The Economics of Debt and Deficits

Budget surplus: taxes and other government revenues exceed government expenditures in a given year.

Budget deficit: taxes and other government revenues are less than government expenditures in a given year.

Balanced budget: government revenues and expenditures are equal in a given year.
Debt vs. Deficit

The government deficit (or surplus) is a flow; it is analogous to water flowing in (deficit) or out (surplus) of a bathtub filled with water.

The amount of water in the bathtub is the government debt. When a government runs a deficit in a given year, it must borrow from the public to cover the shortfall in revenues, thereby increasing the government debt.

The government debt is a stock, not a flow.
Crowding Out

Increases in government spending (holding taxes fixed) shift the aggregate demand curve out, increasing output (and the price level) in the short run.

But in the long run, the SRAS curve shifts up (as $p^e$ adjusts to the increase in $P$), and the economy returns to the natural rate of output ($Y_n$). That is, the long-run equilibrium occurs at the intersection of the AD curve and the LRAS curve (which is vertical at $Y_n$).
What are the effects on the different components of GDP?

Originally, \( Y_n = C + I + G \).

In the new long-run equilibrium, \( Y_n = C' + I' + G' \), where \( G' > G \).

But how do \( C' \) and \( I' \) compare to \( C \) and \( I \)?

If consumption depends only on disposable income \( (Y - T) \), then \( C' = C \): disposable income = \( Y_n - T \) in both the original and the new long-run equilibria.

\( \Rightarrow I' < I \): investment has been crowded out by the increase in government debt.
Why has investment fallen?

- The price level $P'$ in the new long-run equilibrium is higher than the original price level $P$. But the nominal money supply $M$ has not changed, implying that the real money supply has decreased:

$$\frac{M}{P'} < \frac{M}{P}.$$ 

- In order to induce consumers to hold less money, the interest rate must increase (making bonds more attractive, so that consumers want to convert some of their money holdings into bond holdings).
- The higher interest rate in turn reduces investment!
• Decreases in taxes (holding government spending fixed) also “crowd out” investment.
• When taxes T fall, disposable income Y - T increases, leading to an increase in consumption. This shifts out the AD curve, increasing both output and the price level in the short run.
• In the long run, output returns to Y_n, but C is higher because Y_n - T is higher. In the new long-run equilibrium, G is unchanged but C is higher, so I must be lower (since Y_n = C + I + G). Again, the long-run increase in P reduces the real money supply, increasing the interest rate and reducing investment.
A contrarian view: Ricardian equivalence

Robert Barro has argued that changes in taxes do not have real effects, provided that the government’s budget is balanced in the long-run.

His argument relies on consumption smoothing.

Suppose the economy only lasts for 2 years: this year and next year. Consumers have disposable income $Y_1 - T_1$ in year 1 and disposable income $Y_2 - T_2$ in year 2.
Assume that the objective of consumers is to smooth consumption perfectly across the two years. With a zero interest rate, this means that:

\[ C_1 = C_2 = \text{average income across the 2 years} = \frac{(Y_1 - T_1) + (Y_2 - T_2)}{2} \]

Consumers borrow and lend so as to achieve this objective.
Dynamic Government Budget Balance

If the government eventually pays back its debt, then, in our simple two-year economy with a zero rate of interest: $G_1 - T_1 + G_2 - T_2 = 0$

If the government runs a deficit in year 1 ($G_1 - T_1 > 0$), then it must run a surplus in year 2 ($G_2 - T_2 < 0$).

Suppose, originally, that the deficit in each year is zero: $G_1 = T_1$ and $G_2 = T_2$. 
If $T_1$ decreases to $T_1'$, but spending in years 1 and 2 ($G_1$ and $G_2$) do not change, then $T_2$ must increase in year 2 by exactly the difference between $T_1'$ and $T_1$:

$$G_1 - \left( \overline{T_1 + \Delta T_1} \right) + G_2 - \left( \overline{T_2 + \Delta T_2} \right) = 0$$

$$= T_1' = T_2'$$

$$\Rightarrow \Delta T_1 = \Delta T_2$$

(assuming that the government's dynamic budget was in balance originally)
• This means that the consumer's average income across the two years has not changed:

\[
\frac{(Y_1 - T_1) + (Y_2 - T_2)}{2} = \frac{(Y_1 - T'_1) + (Y_2 - T'_2)}{2}
\]

• Because consumption today depends not on today's disposable income but on average disposable income across the consumer's "lifetime", consumption today does not respond. (Instead, consumers save the tax reduction in year 1 in order to pay the higher tax bill in year 2.)

• As a result, the AD curve does not shift, and the decrease in taxes has no short- or long-run effect on the macroeconomy.
Ricardian equivalence in practice

The actual economy probably lies somewhere between the extremes of “crowding out” and “no crowding out” in response to a decrease in taxes (leading to a deficit and hence an increase in govt debt.) Why?

1. Consumers might be myopic (they don’t correctly anticipate the future inevitable increase in taxes).

2. The future increase in taxes might occur far in the future, when today’s consumers are no longer alive.

3. Consumers might not be able to smooth consumption perfectly because of (realistic) constraints on borrowing.