Universitat de Barcelona
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Macroeconomics - Group A8
Professor: Lorenzo Burlon

The IS-LM model and the aggregate demand curve.

List 8 - The aggregate demand: short run and long run.

1. Explain why the Aggregate Demand (AD) curve has a negative slope.

2. Use the IS-LM model to describe the influence of a decrease in prices on the equilibrium level of income.

3. Use the IS-LM model to describe how the following policies affect the income, the interest rate, the price level, the consumption, the investment, and the real money balances. Distinguish the short run effects from the long run effects.

   (a) An increase in the money supply.

   (b) An increase in government purchases.

   (c) An increase in taxes.

   (d) An increase in government purchases accompanied by an increase in taxes of the same mangnitude.

4. Suppose that a closed economy with public sector is characterized by the specific functional forms we saw in class:

   - $C(Y_d) = C_0 + cY_d$,
   - $I(r) = I_0 - I_1 r$,
   - $L(r, Y) = L_0 + L_1 Y - L_2 r$.

   Given these parameters, derive the analytical expression of the IS curve, the LM curve, and the AD curve.

5. Use the analytical expression of the AD curve you derived in the previous exercise.

(a) Does the slope of the AD curve depend on the responsiveness of the demand for real money balances on the interest rate?

(b) Express the AD curve when the demand for real money balances does not depend on the interest rate. Can you find a scalar V such that $MV = PY$? We refer to the term V as the *velocity* of money and to the expression $MV = PY$ as the *quantity equation* of the Quantity Theory of Money.

(c) How does the slope of the AD curve depend on the responsiveness of the investment on the real interest rate?

(d) How does the response of the AD curve to changes in the government purchases depend on the marginal propensity to consume?

6. An open economy with public sector is characterized as follows. Consumption is $C = 40 + 0.75Y_d$, government purchases are $G = 30$, investment is $I = 28 - 4r$, transfers are $TR = 40$, taxes are $T = 0.2Y$, exports are $X = 20$, and imports are $M = 0.1Y$. Moreover, the demand for real money balances is $L(r, Y) = 2 + Y - 100r$ and the money supply is $\bar{M} = 500$.

   (a) Derive the analytical expression of the IS curve and of the LM curve given the level of prices P. Suppose that $P = 2$. What are the equilibrium levels of r and Y?

   (b) Derive the analytical expression of the AD curve and represent it graphically.

   (c) What is the effect of an increase in government purchases by 20 units in the short run? Compute the new levels of income, interest rate, and prices.

   (d) Suppose that the initial equilibrium level of income corresponded to the production of full employment. What is the effect of the increase in government purchases in the long run? Compute the levels of income, interest rate, and prices in the long run.