

Problem Set 4

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Fiscal policy, particularly around government spending and its implications, seems to be an ever-present topic in American politics. Government spending is one of the more tenuous ones, particularly in the name of cutting down the government deficit. President-Elect Donald Trump is even going as far as planning the creation of the new Department of Government Efficiency (DOGE) to make sure there is a bureaucratic body with two department leads in charge of trimming the fat of unnecessary government spending (some jokes write themselves).

The United States government has had a deficit that has continued to rise since the 2008 Financial Crisis, most greatly during the crisis and the COVID-19 Pandemic. In 2020, the stimulus checks passed by the fiscal authorities saw a monumental amount of money borrowed while already in a deficit to finance the stimuli. One of the arguments against borrowing, especially great sums, while in a deficit is the fear of crowding out.

A government crowds out a credit market when it borrows large sums of money when in a deficit. Theoretically, this can have large implications for the credit market of a nation, with the increase demand for loans putting upward pressure on interest rates. This upward pressure on interest rates would decrease investment via higher borrowing rates and decrease net exports, with higher interest rates causing an appreciation in currency, making it more affordable to buy foreign goods and services and more costly for foreigners to buy domestic goods and services. Depending on the sensitivity of investment and exchange rates are to this change in real interest rates, crowding out could have adverse effects on aggregate demand and the economy; if changes in G affect the economy less than I and NX would have at lower rates, fiscal spending could be harmful.

However, looking at historical data, we see there is little to no correlation between interest rates and increased deficit. Looking at changes in government deficit versus a measure of interest rates, we should witness a positive correlation—as the deficit grows and needs to be financed by debt, interest rates should also increase due to an increase in demand.

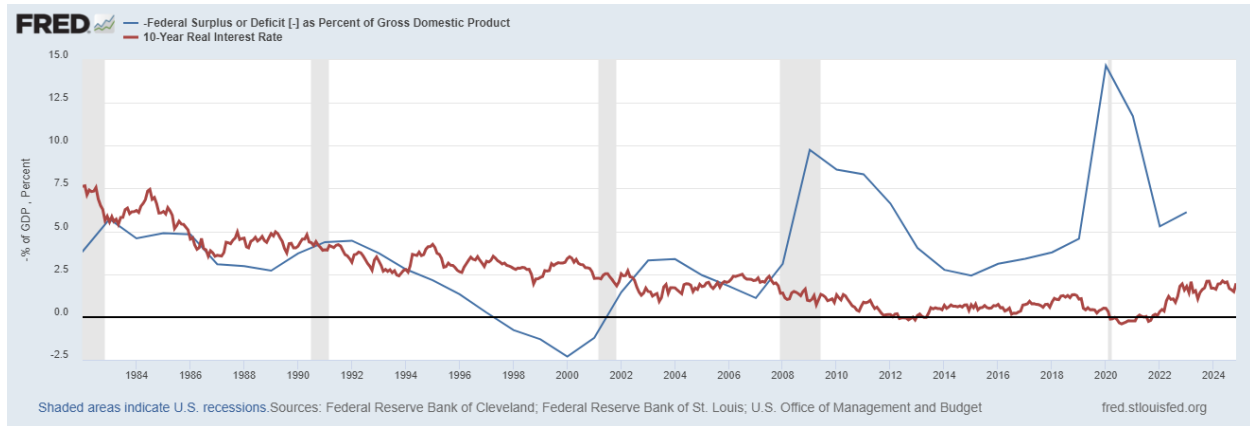


Figure 1 - Federal Deficit & 10 Year Interest Rate

We see some rather large upticks in the deficit and if anything, interest rates go down during these spikes. In the short term these recessionary spikes have a largely negative correlation with interest rates, as we see the lines diverge. This could be due to confidence and expectations from borrowers. In economic downturns, despite low interest rates there can still be a lack of demand due to increased caution from lenders.

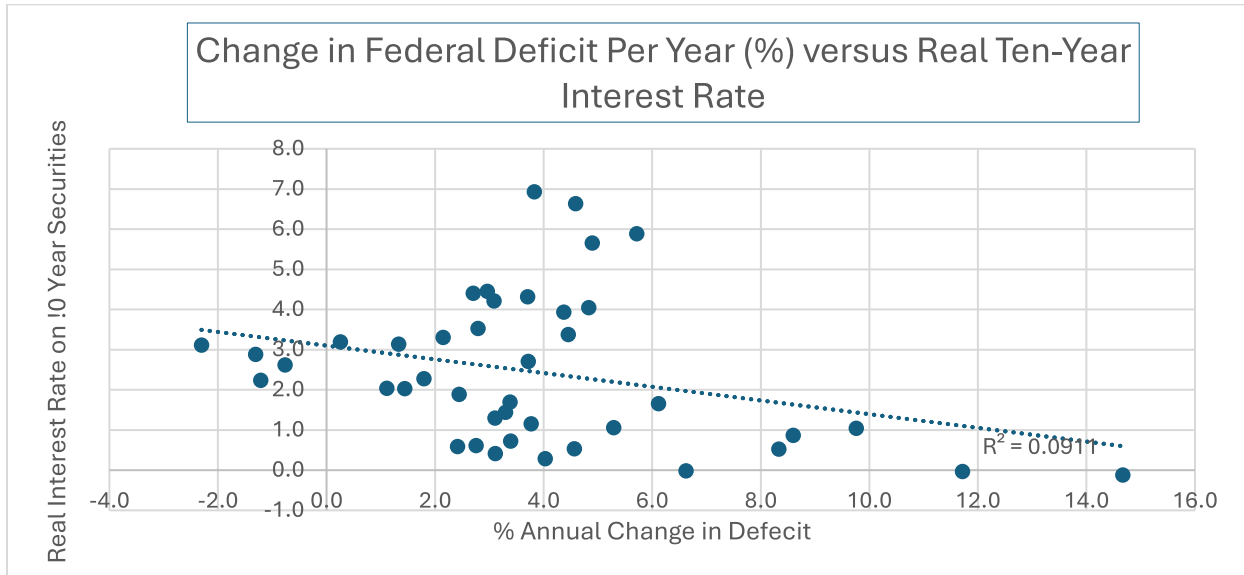


Figure 2 Federal Deficit % Change vs Real 10-Year Interest Rate

Above, we can see the ten-year interest rate and the change in the deficit have a negative, but not exceptionally strong correlation, reporting an R^2 value of just .09.

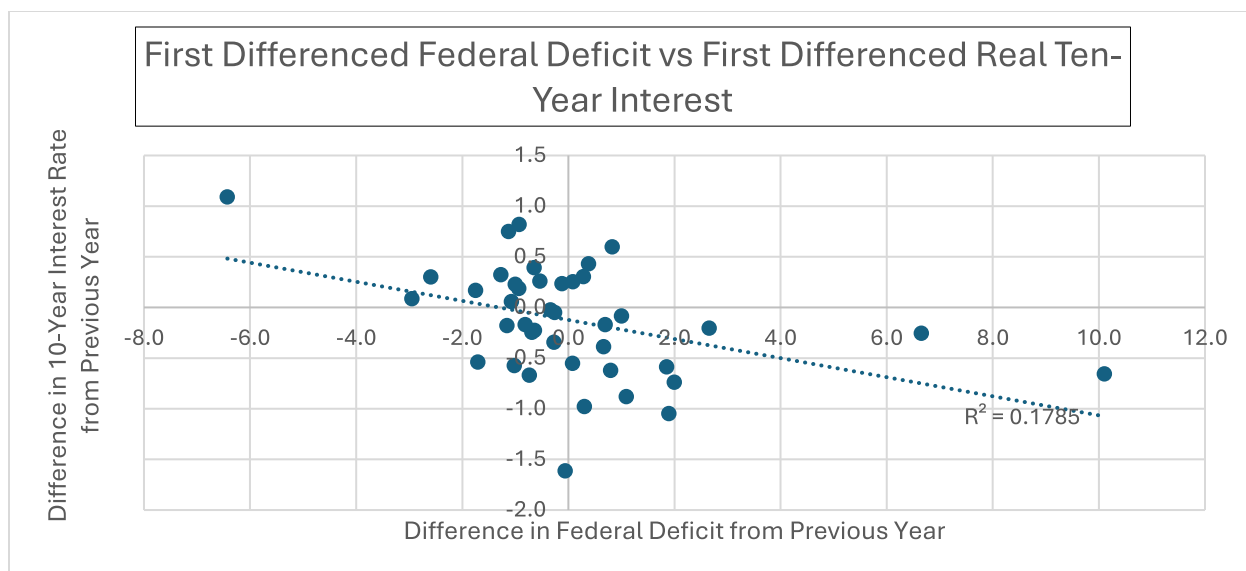


Figure 3 Change in Federal Deficit from Previous Year vs Change in Real 10-Year Interest from Previous Year

The relationship between the difference in change in federal deficit and interest rate from their previous years gives a bit more of a stronger correlation when comparing the changes in interest rates and the changes in budget deficit, with an R^2 of .18. From a year-over-year perspective, we can see that these changes in interest rates and federal deficit lead to more debt but on average lower interest rates.

The theory of crowding out makes sense on paper but may not hold today when global credit markets are highly connected. In a world with more insular credit markets, a government growing a deficit by taking out loans could raise interest rates via increased in demand, but there is no evidence of the crowding out effect in the United States. The above evidence suggests negative relationships between the federal deficit and ten-year interest rate, and particularly large negative correlation in times of recession.

Even still there's been an aura of discontentment around the US budget deficit for years—I even wrote about what the US could do with all of its payments on the debt back in 2018. The scariest thing about the debt of the central government is that the US risks default, and as we've seen in other countries, this can cause some brutal economic conditions and a need for international aid. But the amount of debt a country is in is not the only dictator of default likelihood. For example, Japan has run a huge budget deficit of over 100% of its GDP since the 1990s and is currently over 200% as of 2022 (International Monetary Fund) and has yet to default, while Argentina crashed

with just 30% deficit. Average real interest, long-run growth in GDP, maturity of debt, and confidence all affect debt sustainability.

GDP growth is a key point. If the nation's GDP continues to grow above the real interest rates of their debt, the debt is a lot more sustainable. For example, if the long-term growth of a country is 5% and it borrows on average real interest rate of 3%, then the tax base from the country should be able to pay off the loans that it incurs from foreign lenders. GDP growth is essentially the return on investment. If GDP growth outpaces the loans needed to make it, that's a great sign.

Maturity of the debt matters as well, as loans with shorter time horizons typically have lower risk but are due to lenders sooner, which may increase risk of default. If a majority of the debt is short-term, the urgency for debt repayment grows, whereas if more of it is long-term, the fiscal government has a broader time horizon to save and make payments.

The confidence of lenders can influence the interest rate of loans; if lenders view the borrower as a risk, they may lend, but with an additional risk premium. This higher rate induces the need to pay more back to the lender and increases the risk of default by the borrower. Conversely, if lenders have high confidence in a borrower being able to pay off loans, they won't incur much if any of an additional risk premium, making it easier (cheaper) to pay back the loan (holding loan principal constant).

With these factors in mind, looking at the United States, the nation has a high debt to GDP ratio, which has increase dramatically since the 2008 Financial Crisis.

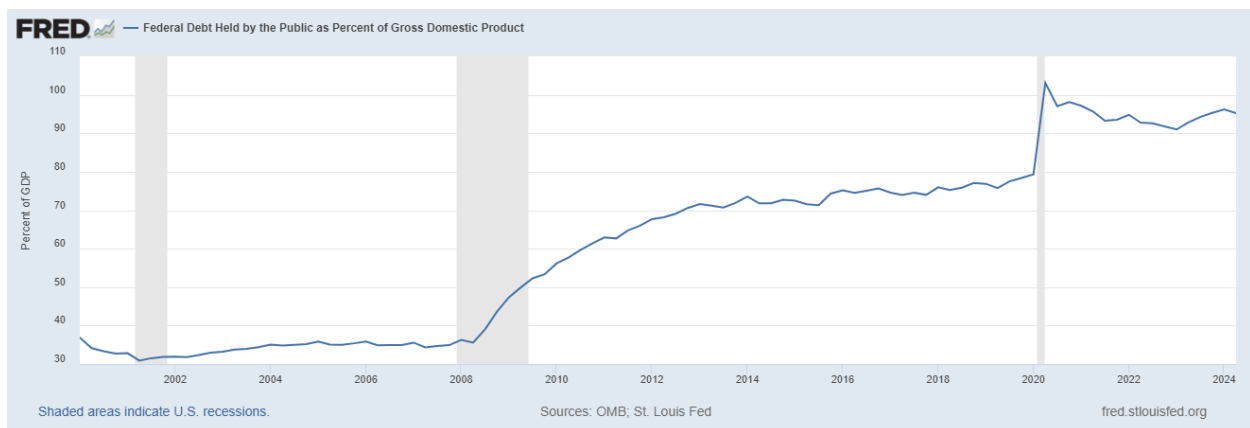


Figure 4 - Debt Held by the Public as Percent of GDP

While this deficit has come down from its local maximum during COVID-19, it is by no means low. This shows a high degree of principal debt, but as stated earlier, high debt doesn't necessarily portend default.

When taking a look at debt sustainability, we can look at the GDP growth rate against the average real interest rate on debt. The average real GDP growth rate is 2.7% for per a year for the United States since 1985, which is greater than the average real interest rate of its one- and ten-year interest rates at 1.1 and .77 respectively averaged monthly over the last ten years.

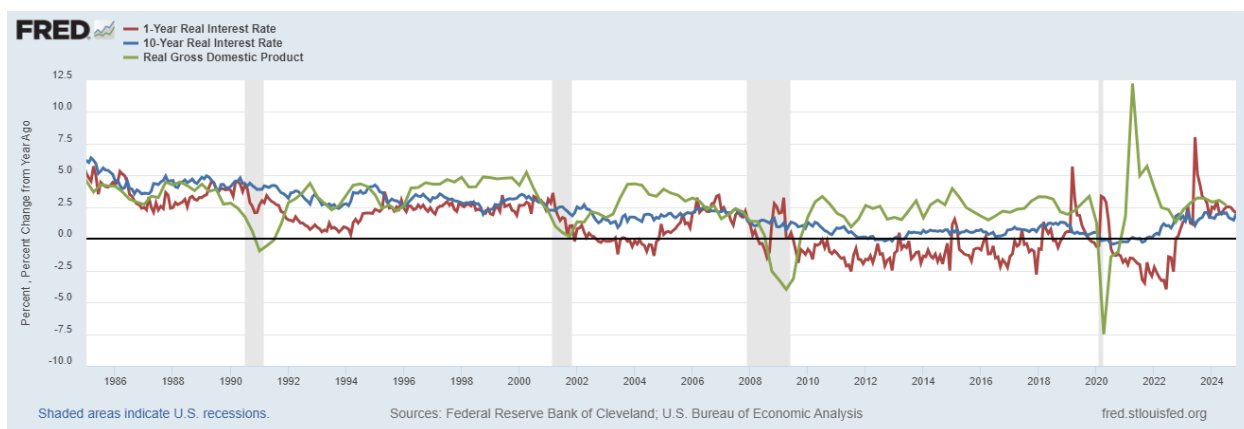


Figure 5 - Real GDP, One-Year Real Interest Rates, Ten-Year Real Interest Rates

The US has a high standing in the world credit arena, further the United States' free market and diverse economy attracts lenders from all over the world, giving it a good track record of debt repayment and therefore confidence. Countries with poor infrastructure, poor institutions, or with social unrest may be less attractive for lenders and inspire lower degrees of confidence.

With this in mind, I believe there is little chance at the US defaulting on its debt in the short or medium term, however, the position isn't infallible—increased deficits could be costly as well as ever popular tax cuts. If government deficits are sustained and taxes are cut, discretionary income from consumers increases which can lead to greater upward pressure on inflation. Continued deficits and fiscal spending may cause the central bank to either hold interest rates high more often or set a new, higher target interest rate. And while maybe not immediately pressing, debt problems not addressed now may turn into greater and more consequential problems later. Keeping the good times going could definitely have implications down the line.

Work Cited

International Monetary Fund. *Gross public debt, percent of real GDP*. Accessed on November 16, 2024.

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