

Macroeconomics A, EI056

Quizz

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1 General equilibrium in IS-TR

Question: The insight of the IS-TR model is the interaction between different markets. Explain how this work

Answer: The model considers two markets: the goods market, and the money market, which is reflected in the monetary policy rule.

IS-TR stresses that we cannot think of the goods market in isolation of the money market. What happens in one market also affects the situation of the other. The emphasis is on the joint determination of all endogenous variables (i.e. general equilibrium). For instance, an increase in the demand for goods raises money demand. If the money supply is constant, a higher interest rate is needed to bring money demand back down. This higher interest rate in turn dampens the increase in output from the initial shift. Similarly, an increase in the money supply requires a combination of higher output and a lower interest rate to raise money demand. There is only one such combination that is consistent with the clearing of the goods market.

2 From IS-TR to aggregate demand

Question: Explain how we can go from IS-TR to AD.

Answer: The IS-TR model is a system of two equations in two endogenous variables (output and interest rate). The equations are shifted by variables such as inflation, fiscal expenditures, and the money supply.

A higher inflation leads to a higher interest rate for a given output, that is a shift of TR up, which reduces output. We therefore get a negative relation between output and inflation, which is the AD relation.

AD is shifted by fiscal and monetary shocks. Higher fiscal expenditures shift IS to the right and boost output, for a given inflation. We thus have a higher output for an unchanged inflation, i.e. a

shift of AD to the right. A monetary expansion (a reduction in the target interest rate) shifts TR to the right and boost output, for a given inflation. The move to higher output at given inflation is again a shift of AD to the right.

3 Different horizons

Question: In the AS-AD setting we distinguish between the short run and long run aggregate supply. What is the difference?

Answer: In the long run the supply of goods is driven by structural factors, such as productivity, or the functioning of the labor market which affects structural unemployment. Output is then pinned down by these factors, and inflation is simply the one that is needed for demand to be at this structural output.

In the short run, supply is not pinned down by structural factors, and higher inflation is associated with higher output. There are many possible reasons for this. First, wages can be sticky. Consider that workers and firms agree to a wage at which output is equal to its structural long term value. Then there is an unexpected shock that drives inflation higher. Firms get a higher price than expected and the wage is set, so they get higher profit margins and take advantage of it by producing more. This is only temporary as ultimately workers realize they were mistaken and ask for higher wages, thus driving back the profit margins.

A second story is that some firms have sticky prices. Firms prefer to respond to higher demand with higher prices (think of a worker who prefers a higher wage and work 8 hours a day than an unchanged wage and a 12 hours workday). When demand is unexpectedly high, the firms who can reset prices raise them. However, other firms cannot reset prices, so they have to work more to meet the high demand. We thus get a combination of higher prices (from the firms who adjust) and higher output (from the firms who do not adjust).

A third theory relates to information frictions. The economy can be hit by two types of shocks: aggregate shocks (consumers want more of all goods) and individual shocks (consumer want more of firm A's good and less of firm B's good, with the same overall consumption). To build the intuition, consider first that the state of the economy is known by all. If there is an aggregate shock, firms A and B raise their prices. (consider again the case of the worker who aims at a 8 hours workday). If there is an individual shock towards firm A, firm A realizes that it has a comparative advantage over firm B. Its optimal choice is then to increase its price, but not fully and also supply more of its good (we can formally show that this is the optimal response, but you can take this as given). Of course, firm B does the exact opposite, and overall we have no aggregate increase in output. Therefore, the AS curve is vertical: either there is an aggregate shock and all firms react with higher prices, or there is an individual shock, and some firms increase output while other decrease it.

Now, consider a situation where firms can see if the demand they face increases, but do not know whether this is because of an aggregate shock or because of an individual shock. When face with high demand, firms deduce that there is a chance that this could be an individual shock, so they react by raising prices and increasing output. If the odds of individual shocks are small, the reaction is primarily through higher prices. In that case, an aggregate shock raises output because

all firms think (mistakenly) that maybe they have a lucky day where their particular good is in high demand.

4 Dealing with supply shocks

Question: Consider a permanent shift of AS to a lower output, because of reduced productivity. Can the government limit the impact on output? If so, what does this require, and what is the cost of the policy?

Answer: A shift of both the long run AS and short run AS to the left reduce output. The government can counteract this by shifting AD to the right, through fiscal expenditures or a monetary expansion.

If the short run AS shift to the left only because of lower productivity (i.e. the expected inflation does not change), then the rightward shift to AD leads to output that is above the long run output and higher inflation. Now, agents realize that the expectations in the short run AS curve are wrong, and they adjust expectations of inflation to a higher level, thereby shifting the short run AS further to the left. This raises inflation even further (if AD has not moved), and gradually we converge to the long run output and high inflation.

If expectations adjust quickly, the temporary output increase is short-lived, and all we get is inflation. Under rational expectation, there is not even a short run increase in output as agents have anticipated the reaction of policy makers shifting AD to the right. The policy makers could shift AD even further to the right, but while this may sustain output a bit longer, all it eventually does is raising inflation even further. Demand stimulus is no help in the face of a permanent reduction in the economy structural output.

5 Lucas critique

Question: What is the Lucas critique?

Answer: The Lucas critique states that the empirical relations between endogenous variables are affected by expectations. Consider the short run aggregate supply. It implies that given expected inflation, there is a positive relation between actual inflation and output. A policy maker may be tempted to push AD to the right to get higher output and inflation. But then agents faced with higher inflation would adjust their expectations, which would shift the short-run aggregate supply to the left, thereby lowering output. In the long run, inflation is fully expected and output is given by the structural characteristics of the economy regardless of inflation.