been inhaling.

So I think we just can't say for sure. But we do know that we're getting closer, we know there are icebergs out there, and the wise path isn't to keep going, let alone to what we're doing now—speeding up—but to alter to somewhat of a different course. We're obviously having trouble doing that.

And on Pat's [Kehoe] point, I developed capital accounts for the federal government when I was a young scholar, and OMB [Office of Management and Budget] took them over. You can argue what kind of a job they're doing, et cetera. And as I said, we don't have market transactions to discipline those investments. But I think there's an opportunity there if we can hold the rigor about what is really tangible capital.

That, I think, is the big risk. That you get some, let's say, a government that wants to have a very expansive definition of human capital and all transfer payments are helping people and that's improving their human capital, whether they just consume it, rather than if they get educated or do job training or anything.

So I think it has some possibilities. I actually proposed this in the 1980s to President Ronald Reagan in a meeting, and he loved the idea because he quickly figured out that

would make it a little more palatable to finance a big defense buildup. But it got scuttled when Cap [Casper] Weinberger, then the defense secretary, went haywire when he realized we'd have to take depreciation into the operating budget. Of course, we could just have presented an average.

And his answer was we'd be giving the Russians all these secrets. That's how we didn't get President Reagan deciding he'd like to see us start, at least present, the stuff that way, whether actually budgeting that way, at least present the material that way.

Alan J. Auerbach: I just want to pick up on that last point. As much as I think reforming budget measures and concepts is useful, the main thing that distinguishes state behavior from the federal government is that states are much more subject to the discipline of capital markets than the federal government.

States have adopted balanced budget rules on their own, without any constraints imposed. The capital budget's part of the balanced budget rules because that's really the only way that you can borrow, except for very short-term fluctuations. And these rules weren't adopted just because officials were good government types. It's because they wanted to retain access to capital markets.

And states also have a much bigger problem of potential labor mobility. If they're a failed state, they'll lose people. And so however well we measure concepts at the federal level, if the market doesn't impose discipline on the federal government and if there's nothing else built into the politicians to be fiscal conservatives, such reforms aren't going to help very much.

Boskin: Just one quick quip.

Since we've been so pessimistic, I want to just say the optimist says things can't get much worse. The pessimist says, yes, they can.

Cogan: Okay, please join me in thanking the panel.