Universitat de Barcelona
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Macroeconomics - Group A8
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Equilibrium in the market for goods and services and in the money market: the IS-LM model.

List 7 - The IS-LM model.

1. Answer to the following questions about the IS-LM model. Responeu les segents preguntes en relaci al model IS-LM:
   (a) What does the IS curve represent?
   (b) What does the LM curve represent?
   (c) In what situation is an economy whose income and interest rate identify a point on the left of the IS curve and below the LM curve?
   (d) What if the point lies on the right of the IS curve and below the LM curve?
   (e) What if the point lies on the IS curve but above the LM curve?
2. For each of the following changes, represent graphically its effect on the equilibrium of the IS-LM model and explain the mechanism behind such effect:
   (a) an increase in the exports;
   (b) an increase in the tax rate;
   (c) a financial innovation that reduces the money demand.
3. Let us analyze the effectiveness of fiscal policy.
   (a) Describe graphically the effects of fiscal policy using the IS-LM model.
   (b) Suppose that the IS curve is perfectly vertical, that is, that the investment does not depend on the interest rate. What are the effects of the fiscal policy on the equilibrium levels of interest rate and income?

(c) Suppose that the LM curve is perfectly vertical, that is, that the money demand does not depend on the interest rate. What are the effects of the fiscal policy in this case?

4. Let us analyze the effectiveness of monetary policy.

   (a) Describe graphically the effects of monetary policy using the IS-LM model.

   (b) Suppose that the IS curve is perfectly vertical, that is, that the investment does not depend on the interest rate. What are the effects of the monetary policy on the equilibrium levels of interest rate and income?

   (c) Suppose that the LM curve is perfectly vertical, that is, that the money demand does not depend on the interest rate. What are the effects of the monetary policy in this case?

   (d) Suppose that the LM curve is perfectly horizontal, that is, that the money demand is extremely sensible to the interest rate. This situation is the so-called *liquidity trap*. Is the monetary policy effective in this case?

5. (Mankiw) According to the IS-LM model, what happens to interest rate, income, consumtpion, and investment in each of the following circumstances:

   (a) the central bank decides to increase the supply of money;

   (b) the government increases government spending;

   (c) the government raises the tax level;

   (d) the government increases spending and taxes by the same amount, so as to maintain public finances balanced.

6. (Mankiw) Use the IS-LM model to predict the effect of each of the following shocks on income, interest rate, consumption, and investment. Explain in each case what should the central bank do in order to maintain the income to its initial level.

   (a) After the introduction of a new high-performance electronic chip, many companies decide to update their hardware technologies.

   (b) A sudden increase in credit card frauds increases the frequency with which people realize cash transactions.

   (c) A book with the title "Millionaire retirement" induces people to increases the fraction of income devoted to savings.

7. (Mankiw) Suppose we are in a very particular economy called Hicksland.

   (a) The consumption function is $C = 200 + 0.75(Y - T)$, the investment function is $I = 200 - 25r$, and the government spending $\bar{G}$ and taxes $\bar{T}$ are both equal to 100. Express analytically and represent graphically the IS curve of this economy knowing that r fluctuates between 0 and 8.

   (b) The demand for real money balances is $(M/P)^d = L(Y, r) = Y - 100r$, the money supply is $\bar{M} = 1000$ and the price level is $\bar{P} = 2$. Express analytically and represent graphically the LM curve of this economy knowing that r fluctuates between 0 and 8.

   (c) Derive the equilibrium levels of interest rate and income.

   (d) Suppose that the government spending increases from 100 to 150. How much is the shift of the IS curve? What are the new equlibrium levels of interest rate and income?

   (e) Given the new level of government spending, suppose now that the money supply is raised from 1000 to 1200. How much is the shift of the LM curve? What are the new equlibrium levels of interest rate and income?

   (f) Given the initial level of money supply and government spending, suppose that the price level increase from 2 to 4. What happens? What are the new equlibrium levels of interest rate and income?

   (g) Express and represent graphically the Aggregate Demand (AD) curve. What happens to this AD if we change fiscal or monetary policy? [This question is an anticipation of the following exercise list.]

8. (Mankiw) Explain why each and every statement reported below is true. Analyze the effects of monetary and fiscal policy in each case.

   (a) If investment does not depend on the interest rate, the IS curve is vertical.

   (b) If the money demand does not depend on the interest rate, the LM curve is vertical.

   (c) If the money demand does not depend on the income, the LM curve is horizontal.

   (d) If the money demand is very responsive to changes in the interest rate, the LM curve is close to horizontal.

9. (Mankiw) Suppose that the demand for real money balances depends on disposable income instead of simply on the income. In other words,

$$M/P = L(r, Y - T).$$

Using teh IS-LM model, check whether this variation on the liquidity function has any implication for:

(a) the analysis of changes in the government spending;

(b) the analysis of changes in the taxation level.