Monetary Policy

ECON 1102

Spring 2014

Outline

1. Introduction

2. Tools of Monetary Policy

3. Monetary Policy in AS-AD Model

4. Effectiveness of Policy and Policy Rules

Introduction

- $Y = C + I + G$ (Closed Economy).

- Last time saw how government interaction could change Y in our model by:

    - Increasing/decreasing G (direct effect into output market).

    - Increasing/decreasing T (indirect effect via change in C).

- That is **fiscal** policy.

- This time will look at **monetary** policy.

- This will allow us to change I (One policy instrument per component of GDP) .

Basic Definitions

- **Expansionary Monetary Policy:** Increasing the money supply to decrease the interest rate, which increases investment and GDP.

- **Contractionary Monetary Policy:** Decreasing the money supply to increase the interest rate, which decreases investment and GDP.

Tools of Monetary Policy

- How does the Fed conduct monetary policy?

- Tools available (Review from Topic 8):

    1. Reserve Ratio: Fraction of reserves banks must keep on hand.

    2. Open Market Operations (OMO): Fed buys/sells bonds.

    3. Discount Rate: Interest rate Fed charges on loans to banks.

Reserve Ratio

- Saw how this works in our balance sheet example from Topic 8.

- When the Reserve Ratio (RR) increases, banks must hold more reserves, reducing the money supply.

- When (RR) decreases, banks are able to loan out more reserves, increasing the money supply.

- Not commonly used in the U.S.

Open Market Operations

- Most commonly used monetary policy tool.

- Stylized way of thinking of OMO:

    - Fed **buys** bonds from banks.

        - Pays for bonds with dollars.

        - Exchange dollars, which are reserves, for IOUs, which are not.

        - Banks reserves have increased.

        - This generates more loans, increasing money supply.

    - Fed **sells** bonds.

        - Bonds are bought with dollars.

        - Bonds are not reserves while dollars are, so banks have fewer reserves.

        - Banks have to reduce number of loans, lowering the money supply.

Open Market Operations

- Real story is more subtle.

- Suppose for some particular day the demand for money at a bank exceeds the supply. What options does the bank have?

- They can get a loan from one of two places:

    - **Another Bank:** The interest rate associated with these interbank loans is called **the Federal Funds Rate**.

    - **The Fed:** The interest rate associated with loans from the Fed is called **the Discount Rate**.

- The Federal Open Market Commitee (FOMC) releases statements about monetary policy in terms of a target interest rate. This interest rate is the Federal Funds Rate, and the tool used to acheive the target is OMO.

Discount Rate

- Not used as often in practice.

- Fed is the "lender of last resort."

- Loans taken from the Fed are not anonymous (stigma associated with taking loans from the Fed).

- Only time a bank uses this option is during a financial crisis and other banks will not lend. (Do you really want the public to know you have a problem during a crisis?)

- Discount rate is a passive tool. Usually adjusted only to avoid arbitrage.
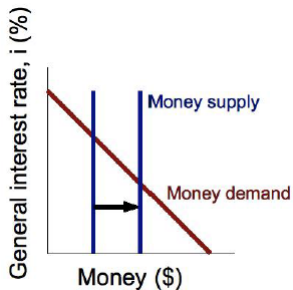
Monetary Policy in AS-AD Model

- Depends on the AS-AD model we use.

- In large lecture, AD is $P = \frac{MV}{Y}$. $M \uparrow$ then $AD \uparrow$. (Easy case)
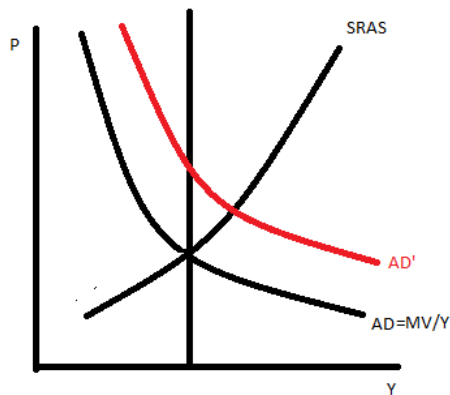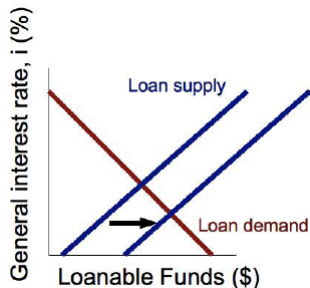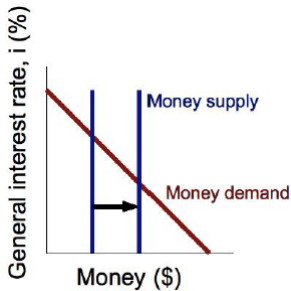
Monetary Policy in the AS-AD Model

- A little more complicated in AS-AD as done in Mankiw/our lecture.
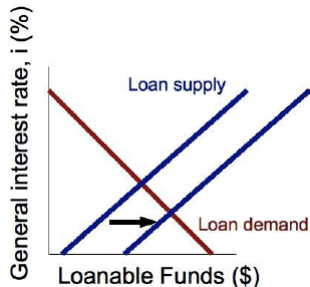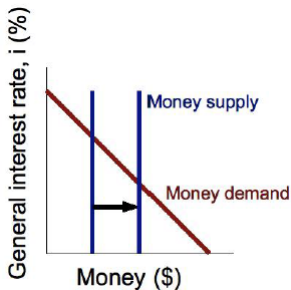
- **Intuition:** Start in the money market. We control MS.

- When we increase money supply what happens?

Monetary Policy in the AS-AD Model

- First, *MS* increases, so the value of money decreases and, therefore, prices increase.

- However, banks also have more money to lend and they reduce interest rates to spur investment

Monetary Policy in the AS-AD Model

- The increases in prices and lower interest rates increase MD.

- The increase in investment increases AD, but since we haven't shifted LR-AS, prices must also increase to compensate.

Monetary Policy in the AS-AD Model

- Now have some intuition for the mechanism. How do we solve a numerical problem?

- Similar to fiscal policy, but a little longer to solve, as we have to work through multiple markets.

- The following is taken from a handout I've made available on the course website.

- In general, we will tell you: Y, $\bar{Y}$, the marginal propensity to consume (mpc), the reserve ratio (RR), initial deposits (ID), and the equations for money demand (MD) and loanable funds demand (LF_d).

Algorithm for Solving Monetary Policy

1: What is the GDP Gap?

$$\Delta Y = Y - \bar{Y}$$

Where Y is observed output and $\bar{Y}$ is long-run aggregate supply, AKA NRO (Natural Rate of Output).

This tells us that the change in Y necessary to return the economy to equilibrium is $-\Delta Y$.

Algorithm for Solving Monetary Policy

2: What change is necessary in I to close this gap?

$$\Delta Y = \frac{1}{1 - mpc}\Delta I$$

Solve for ΔI as we know both ΔY and the mpc.

3: Now we need to solve for initial conditions. We will start with the initial money supply (MS).

$$MS_{initial} = \frac{1}{RR}ID$$

Algorithm for Solving Monetary Policy

4: Use the money demand (MD) equation to calculate the initial interest rate.

 We know that in equilibrium, $MS = MD$, so we can calculate $i_{initial}$

5: Use initial interest rate in loanable funds demand (LF_d) equation to calculate $I_{initial}$. Note: $LF_d = I$.

6: Find the final level of I that corresponds with closing the GDP gap.

$$I_{initial} + \Delta I = I_{final}$$

7: Plug in the final level of investment into (LF_d) to get i_{final}.

Algorithm for Solving Monetary Policy

8: Plug i_{final} into MD to get MS_{final}.

Again, in equilibrium $MS = MD$.

9: Find the change in either i) the change in the amount of initial deposits; or ii) the new reserve ratio necessary to achieve MS_{final}.

i.

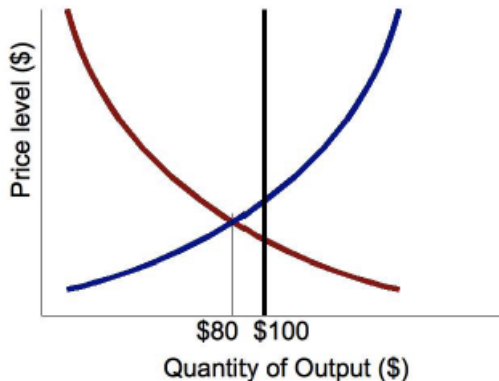$$MS_{final} = \frac{1}{RR} ID_{final}$$

Which gives us the answer:

$$\Delta ID = ID_{final} - ID$$

This is open market operations in our model. Reserves change if I (the Fed) buy/sell bonds.

ii.

$$MS_{final} = \frac{1}{RR_{new}} ID$$

A Numerical Example

- $MD = 400 - 1000i$, $LF_d = 500 - 1000i$, $ID = \$50$, $RR = \frac{1}{5}$, $mpc = 0.5$.

Pros and Cons of Monetary Policy

Pros:

- Speedier and more flexible than fiscal policy (Fed buys/sells securities daily).

- Less political. As previously mentioned, Fed board members serve 14 year terms.

Cons:

- Same problems with recognition as fiscal policy. Operation lag still applies to changes in Federal Funds Rate.

- Effectiveness? Contractionary monetary policy appears to work to slow inflation, but expansionary policy is not always effective.

Policy Rules

- The Fed has discretionary power to implement monetary policy.

- Would it be better if monetary authorities followed a rule that limited their power?

- Arguments for a policy rule:
    - Prevents any abuse of power (this is unlikely in the U.S., however).
    - Policy can be time inconsistent, leading to a loss of credibility in policy announcements. Economy runs smoother when inflation is predictable.

- Arguments against a policy rule:
    - No flexibility. Policy rule maker cannot foresee all possible events, so the rule may take longer to respond to a crisis.
    - The criticisms are largely hypothetical, thus it is better to allow for this flexibility.