IFEEK特別演習IIB: 2018年度

Problem Set 4: Applications of the *IS-LM* Model

Q1. Accoording to the IS-LM model, what happens to the interest rate, income, consumption, and investment under the following circumstances?

(a) The central bank increases the money supply.

(b) The government increases government purchases.

(c) The government increases taxes.

(d) The government increases government purchases and taxes by equal amounts.

Q2. Consider the following economy.

(a) The consumption function is given by

$$C = 200 + 0.75(Y - T), \qquad I = 200 - 25r, \qquad G = T = 100$$

For this economy, graph the IS curve for the interest rate r ranging from 0 to 8.

(b) The money demand function in this economy is

$$\left(\frac{M}{P}\right)^d = Y - 100r.$$

The money supply M and the price level P are given by

$$M = 1,000, \qquad P = 2.$$

For this economy, graph the LM curve for r ranging from 0 to 8.

(c) Find the equilibrium interest rate r and the equilibrium level ofincome Y.

(d) Suppose that government purchases are raised from 100 to 150. How much does the IS curve shift? What are the new equilibrium interest rate and level of income?

(e) Suppose instead that the money supply is raised from 1,000 to 1,200. How much does the LM curve shift? What are the new equilibrium interest rate and level of income?

(f) With the initial values for monetary and fiscal policy, suppose that the price level rises from 2 to 4. What happens? What are the new equilibrium interest rate and level of income?

Q3. Suppose that the government wants to raise investment but keep output constant. In the IS-LM model, what mix of monetary and fiscal policy will achieve this goal? In the early 1980s, the US. government cut taxes and ran a budget deficit while the Fed pursued a tight monetary policy. What effect should this policy mix have?

Q4. Suppose that the economy is in the long-run equilibrium with full employment. Use the *IS-LM* diagram to describe the short-run and long-run effects of the following changes on national income, the interest rate, the price level, consumption, investment, and real money balances. In considering the long-run effects, assume that the general price level increases/decreases if output is above/below its long-run level.

(a) An increase in the money supply.

(b) An increase in government purchases.

(c) An increase in taxes.

Q5. Suppose that the Bank of Japan is considering two alternative monetary policies:

- holding the money supply constant and letting the interest rate adjust, or
- adjusting the money supply to hold the interest rate constant.

In the *IS-LM* model, which policy will better stabilize output under the following conditions?

(a) All shocks to the economy arise from exogenous changes in the demand for goods and services.

(b) All shocks to the economy arise from exogenous changes in the demand for money.

Q6. Answer the following.

(a) Using the *IS-LM* model, derive the aggregate demand (AD) curve using diagrams.

(b) What happens to the AD curve if government purchases increase/decrease?

(c) What happens to the AD curve if money supply increase/decrease?

Q7. In the following equations, $a > 0$, $1 > b > 0$, $c > 0$, $d > 0$ $e > 0$, $f >$, $\bar{G} > 0$, $\bar{T} > 0$, and $\bar{M} > 0$ are all parameters.

$$\text{The Goods Market :} \quad C = a + b(Y - T), \quad I = c - dr, \quad G = \bar{G}, \quad T = \bar{T}$$

$$\text{The Money Market :} \quad \frac{M}{P} = eY - fr, \quad M = \bar{M}.$$

Derive an equation for the aggregate demand.