Lecture 14 - Recommended Problems

François Geerolf
UCLA

☆☆☆ Chapter 18, Problem 7

Multipliers, openness, and fiscal policy. Consider an open economy characterized by the following equations:

$$\begin{aligned} C &= c_0 + c_1 (Y - T) \\ I &= d_0 + d_1 Y \\ IM &= m_1 Y \\ X &= x_1 Y^* \end{aligned}$$

The parameters m_1 and x_1 are the propensities to import and export. Assume that the real exchange rate is fixed at a value of 1 and treat foreign income, Y^*, as fixed. Also assume that taxes are fixed and that government purchases are exogenous (i.e., decided by the government). We explore the effectiveness of changes in G under alternative assumptions about the propensity to import.

a. Write the equilibrium condition in the market for domestic goods and solve for Y.

b. Suppose government purchases increase by one unit. What is the effect on output? (Assume that $0 < m_1 < c_1 + d_1 < 1$. Explain why.)

c. How do net exports change when government purchases increase by one unit?

   Now consider two economies, one with $m_1 = 0.5$ and the other with $m_1 = 0.1$. Each economy is characterized by $c_1 + d_1 = 0.6$.

d. Suppose one of the economies is much larger than the other. Which economy do you expect to have the larger value of m_1? Explain.

e. Calculate your answers to parts (b) and (c) for each economy by substituting the appropriate parameter values.

f. In which economy will fiscal policy have a larger effect on output? In which economy will fiscal policy have a larger effect on net exports?

☆☆☆ Chapter 18, Problem 8

Policy coordination and the world economy. Consider an open economy in which the real exchange rate is fixed and equal to one. Consumption, investment, government spending, and taxes are given by:

$$\begin{aligned} C &= 10 + 0.8(Y - T) \\ I &= 10 \\ G &= 10 \\ T &= 10 \\ IM &= 0.3Y \\ X &= 0.3Y^* \end{aligned}$$

where Y^* denotes foreign output.

a. Solve for equilibrium output in the domestic economy, given Y^*. What is the multiplier in this economy? If we were to close the economy – so exports and imports were identically equal to zero – what would the multiplier be? Why would the multiplier be different in a closed economy?

b. Assume that the foreign economy is characterized by the same equations as the domestic economy (with asterisks reversed). Use the two sets of equations to solve for the equilibrium output of each country. [Hint: Use the equa- tions for the foreign economy to solve for Y^* as a function of Y and substitute this solution for Y^* in part (a).] What is the multiplier for each country now? Why is it different from the open economy multiplier in part (a)?

c. Assume that the domestic government, G, has a target level of output of 125. Assuming that the foreign government does not change G^*, what is the increase in G necessary to achieve the target output in the domestic economy? Solve for net exports and the budget deficit in each country.

d. Suppose each government has a target level of output of 125 and that each government increases government spending by the same amount. What is the common increase in G and G^* necessary to achieve the target output in both countries? Solve for net exports and the budget deficit in each country.

e. Why is fiscal coordination, such as the common increase in G and G* in part (d), difficult to achieve in practice?

☆☆ Chapter 18, Problem 3

A European recession and the U.S. economy.

a. In 2014, European Union spending on U.S. goods accounted for 18% of U.S. exports (see Table 17-2), and U.S. exports amounted to 15% of U.S. GDP (see Table 17-1). What was the share of European Union spending on U.S. goods relative to U.S. GDP?

b. Assume that the multiplier in the United States is 2 and that a major slump in Europe would reduce output and imports from the U.S. by 5% (relative to its normal level). Given your answer to part (a), what is the impact on U.S. GDP of the European slump?

c. If the European slump also leads to a slowdown of the other economies that import goods from the United States, the effect could be larger. To put a bound to the size of the effect, assume that U.S. exports decrease by 5% (as a result of changes in foreign output) in one year. What is the effect of a 5% drop in exports on U.S. GDP?

d. Comment on this statement. "Unless Europe can avoid a major slump following the problems with sovereign debt and the Euro, U.S. growth will grind to a halt."

☆☆ Chapter 18, Problem 6

Eliminating a trade deficit.

a. Consider an economy with a trade deficit ($NX < 0$) and with output equal to its natural level. Suppose that, even though output may deviate from its natural level in the short run, it returns to its natural level in the medium run. Assume that the natural level is unaffected by the real exchange rate. What must happen to the real exchange rate over the medium run to eliminate the trade deficit (i.e., to increase NX to 0)?

b. Now write down the national income identity. Assume again that output returns to its natural level in the medium run. If NX increases to 0, what must happen to domestic demand ($C + I + G$) in the medium run? What government policies are available to reduce domestic demand in the medium run? Identify which components of domestic demand each of these policies affect.

☆ Chapter 18, Problem 9

The U.S. trade deficit, current account deficit, and investment.

a. Define national saving as private saving plus the government surplus – that is, as $S + (T - G)$. Now, using equation (18.5):

$$CA = S + (T - G) - I$$

describe the relation among the current account deficit, net investment income, and the difference between national saving and domestic investment.

b. Using the FRED economic database retrieve annual data for nominal GDP (series GDP), gross domestic investment (series GDPIA), and net exports (series A019RC1A027NBEA) from 1980 to the most recent year available. Divide gross domestic investment and net exports by GDP in each year to express their values as a percentage of GDP. What year has the largest trade deficit as a percentage of GDP?

c. The trade surplus in 1980 was roughly zero. Compute the average percentage of GDP invested and the average value of the trade balance as a percent of GDP in three periods: 1980–1989, 1990–1999, 2000 to the latest point. Would it appear that trade deficits have been used to finance investment?

d. Is a trade deficit more worrisome when not accompanied by a corresponding increase in investment? Explain your answer.

e. The previous question focuses on the trade deficit rather than the current account deficit. How does net investment income (NI) relate to the difference between the trade deficit and the current account deficit in the United States? You can download GDP (series GDP) and GNP (series GNP) from the FRED database at the Federal reserve Bank of St. Louis. This difference is a measure of NI. Is this value rising or falling over time? What is the implication of such changes?