Macroeconomics A: EI056

Quizz

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1 Money multiplier

Question: What is the bank money multiplier?.

Answer: The bank multiplier refers to the fact that deposits in a bank are lent out, leading to further deposits and lending. The impact of the initial deposit on the money supply is then a multiple of the deposit.

The multiplier implies that M1 (cash and bank deposits) is larger than M0 (cash and reserves of banks at the central bank), with the gap being proportional to the share of deposits kept as reserves. The higher this share, the lower the gap. If banks decide not to lend as much as they could, but instead keep reserves at the central bank beyond the required amount, the multiplier M1 / M0 falls. This is what we observed in the current crisis as lending fell because everyone was considered risky.

2 Money and inflation

Question: What is the link between money and inflation? Does higher money growth necessarily imply higher inflation?

Answer: The link comes from the two ways to represent nominal GDP. The first way comes from the fact that nominal GDP is equal to real GDP times the price level. The second way considers the cash transactions that are used in the selling / buying of the goods and services that make up GDP. Nominal GDP is then the amount of money outstanding (the money supply) times how many times this money changes hands (the velocity).

The idea behind velocity is that a 100 franc bill that changes hands twice in a month is equivalent to a 10 franc bill that changes hands ten times. Consider that there are two agents, Tubbs and Crockett (for a touch of 1980's nostalgia). Tubbs has 10 units of goods priced at ten francs each that only Crockett can consume. Similarly, Crockett has 10 units of goods priced at ten francs each

that only Tubbs can consume (Captain Castillo does not take part in the dealing). The value of GDP is then 10 francs * 10 goods * 2 agents = 200.

If Tubbs and Crockett each have a 100 franc bill, Tubbs gives his bill to Crockett in exchange for Crockett's goods, and Crockett gives his bill to Tubbs in exchange for Tubbs's good. We thus have 2 bills of 100 francs that change hands once, so M is 2*100 = 200 and V is one.

Now, Tubbs and Crockett each only have a 10 francs bill. In a first round of dealing, Tubbs gives his bill to Crockett against one of Crockett's goods, and conversely. At the end of this first round, Crockett has the 10 franc bill that originally was Tubbs's, and Tubbs has the 10 franc bill that originally was Crockett's. A second round of dealing takes place where Tubbs gives his bill to Crockett against one of Crockett's goods, and conversely. This goes on for 10 rounds so that all goods are exchanged. As we have 2 bills of 10 francs, M is 2*10 = 20. As each bill changed hands 10 times, V is equal to 10. Thus, MV is equal to 200.

In the long run real output is set by the real side of the economy, and velocity is stable. A larger quantity of money then leads to a higher price. This link is quite close over long horizons.

In the short run real output is not a given (think of the models with sticky prices that we saw in earlier classes). More money can then boost real activity. In addition, velocity can fluctuate and even be itself a source of shocks. If banks are reluctant to intermediate funds, velocity falls. A larger quantity of money is then not necessarily inflationary: if it offsets a lower velocity, the effective quantity of money (quantity times velocity) is unchanged. Of course, if the larger quantity of money remains once velocity returns to normal, it will lead to inflation.

3 Disinflation in the Cagan model

Question: Explain how a disinflation work under rational expectations in the Cagan model.

Answer: At the core of the Cagan model is the link between inflation and money demand. The real interest rate is pinned down by the real side of the economy. Low inflation then implies a low nominal interest rate, making money attractive.

A monetary authority that implements a permanent reduction in the growth rate of money (say from 5 to 2 percent) generates a lower inflation (from 5 to 2 percent). This immediately boosts the demand for real balance (say by 10 percent). We therefore have a discrete increase (jump) in the demand for real balance. The supply of nominal balances does not jump, but instead increases at a small rate (2 percent). The only way to match the higher demand for real balance and the moderately higher supply of cash is for the price level to jump down (or increase at a much slower pace than before), so real balance increase.

In our example, the demand for real balances increases by 10 percent, but the supply of cash increases only by 2 percent. The price level must thus fall by 8 percent, before resuming its steady increase at a 2 percent growth rate.