Macroeconomics A; EI060

Quiz

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1 Mundell-Fleming structure

Question: What do the three lines in the model represent?
How do they all cross at the same point?

Answer: The first IS line is the equilibrium in the market for goods. A high interest rate raises the cost of investment, leading to lower investment and GDP. A depreciation of the exchange rate raises external competitiveness, leading to higher output at a given interest rate, i.e. a shift of the line to the right.

The second LM line reflects the equilibrium on the money market. A higher output raises the demand for money, which at a given money supply requires an increase in the interest rate to bring money demand back in line. A monetary expansion requires a higher money demand, which can be achieved by higher output, i.e. a shift of the line to the right.

The last IFM line reflects the interest parity. The domestic interest rate reflects the foreign rate and the expected depreciation of the currency. We set that expected depreciation at zero, either because the country has a peg, or because an exchange rate movement happens in one unexpected step, following which the exchange rate remains constant.

The three lines cross because one always ensures it does so. The IFM line is always set. If we have a floating exchange rate, the LM line is set. As the IS line is affected by the endogenous exchange rate, the market equilibrium gives an exchange rate that ensures that the IS line intersects the other two at the right point. If we have a peg, the IS line is set. The LM line includes the money supply, which is set to deliver the fixed exchange rate target. In equilibrium, the central bank sets the money supply so that LM comes intersect the other lines at the same point.

2 Policy effectiveness

Question: Which policy work, or don't, in affecting output?

Answer: It depends on the exchange rate regime.

Under a peg, monetary policy is not effective. This is because in fact monetary policy is not really available, as it is assigned to keeping the peg. A monetary expansion moving LM to the right would bring the interest rate below IFM, leading to a pressure of depreciation. The central bank cannot let that happen, and must move LM back to the original position.

Fiscal policy is effective. Higher government spending moves IS to the right. This puts the interest rate above IFM, leading to a pressure of appreciation. The central bank prevents the appreciation by expansing the money supply, moving LM to the right so it reaches the crossing of IFM and the new IS. This leads to a large output increase.

Under an exchange rate float, policy effectiveness is reverted. A monetary expansion moves LM to the right and leads to a depreciation. The weaker exchange rate stimulates exports and moves IS to the right, until is cross IFM and the new LM. The output increase is subtantial.

A fiscal expansion moves IS to the right, leading to a pressure of appreciation. LM does not move, so the exchange rate appreciates, which reduces net exports. This brings IS back to the original position, so the fiscal expansion is fully offset by lower net exports.

3 Exchange rate under flexible prices

Question: In previous classes, we saw that a permanent increase in the money supply does not lead to exchange rate overshooting when the price of goods is flexible. Why is that?

Answer: When the price of goods is flexible, the exchange rate is not "overworked".

The core question is whether the money expansion in the short run is met by an equal change in money demand. Under flexible prices, the real side is not affected, so there is no movement of the demand for real balances coming from output. The interest rate does not have to move either, as the demand for real balances can be stabilized thanks to the flexibility of the price level. Specifically, the price level matches the increase in the supply of money, so real balances are unchanged (the general forward looking solution of the exchange rate implies $e = m$ when the money supply is constant).

With the real balance adjusted through prices, the interest rate does not have to change, so there are no exchange rate dynamics. In fact, the exchange rate immediately reaches the long run value.

With sticky prices, real balances cannot move rapidly via movements in prices. In other words, the purchasing power parity does not hold and movements in the exchange rate are not met fully and immediately in prices.

4 Intuition for overshooting

Question: Why is there overshooting when output is not very sensitive to the real exchange rate, and money demand is not very sensitive to output?

Answer: It is clear that in the long run the higher money supply leads to an exchange rate depreciation, with the same logic as under flexible prices.

The question is whether the short run money demand increases by enough to meet the money supply.

As prices are sticky, a monetary expansion leads to an exchange rate depreciation in nominal terms that also occurs in real terms. The real depreciation increases output. Higher output in turn raises the money demand.

If the two steps are strong enough (output is sensitive to the real exchange rate, and money demand is sensitive to output), they can raise the money demand to match the increase in money supply. In that case, there is no need to move the interest rate to affect the money demand further. With an unchanged interest rate, the exchange is constant from now into the future.

If however the two steps are not strong enough, money demand remains lower than money supply. The interest rate has to decrease to stimulate the money demand further and match it with the supply. The lower interest rate however requires that the currency appreciates between now and the future to respect the interest parity condition. We thus need a) a depreciation in the long run and b) getting there through an appreciation from now on. The only way to deliver this path is to have a big jump depreciation today, so that from now on the exchange rate can appreciate (hence allowing for a low interest rate) and still depreciate in the long run, relative to the value prior to the shock.

5 Undershooting

Question: Can the exchange rate undershoot, i.e. depreciate by less in the short run than in the long run?

Answer: Yes. If the real exchange rate has a strong effect on output, and output strongly affect money demand, the short run depreciation stimulates money demand beyond the money supply. The story then mirrors the overshooting one. The interest rate needs to increase to bring the money demand down. This increase requires that the exchange rate depreciates from now on to satisfy the interest rate parity. We thus have an initial small jump depreciation, followed by an additional gradual depreciation to ultimately reach the long run solution.