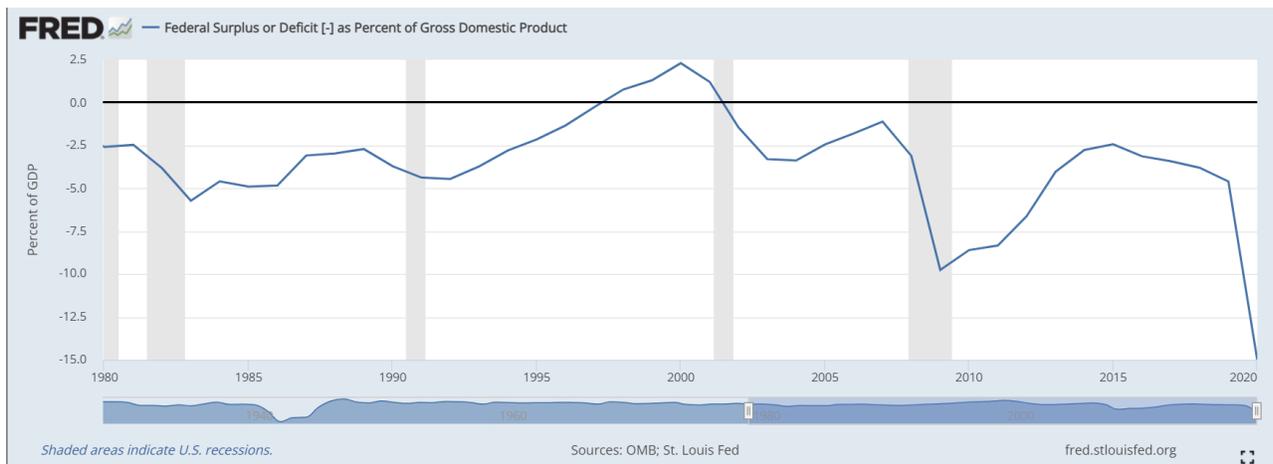


Week 13 Recitation

For this week's recitation, we will study government spending and fiscal policy, focusing on the relationship between budget results and the business cycle. We will also debate how budget surpluses/deficits impact (but are different from) the debt/GDP ratio. After analyzing data for the United States, we will compare that with data from other countries, that you will collect using FRED.

- 1) Analyze the graph below, showing the Federal Government annual budget result for the United States since 1980 (as a percentage of GDP). Is the government running a surplus, deficit, or balanced budget during the past 40 years? Considering that the shaded areas represent recessions, what can you tell about the fiscal policy adopted by the United States during those periods?



Note that the graph shows the deficit(surplus) as a percentage of GDP, because we will be comparing the US with other countries on Question 4.

Since 1980 (really since the 1960s), the United States Federal Government shows mostly budget deficits, meaning that it spends more money than it receives in that given period – with the exception of the period between 1998-2001, where we can see a few consecutive surpluses. The graph shows that, during recessions, the size of the deficit increases, and after the economy recovers, the deficit decreases, indicating a countercyclical fiscal policy: during the bust of the business cycle, the government increases spending as a proportion of revenue; when the economy recovers (boom of business cycle), it allows for balanced budget or even a surplus result. This can be either the result of discretionary fiscal policy (meaning that the government actively promoted deficits as a way to stimulate the economy, with policies such as tax cuts for businesses, temporary tax exemptions on certain final goods, and increase in government consumption) or the result of automatic stabilizers (during recessions, it's natural that the tax revenue decreases, due to a smaller mass of profits and wages and a smaller level of investment and consumption; at the same time, the level of government spending tends to increase, since more people will be relying on unemployment benefits and other welfare programs such as food stamps). In Week 7, when we analyzed the components of GDP for the United States, we saw that, indeed, during periods of recession, the US Government increase their expenditure as a percentage of GDP (while private consumption and investment decreased).

- 2) Compare the fiscal policy observed for the United States Federal Government in the question above with the common budget strategy advised for households—families should decrease their consumption during periods of low income (smaller revenues), and only increase expenditure when income increases—to avoid debt. How are those strategies different? How is that debate associated with the balanced budget discourse?

The budget of a household as described above follows a pro-cyclical logic: periods of crisis (small revenue) are periods for cutting expenditure, while periods of boom (increase in revenue) are opportunities for increased consumption. So, it is the exact opposite of the counter-cyclical fiscal policy observed in the graph above.

In general, that's a central argument advanced by balanced budget advocates: the government should always run their budget with a balanced result, so that it's an example for households and the level of debt doesn't get too high. To achieve that, it must cut expenditure in periods of low revenue (so pursue an austerity policy during economic crisis) and increase again when revenue increases (pro-cyclical fiscal policy). On the other hand, balanced budget opponents argue that that's precisely why a countercyclical policy is better: since households (and businesses) decrease their consumption (investment) during periods of crisis, the government should increase their consumption level—despite the decrease in revenues typical of recession periods—as a way to avoid a deeper crisis.

- 3) Now, compare the graph from Question 1 with the graph below, which shows the Federal Debt as a percentage of GDP for the United States during the same period (1980-2020). What's the relationship between the budget result and the debt/GDP ratio?



Since the Federal Government of the United States ran budget deficits during most of the period analyzed, it's expected that the debt/GDP ratio will increase, which is exactly what we observe in the graph above. It is important to notice that debt is a **stock** variable, which measures the amount of federal debt accumulated over time, while the budget result is a **flow** variable, that shows if the federal government had a surplus or deficit in a specific period of time. For that reason, even when the Federal Government has consecutive budget surpluses, the debt/GDP is still

positive and can be quite significant, depending on the amount of accumulated debt and on the size of GDP in that specific point in time—during 1998-2001, for example, the US had consecutive budget surpluses, and the debt/GDP was decreasing, but was still always greater than 50%.

Therefore, a high debt/GDP tells us nothing about the budget result of a country/state, and the opposite is also true, a surplus or deficit result doesn't inform us about the debt/GDP of a country/state. However, the analysis of budget results over time gives us clues about how the debt/GDP is moving (if increasing or decreasing), despite not informing us about the magnitude of that ratio. Similarly, the analysis of debt/GDP over times gives us clues about how the country is performing in terms of budget results.

- 4) Now, let's take a look at other countries budget results, debt/GDP, and business cycles. Go to <https://fred.stlouisfed.org/> and follow these steps:

The countries below are the ones with data starting in the 1980s, so they have a larger dataset to analyze trends and it's easier to compare with the data from the United States showed above (that also starts in 1980). If you have a small number of students in your recitation section, they can do it individually; otherwise, you can divide the class in groups, so that each group picks one country. The students should be able to answer the questions below, then present their analysis to the classroom.

1. Pick one of the following countries: Japan, Spain, France, United Kingdom, Canada, Taiwan Province, Bolivia, Colombia, China, Paraguay, or St. Vincent and the Grenadines.
2. Look for “General government net lending/borrowing *chosen country*” at the search bar. Save that graph by taking a screenshot or copying the image and paste it in a Word document.
3. Go to the search bar again and look for “Central government debt *chosen country*”. Paste that graph right below the one you just found, in the same Word document.
4. Finally, go to the search bar one more time and look for “Gross domestic product *chosen country*”. Paste that last graph in the same page as the two previous ones, so it makes it easier for you to do a visual analysis. Now answer the following questions:
 - a) Based on the business cycle movements (from the GDP graph) and the budget result graph, do you believe that the observed country follows a countercyclical fiscal policy, a procyclical fiscal policy, or a strict balanced budget strategy?

Students can try to add the GDP line in the budget result graph in FRED for this question, to make it easier for them to make the analysis, but for the next question they will have to use a new graph anyways, due to a scale problem (variation of GDP and budget result/GDP are smaller than 5% in general, while debt/GDP can be 100-200%). Also, the “Add a line” search box doesn't always work perfectly in FRED, especially for international data.

Here, the idea is for students to visually inspect if periods of recession or very small GDP growth are associated with the existence of budget deficits (indicating a countercyclical fiscal policy), or with a cut in expenditure that generates budget surpluses or smaller deficits when compared to the historical average (indicating a procyclical fiscal policy). Remind the students that this is just a visual inspection that gives us clues about

how the government acts, since those budget results can be a result of discretionary monetary policy or just the result of automatic stabilizers. It can also be the case that the government always tries to run a balanced budget (which is the case of Paraguay, that produced mostly small budget surpluses during this period, except during the COVID crisis).

- b) How does the budget result associate with the debt/GDP relationship? Is it similar to the relationship observed for the United State in the questions above?

For some countries, the data will just say “Central Government Debt, total (%GDP)”; for others, it will be “Central Government Gross Debt” (and the data is as a percentage of GDP too, despite the title of the variable not making this explicit). Be aware of this difference but the data is very similar for the countries that show both indicators; the main different is the timeframe available, so students should pick the longer timeframe.

Students should be able to identify that, in general, when countries produce consecutive deficits, the debt/GDP grows, while consecutive surpluses should make the debt/GDP decrease, but that’s not always the case. Since debt is a stock variable and is accumulated over time, a country might be producing surpluses but the interest in those debts are growing faster, so they only pay part of the interests and never really decrease the amount of debt itself. Further, the net lending/borrowing variable adopts a methodology that is focused on fiscal result (how much revenue a central government makes from tax and tariffs collection, and how much it spends on government consumption), so some financial transactions and profits from government enterprises are not included, meaning the government has other ways of making (or losing) money.

- c) How does the size of the debt/GDP compare with the size of the debt/GDP of the United States? How about the size of the surplus(deficit)/GDP?

This question is design for students to see that periphery countries in general have smaller levels of debt/GDP than developed nations. If you have time, you can talk about how borrowing and lending money to countries (which impact their debt level) depends on lots of other factor such as political relations and overall level of trust in central government and federal banks.

- d) One of the main arguments favoring a low level of debt/GDP (and, therefore, encouraging the pursue of consecutive budget surpluses as a way to decrease the level of debt) is that countries with a high debt/GDP ratio struggle to keep a sustainable GDP growth. Does the data that you observed corroborate with this argument? Based on your knowledge of macroeconomics, do you agree with that perspective?

This is a debate question, so depending on how much time you have left on your recitation section, you can go deeper in this discussion. A few points for discussion are: (1) economic crisis in general are spread worldwide, and every country suffers from it, so all countries saw the impacts of the 2008 crisis and the COVID crisis (and failed to have sustainable growth at some point); the important policy question is how to get out of it

(meaning, what type of fiscal policy, if any, countries that don't suffer deep or long recessions adopt); (2) a lot of developed countries have very high debt/GDP when compared to the US, and a lot of periphery countries do not; GDP growth depends on a lot of other factors; (3) debt/GDP obviously depends on GDP, so countries that are acquiring high levels of debt but using it in a way that will make them grow faster, will keep that relationship stable; similarly, countries with a sustainable level of debt but facing an economic crisis will see that relationship grow; (4) for those interested in history of economic thought, there was a 2010 paper from Reinhart and Rogoff (Harvard Econ professors) claiming that economic growth slows dramatically when the size of a country's debt rises above 90%, which became highly influential and gave empirical backgrounds for austerity policy advocates (IMF and the World Bank in particular); when PhD student Thomas Herndon from UMass Amherst got access to their dataset and coding, however, he discovered that the data of five countries (Australia, Austria, Belgium, Canada and Denmark) were dropped from the sample in the original research, and the inclusion of those countries changed the results of the original paper. With the new dataset, high debt was correlated with somewhat lower growth, but the relationship was much gentler and there were lots of exceptions to the rule.