Government expenditures & fiscal policy

EC 103–003

Marcio Santetti
Spring 2023

Motivation

Housekeeping

Required readings:

- Case, Fair, & Oster (2012), ch. 9.
    - See *Extra Readings* module on `theSpring`.

Government: Good or bad for the economy?

The **role of the government** in a country's economy is a matter of great *debate*.

Regardless of one's view abut the role of the government, it performs several **functions**, including:

- Setting *minimum wages*;
- Regulating *product quality*;
- Providing and maintaining public *schools*, *parks*, *health programs*, etc.

From a **macroeconomic** perspective, the government (be that *local*, *state*, or *federal* instances) acts in the economy through two main channels:

1. **Fiscal** policy;
2. **Monetary** policy.

Government: Good or bad for the economy?

Fiscal policy refers to a government's *spending* and *taxing* practices.

- In other words, how the government manages its own **budget**.

We may divide fiscal policy into three main categories:

1. Government *expenditures* on goods and services;
2. *Tax* policies;
3. *Transfer* payments (veteran benefits, Social Security, unemployment compensation,...).

On the other hand, **monetary** policy involves how the government, through its central bank, manages a country's **supply of money**.

Government variables

Government variables

From now on, we will add the **government** to our formal analysis of an economy.

In other words, we are now treating a still *closed* economy, but *with* government.

Thus, its **aggregate expenditures** (AE) are defined by:

$$AE \equiv C + I + G$$

where G includes government expenditures.

Government variables

Now, turning to **aggregate output** (Y), we will define a new variable, called **net taxes** (T).

- T accounts for taxes collected by the government and its transfer payments.

Since now we are considering the role of government in the macroeconomy, it takes a **portion** of household income flows in the form of taxes.

Therefore, the income that *ultimately* gets to households is known as **disposable (after-tax)** income, Y_d:

$$Y_d \equiv Y - T$$

where Y_d *subtracts* taxes paid by households and *includes* any transfer payments that these receive from the government.

Government variables

Now, households' *disposable income* must be either spent on **consumption** or **saved**.

$$Y_d \equiv C + S$$

And since $Y_d \equiv Y - T$,

$$Y - T \equiv C + S$$

Rearranging,

$$Y \equiv C + S + T$$

This last identity says that aggregate output is **split** between *net taxes*, household *consumption*, and *savings*.

Government variables

Whenever a government's expenditures (G) are **larger** than what it collects in net taxes (T), the government runs a **budget deficit**.

$$Budget\ deficit = G - T$$

- If $G > T$, budget *deficit*;
- If $G < T$, budget *surplus*.

In case G exceeds T, the government must finance this deficit by **borrowing** from the public.

- Via Treasury bonds, bills,...
- This way, part of **aggregate savings** (S) goes to financing budget deficits.

Government variables

Before considering the government, our aggregate consumption function looked like:

$$C = a + bY$$

Now, we simply replace total income (Y) by **disposable income**, Y_d:

$$C = a + bY_d$$

or

$$C = a + b(Y - T)$$

For now, we still consider that **aggregate investment** (I) *does not* depend on income (meaning that *planned* investment equals *actual* investment.)

Equilibrium

Equilibrium

From our previous lectures, we saw that a **macroeconomic equilibrium** happens when

$$Y = AE$$

That is, when *aggregate output* (Y) is **equal** to planned *aggregate expenditures* (AE).

And this is equivalent to

$$Y = C + I + G$$

Equilibrium

Assume the following:

- An aggregate consumption function $C = 150 + .80Y_d$;
- Government expenditures $G = 100$;
- The government has a *balanced budget*, meaning that its spending is fully financed by taxes (T);
- Planned investment $I = 150$.

Now, we can ask some **questions**:

- If aggregate output (Y) is \$ 500, what is the level of **disposable income** of this economy?
- When output (Y) is \$ 500, is the economy in **equilibrium**?
- When output (Y) is \$ 1,800, is the economy in **equilibrium**?
- What is the **equilibrium level** of output for this economy?

Saving = Investment revisited

Saving = Investment revisited

In previous lectures, we saw that the *equality* between aggregate saving and investment is a **necessary condition** for equilibrium.

Now that *government expenditures* and *taxes* play a role in the economy, we may **revisit** this condition.

Consider the **income flow** in the economy as the amount of money households, firms, and the government spend.

- For consumption, we have assumed that household spending is guided by the **marginal propensity to consume** (a fixed value between 0 and 1).
- And new **injections** in the economy come either from planned **investment** (I) or **government expenditures** (G).
- However, the government also takes out **taxes** (T) from this flow of income, and households usually **save** some of their income.
- Thus, taxes and saving can be considered **leakages** from the flow of income.

Saving = Investment revisited

Therefore, the **equilibrium condition** when there is government in the economy becomes

$$S + T = I + G$$

In words, the volume of **leakages** ($S + T$) must be **compensated** with planned **injections** ($I + G$) in the economy to achieve **equilibrium**.

Notice that, now, equilibrium **does not** require a balanced government budget ($G = T$) or an equality between aggregate saving and investment ($S = I$) to be achieved.

- The equality must be between **leakages** and **injections**!

From our previous example, is this condition satisfied in **equilibrium**?

Fiscal policy & multiplier effects

Fiscal policy & multiplier effects

When we consider the **government** in the macroeconomy, we see that output can be changed by either changing the levels of **government expenditures** (G) or **net taxes** (T) (or both simultaneously).

Whenever changing **any** of these variables, the government is engaging in **fiscal policy**.

Fiscal policy can generate **three** types of **multiplier** effects in the economy, namely:

1. The **government spending** multiplier;
2. The **tax** multiplier;
3. And the **balanced-budget** multiplier.

Fiscal policy & multiplier effects

Suppose **policymakers** are faced with the following situation:

- The economy must be **stimulated** (i.e., aggregate output must grow to reduce unemployment, for example).
- Taxes **cannot** be changed (due to a recent tax reform package, for example).

How can the government increase aggregate spending **without** changing the tax regime?

Say that we have the same setup from before:

- $C = 150 + 0.8Y_d$;
- $I = 150$
- $G = 100$
- $T = 100$

The goal is to increase output by \$ 200 ($\Delta Y = 200$).

Fiscal policy & multiplier effects

With aggregate investment and the tax regime remaining unchanged, **government expenditures** are capable of generating **multiplier** effects.

This is the **government expenditures multiplier**.

> The **government expenditures multiplier** is the ratio of the change in the equilibrium level of output to a change in **government spending**.

$$\text{Government expenditures multplier} = \frac{1}{\text{MPS}} \text{ or } \frac{1}{1 - \text{MPC}}$$

From our example, what is the government expenditures multiplier?

Fiscal policy & multiplier effects

Now, assume that a policymaker has the task of increasing aggregate output by $ 200 (as before), but **without** increasing government expenditures (G).

The remaining fiscal policy instrument is **taxation**.

- Thus, a **tax cut** takes place.

Using our example economy, what tax cut is necessary to increase aggregate output by $ 200?

Fiscal policy & multiplier effects

> The **tax multplier** is the ratio of change in the equilibrium level of output to a change in taxes.

$$\text{Tax multplier} = -\left(\frac{\text{MPC}}{\text{MPS}}\right)$$

Given that a tax *cut* will cause an *increase* in consumption expenditures and output and a tax *increase* will cause a *reduction* in consumption expenditures and output, the tax multiplier is a negative number.

Fiscal policy & multiplier effects

Now, what happens if government spending and taxes are increased **by the same amount**?

In other words, the government decides to pay for its extra spending by increasing taxes by the same amount, thus keeping the government's budget **deficit unchanged**.

- What is the effect on the equilibrium level of output, in case the goal is to increase output by $ 200?

Fiscal policy & multiplier effects

> The **balanced-budget multiplier** is the ratio of change in the equilibrium level of output to a change in government spending where the change in government spending is balanced by a change in taxes so as **not to create any deficit**.

$$\text{Balanced-budget multplier} = 1$$

In words, the change in Y resulting from the change in G and the equal change in T are exactly the same size as the initial change in G or T.

Fiscal policy & multiplier effects

A nice summary:

TABLE 9.4 Summary of Fiscal Policy Multipliers

	Policy Stimulus	Multiplier	Final Impact on Equilibrium Y
Government spending multiplier	Increase or decrease in the level of government purchases: ΔG	$\frac{1}{MPS}$	$\Delta G \times \frac{1}{MPS}$
Tax multiplier	Increase or decrease in the level of net taxes: ΔT	$\frac{-MPC}{MPS}$	$\Delta T \times \frac{-MPC}{MPS}$
Balanced-budget multiplier	Simultaneous balanced-budget increase or decrease in the level of government purchases and net taxes: $\Delta G = \Delta T$	1	ΔG

Next time: Money supply & demand