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Economics 202

Summary Sheet on Multipliers

1. What is a multiplier?

It is a way of seeing how sensitive the economy is to an expenditure injection/leakage. That is, within macroeconomics, multipliers tell us the effect of a change in aggregate expenditure on equilibrium GDP. In using multipliers within the context of our simple AE model, we also note the following:

a. any given change in expenditure (i.e. any given ΔG, ΔI, ΔT, etc.) will be less than the resulting change in equilibrium GDP (i.e. ΔY) – although with ΔT, we are assuming a larger MPC.

b. changes in any expenditure represented as an injection (e.g. ΔG) are positively related to ΔY, while changes in any expenditure represented as a leakage (e.g. ΔT) is negatively related to ΔY

2. How do I use a multiplier?

There are two types of multiplier, the expenditure multiplier and the tax multiplier. On the expenditure side, we will focus on the government expenditure multiplier.

(i) Government expenditure multiplier: $\Delta Y = \left(\frac{1}{1 - MPC} \right) \Delta G$

(ii) Tax multiplier: $\Delta Y = \left(\frac{-MPC}{1 - MPC} \right) \Delta T$

Government expenditure multiplier

Example 1: The MPC is 0.8 and the government wants to know how much GDP is affected after increasing government spending by 1000 (i.e. $\Delta G = 1000$)

$$\Delta Y = \left(\frac{1}{1 - 0.8} \right) (1000)$$

When we solve for ΔY, we get $\Delta Y = 5000$. I.e., an increase in G of 1000 leads to an increase in Y of 5000.

Tax multiplier

Example 2: The MPC is 0.8 and the government wants to know how much GDP is affected after increasing taxes by 1000 (i.e. $\Delta T = 1000$)

$$\Delta Y = \left(\frac{-0.8}{1-0.8} \right)(1000)$$

When we solve for ΔY, we get $\Delta Y = -4000$. I.e., an increase in T of 1000 leads to a decrease in Y of 4000.

Note what we said above. Increasing G leads to an increase in Y, but also that $\Delta G < \Delta Y$. Similarly, an increase in T leads to a decrease in Y. Given that the MPC is relatively large, we also observe $|\Delta T| < |\Delta Y|$.

Of course, if we began with a given ΔY, we could use that ΔY with the MPC to determine the amount of ΔG or ΔT that would get us this given ΔY.