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Economics 202

Closing a Recessionary gap with a change in government spending

Let's assume we have a set of equations that represent the standard AE model and which tell us how much people spend within a specific economic system. Here are those equations:

C = 0.8(DI) + 4800	(C = Consumption Expenditure, DI = Disposable Income)
I = 5000	(I = Investment Expenditure)
G = 4000	(G = Government Expenditure)
X = 1000	(X = Expenditure on Exports)
M = 1000	(M = Expenditure on Imports)
T = 1000	(T = Tax Revenues)
DI = Y - T	(Y = real GDP)

If we solve for equilibrium GDP, then we find that Y* = 65000. Let's assume further that the Potential GDP of this economy is 70000, which gives us a recessionary gap.

To close this gap, the government can use fiscal policy, which means some amount of change in government expenditure and/or taxes. Let's assume that government plans to change spending. In doing so, the government must also decide how they will pay for that increased spending. Their options are as follows:

- Issue bonds (increased borrowing)
- Raise taxes (e.g. maintain a balanced budget)
- Print money (i.e. accommodating monetary policy)

Let's assume that government decides to borrow the money, which obviously seems very far-fetched when you consider how our government works (#sarcasm). When making such a choice, we will only need to determine how that change in G will affect Y*. E.g., if we chose option 2 (taxes), then we'd have to look at the net effect of changing G and T together.

We analyze the effect of this change through the use of the government expenditure multiplier equation. A generic version of that equation is provided below:

$$\Delta Y = \left(\frac{1}{1-MPC}\right)\Delta G$$

Note that the MPC is provided in our Consumption function above. The change in Y needed to close this output gap would be the ΔY, and the change in G that will close this gap, the value we will try to calculate, is ΔG.

What is the change in Y needed to close this output gap? If Potential GDP = 70000 and Y* = 65000, then $\Delta Y = 5000$. If we plug our MPC and ΔY into the government expenditure multiplier equation, then we have:

$$5000 = \left(\frac{1}{1-0.8}\right)\Delta G$$

Solving for ΔG, we get $\Delta G = 1000$. I.e., if we raise G by 1000 (from 4000 to 5000), then we will increase Y from 65000 to 70000 and close this recessionary gap.