

The IS-LM model

EC 235 | Fall 2023

Required readings:

- Blanchard, ch. 5.

The previous two chapters introduced the *goods* and *financial* markets, respectively.

In the first, we explored the determinants of *aggregate demand* (Z), and how equilibrium can be reached when production (Y) is met by *aggregate expenditures*.

In the second, we saw that the *interest rate* plays a key role in the demand for and supply of *money*, and how equilibrium may be reached through *monetary policy*.

However, just looking at these two markets on their own is *not* sufficient to fully understand the macroeconomy.

Now we turn to the *IS-LM* model, which combines the *goods* and *money* markets for a more comprehensive macroeconomic analysis.

Recall *aggregate demand* in a *closed* economy:

$$Z = C + \bar{I} + G$$

And we assumed that C is a function of disposable income (Y_D), and I and G were *exogenously* determined.

Moving on, we will *abandon* the assumption that aggregate investment (I) is given.

Aggregate investment is in fact *far from constant* and depends primarily on two factors:

1. The level of *sales*;
2. The *interest rate*.

First, firms facing increases in *sales* will need to *invest* further in order to increase production.

Second, firms almost *never* have the entirety of funds to finance themselves to make such investments. Thus, they need to *borrow* from the money market.

Given this motivation, we may write the *investment function* as:

$$I = I(Y, i) \quad \frac{\partial I}{\partial Y} > 0 \quad ; \quad \frac{\partial I}{\partial i} < 0$$

In words, an increase in output (Y) *increases* investment; and an increase in the interest rate (i) *decreases* investment.

Now we can rewrite the aggregate demand function Z as:

$$Z = C(Y_D) + I(Y, i) + G$$

And we know that equilibrium in the goods market ($Y = Z$) also implies that *investment equals savings*:

$$I = S$$

The name *IS* comes from *Investment-Saving*.

Thus, let us use this last equilibrium condition to derive the IS curve.

Intuitively, we would like to find *all combinations* of the interest rate (i) and output (Y) that bring *equilibrium* to the goods market.

What factors will affect the *slope* of the the IS curve?

What factors will *shift* the IS curve?

Now, we turn to the *financial* market.

We all know that the demand for money (M^D) depends on income (Y) and on the interest rate (i):

$$M^D = PY \cdot L(i)$$

And equilibrium in the money market is reached when the supply of money (M^S) is met by money demand:

$$M^D = M^S$$

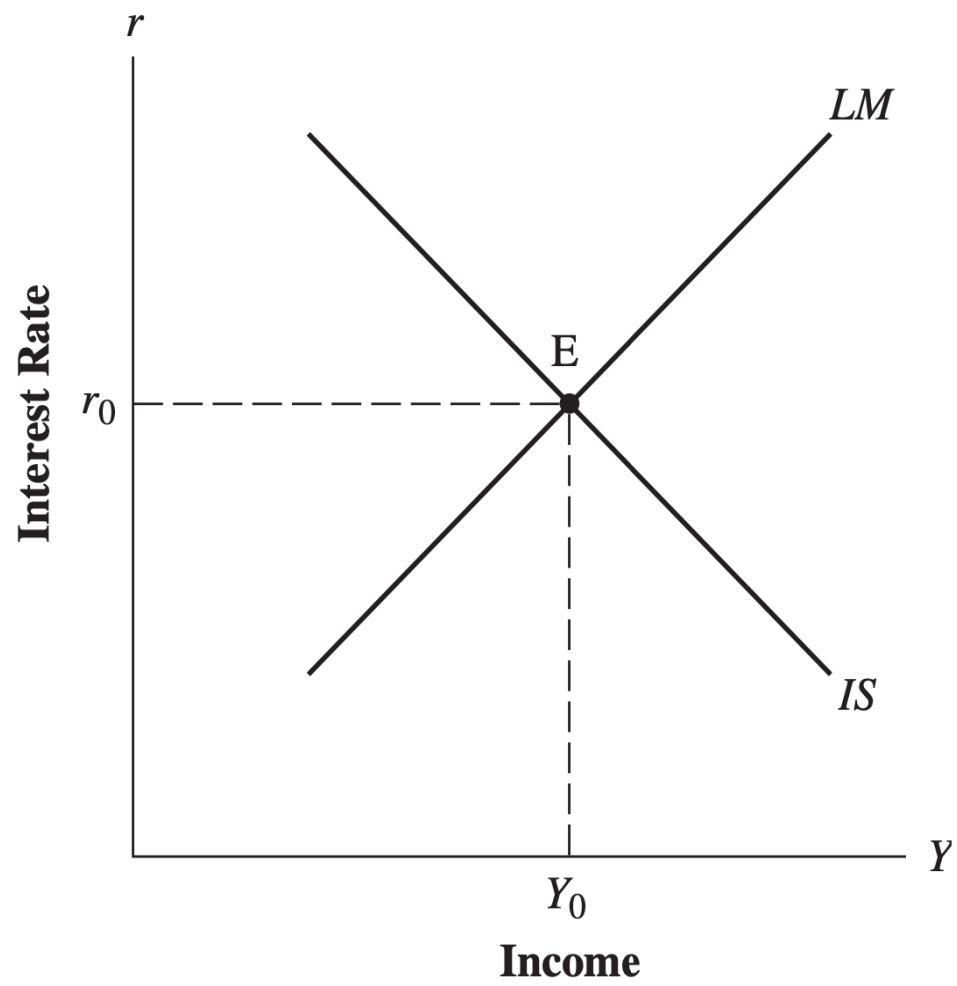
The name *LM* comes from *Liquidity-Money*.

Thus, let us use this last equilibrium condition to derive the LM curve.

Intuitively, we would like to find *all combinations* of the interest rate (i) and output (Y) that bring *equilibrium* to the money market.

What factors will affect the *slope* of the the LM curve?

What factors will *shift* the LM curve?



The *upward-sloping* LM schedule shows the points of equilibrium for the *money* market.

The *downward-sloping* IS schedule shows the points of equilibrium for the *goods* market.

The point of *intersection* between the two schedules is the (only) point of general equilibrium for the two markets.

Let us now explore this further with an *example*.