SMU
SINGAPORE MANAGEMENT UNIVERSITY

Economics & Society
Singapore Management University
School of Economics & O.C.C.
Kosmas Marinakis, Ph.D.
www.kmarinakis.org

Practice Set 10

Short-run GDP Fluctuations

This set contains problems for your own practice. It is highly recommended to work on the problems on your own. Do not just read the provided solutions. Instead, try to solve the problems and use the solutions only when you cannot continue on your own. Reading problems that someone else has solved has the same value for your preparation like watching someone else running a marathon on TV and then expecting to be able to run it, too. If you have questions on this set, please ask your section's teaching assistant.

1. Explain why the intersection of the 45-degree line with the $C + I + G$ line is indeed where the equilibrium of the commodity market should be located.
2. Explain the mechanism through which a shock on C, I or G can put pressure on the real interest rate.
3. Explain how the Central Bank can stabilize a shock that was caused from C, I or G and block it from affecting the real interest rate in a scarce reserves framework.
4. Explain what will happen in a scarce reserve framework, if a shock that was caused from C, I or G is not blocked by the Central Bank.
5. Explain how a decrease in the real interest rate can affect the real output.
6. Explain how a shock that originated in the money market can be neutralized in the commodity market.
7. Explain why the Central Bank may have to adjust the money supply for a second time after it initially increased it in order to conduct expansionary monetary policy in a scarce reserves framework.
8. Assume that $C = 70 + 0.5(Y - T)$, $I = 300, G = 230$, $T = 0.2Y$ and $X = M$.
   (a) Show that the equilibrium income is $Y = 1{,}000$.
   (b) Show that if G is increased by 60 units, the equilibrium income will increase by 100 units.
   (c) We know that $Y = C + I + G$. If G increased by only 60 units and C and I have not changed, how did Y increased by 100 units? Where are the additional 40 units of Y coming from?
9. In the lecture, we considered an economy with
   $$C = 100 + 0.75(Y - T),\ G = 220,\ I = 120,\ T = 0.2Y$$
   and we concluded that $Y = 1{,}100$.
   (a) What is the government budget deficit $G - T$ in this economy?
   (b) What is the government budget deficit $G - T$ in this economy if G increases by 45 units, so that $Y \approx 1{,}213$?
   (c) What is the government budget deficit $G - T$ in this economy if G does not increase but the taxation coefficient decreases to $t = 0.15$, so that $Y \approx 1{,}214$?
   (d) What can you conclude for expansionary fiscal policy?
10. A creditor provides a loan of \$100 with interest rate 20% to a debtor. The debtor will invest the money in a project that has 10% probability to fail. If the project fails, the debtor will default on the loan not being able to pay anything back.
    (a) What is the probability for the creditor to lose money from this loan?
    (b) Assume now that this creditor provides 1,000 such loans to different debtors, who all invest in different projects that each has 10% probability to fail. If a project fails, the debtor who invested in it will default on the loan but this does not necessarily imply that all others will default. What is the probability for this creditor to lose money in total?

(c) Assume now that this creditor provides 1,000 such loans to different debtors, who all invest in the same project, which has 10% probability to fail. If the project fails, all debtors will default on their loans. What is the probability for this creditor to lose money in total?

11. *[Optional]* In the Solow model, we have seen that $S = I$. Is it the same in the "$Y = C + I + G$ model"?