

Chapter 11: Applying IS-LM Model

In this chapter we learn the potential causes of fluctuations in national income. We focus on demand shocks other than supply shocks.

We also learn how the IS-LM model fits into the AD-AS model.

Expansionary Fiscal Policy

Suppose the government purchases rises by ΔG .

If interest rate remains unchanged, from Keynesian cross we know the planned expenditure curve shifts (up down), and output (rises falls) by _____

Thus when goods market is in equilibrium, output rises for given interest rate. This implies that (IS LM) curve shifts (right left)

But we have to take money market into account. Rising output will (increase decrease) the demand for real money balance. Since the supply of money remains fixed, interest rate must (rise fall) to clear the money market.

That means we (move along shift) LM curve

Finally we get Figure 11-1, which shows the effects of rising government purchase on output and interest rate, when both goods and money markets are in equilibrium.

Notice that interest rate (falls rises) and investment (falls rises). This fall in investment partially offsets the expansionary effect of the increase in government purchases.

Thus, the increase in output in response to fiscal expansion is (bigger smaller) in the IS-LM model than it is in the Keynesian cross. This difference is explained by the crowding out of investment due to a higher interest rate.

Expansionary Monetary Policy

Suppose the money supply rises by ΔM .

If output remains unchanged, then on the money market the money demand curve _____, and money supply curve _____. So the interest rate (falls rises) and LM curves shifts (up down) by the amount of _____

But the fall in interest rate, in turn, has ramifications for the goods market. Lower interest rate stimulates planned investment and output. The latter will increase the money demand. So eventually the interest rate will fall by an amount (bigger smaller) than that indicated in the previous step.

Figure 11-3 shows the final effects of falling money supply.

To sum up, fiscal policy cause (IS LM) curve to shift. As a result, output and interest rate moves in the (same opposite) direction. Fiscal policy is an example of IS shock.

Monetary policy cause (IS – LM) curve to shift. As a result, output and interest rate moves in the (same – opposite) direction. Monetary policy is an example of LM shock.

Exercises:

Is a cut in tax IS shock or LM shock? What is the effect?

Interaction between the two policies

It is important to keep in mind that the policymakers who control the policy tools are aware of what the other policymakers are doing. So we have to account for the interaction between fiscal and monetary policies.

For example, how a hike in tax affects the economy really depends on how the Fed (monetary policy) responds to the tax increase.

Case 1: Fed keeps on money supply constant (so does nothing)

Case 2: Fed keeps interest rate constant (and changes money supply accordingly)

Case 3: Fed keeps output constant (and changes money supply accordingly)

See Figure 11-4 for the three cases.

Exercise: what should be the combination of fiscal and monetary policies if the government wants to decrease consumption and increase investment (say, to help long term economic growth).

Animal Spirits

Keynes called the exogenous and perhaps self-fulfilling wave of optimism and pessimism animal spirits.

For example, suppose firms become pessimistic about the future of economy. Then investment (rises / falls), and (IS / LM) curve shifts (right / left). This fall in equilibrium output in part validates the firms' initial pessimism (and makes it self-fulfilling). Next firms become more pessimistic, output falls more, and so on (vicious spiral).

One job of policymakers is to use the policy tools to offset the effect of animal spirits (since it can cause vicious spiral). In

some sense this counter-animal-spirits action of government belongs to expectation management.

Case Study: US recession of 2001 on page 313.

Discuss

How did the crash in stock market affect IS curve?

How did the terrorist attack affect IS curve?

How did the accounting scandal of Enron affect IS curve?

How did government respond to these IS shocks?

Aggregate Demand Curve

In chapter 10 we derive AD curve based on the quantity theory of money. Now we can use IS-LM model to derive AD curve in another way.

Suppose price level rises. On the money market the supply of real money balance (rises falls), and interest rate (rises falls). This indicates that LM curve shifts (up down) and the equilibrium output (rises falls)

To sum up, the negative relationship between price and output is captured by the downward sloping AD curve.

Question

How does a tax cut affect AD curve?

How does an increase in money supply affect AD curve?

IS-LM model in short run and long run

In short run, the price is fixed at predetermined level. The equilibrium output implied by the intersection of IS and LM curves can be either larger or smaller than the natural level of output (\bar{Y}).

In long run, price is flexible and will (rise / fall) if the short-run equilibrium output is greater than the natural level of output. Hint: the economy is (hot / cold) in this case. This change in the price level will cause (IS / LM) curve to shift (down / up). The adjustment of LM curve continues until the final equilibrium output is the same as the natural level of output.

We can also analyze short run vs. long run using AD-AS model. In short run, the equilibrium output is given by the cross of AD and SRAS curve, and the cross can be on either left or right of \bar{Y} .

In long run, flexible price causes SRAS curves to shift until it intersects with the AD curve at \bar{Y} .

See Figure 11-7.

Read page 319 and learn how to distinguish short run and long run from a mathematical perspective. You can also learn how to formulate the difference between Keynesian model and classical model mathematically.

Great Depression

Discuss:

What is the evidence that Great Deprecation is caused by IS shock (spending hypothesis)?

What is the evidence that Great Deprecation is caused by LM shock (money hypothesis)?

What is the evidence against the money hypothesis?

The role of falling price (deflation)

Deflation can have either stabilizing or destabilizing effect on output. The money hypothesis makes more sense if the destabilizing effect of deflation dominates.

Suppose initially output is less than \bar{Y} . In this case since economy is (hot cold), price will (rise fall) and there is (inflation deflation).

Deflation can have stabilizing effect (by increasing output and moving it closer to \bar{Y}) because

(I) LM curve will shift (up down) due to falling price

(II) IS curve will shift (right left) because of Pigou effect.

It is also possible that deflation have destabilizing effect (by decreasing output and moving it further away from \bar{Y}) because

(I) Unexpected deflation transfers wealth from debtors to creditors, and the latter have marginal propensity to consume less than the former. As a result, IS curve shifts (left right).

(2) Expected deflation (increases decreases) (real nominal) interest rate. As a result, investment (rises falls) and IS curve shifts (left right). See Figure 11-8.

Case study: US recession of 2008-2009 on page 326.

Discuss

Draw IS-LM and AD-AS diagrams to show what happened during the 2008-2009 recession (including government's response).

Liquidity trap

Sometimes policy can lose (part of) its effectiveness.

For example, expansionary fiscal policy becomes less effective in changing output when LM curve becomes (steeper flatter). In that case, investment is crowded out by a (small large) amount due to the rise in government purchase.

Expansionary monetary policy can become less effective too, say, when the nominal interest rate is approaching zero. This situation is called liquidity trap.

But still, even if liquidity trap occurs, monetary policy still has some power because

(I) rising money supply will cause inflation, depreciation of domestic currency, and increase in export.

(II) rising money supply permanently will cause expectation about future inflation. So real interest rate can become negative even though nominal interest rate is fixed at zero. Falling real interest rate can help increase investment.

Moderate inflation gives monetary policymakers more room to stimulate the economy when needed, reducing the risk of falling into a liquidity trap.

Discuss: why has Japan been in liquidity trap for more than ten years?