

## Econ 330: Money and Banking

Fall 2014, Handout 6

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### Chapter 13 : Central Banks and the Federal Reserve System

#### Goals of Monetary Policy

- Price stability
- High employment
- Economic growth
- Stability of Financial Markets
- Interest-rate stability
- Stability in foreign exchange markets

#### Independence of Central Banks

- Instrument independence: the ability of the central bank to set monetary policy instruments
- Goal independence: the ability of the central bank to set the goals of monetary policy
- The case for independence: political business cycle and expansionary monetary policy
  - Inflationary bias
  - Time-inconsistency problem

### Chapter 14 : Multiple Deposit Creation and the Money Supply Process

1. Three players in the money supply process
  - The central bank
  - Banks
  - Depositors (individuals and institutions that hold deposits in banks)
2. The FED's balance sheet
3. The Multiple Deposit Creation

The banking system can create a multiple expansion of deposits, because as each bank makes a loan and creates deposits, the reserves find their way to another bank, which uses them to make loans and create additional deposits.

- Simple deposit multiplier  $\frac{1}{rr}$

$$\Delta D = \Delta R + (1 - rr) \Delta R + (1 - rr)^2 \Delta R + \dots = \frac{1}{rr} \Delta R$$

- where  $rr$  is the required reserve ratio.
- Deficiencies of the simple model:
  - (a) Model assumes that banks do not hold excess reserves; and
  - (b) The public does not hold currency during the process of deposit creation.

Note: Any violation of these assumptions will result in a smaller expansion of deposits than the simple model predicts.

#### 4. The Money Supply Process

- While central bank cannot directly control money supply, it has a more direct capability to control Monetary Base.

$$\begin{aligned} \text{Monetary Base (MB)} &= \text{Fed's Liabilities} \\ &= \text{High Powered Money} \\ &= \text{Currency in Circulation (C) + Reserves (R)} \\ &= \text{Nonborrowed Monetary Base (MB}_n\text{) + Borrowed reserves (BR)} \end{aligned}$$

- Relationship between money supply (MS) and monetary base (MB)

$$MS = \frac{1 + c}{c + rr + er} \times MB = m \times MB$$

- $c = \frac{C}{D}$  : currency ratio
- $rr = \frac{RR}{D}$  : reserve requirement ratio
- $er = \frac{ER}{D}$  : excess reserves ratio

- Factors that determine the money supply
  - Changes in the non-borrowed monetary base  $MB_n$  ( $\uparrow$ )
  - Changes in the required reserve ratio  $rr$  ( $\downarrow$ )
  - Changes in borrowed reserves,  $BR$ , from the Fed ( $\uparrow$ )
  - Changes in excess reserves ( $\downarrow$ )
  - Changes in currency holdings ( $\downarrow$ )

- Example : Open Market purchase (3 possible situations):

This is typically used when central bank wishes to increase money supply, i.e., monetary expansion.

1. When the Fed buys securities from banks
  - (a) Fed's Assets (Securities) increase, so do Liabilities (Reserves). MB increases because Reserves have increased.
  - (b) Bank's Assets overall remain unchanged as Securities decrease and Reserves increase by the same amount.
2. When the Fed buys securities from the nonbank public there are two cases
  - (a) Nonbank public deposits Fed's check in the local bank.
  - (b) Nonbank public cashes Fed's check to hold currency.  
Currency in circulation increases by \$100—Monetary Base increases by the same amount.  
In this case, money supply increases because of increase in Currency.

Note: (Next week we will discuss )

- In Open Market Sales, money flows into the Federal Reserve and monetary base shrinks: The Federal Reserve sells securities either to banks (then reserves decrease) or to the nonbank public (then either reserves or currency decrease).
- To increase money supply, the Federal Reserve can also reduce discount rate on discount loans to banks and directly drive down reserve holdings of these banks.
- One other means to control monetary supply, through adjusting monetary base, is to have central bank intervening in foreign exchange market. This is often used in many emerging market countries which also wish to implicitly manage their exchange rates.

**Practice questions:**

**Chapter 13**

**[Q1]** (Spring 2011) There are \_\_\_\_\_ members of the Board of Governors of the Federal Reserve System.

- A) 5
- B) 7
- C) 12
- D) 19

**[Q2]** (Spring 2011) Even if the Fed could completely control the money supply, monetary policy would have critics because

- A) the Fed is asked to achieve many goals, some of which are incompatible with others.
- B) the Fed's primary goal is exchange rate stability, causing it to ignore domestic economic conditions.
- C) it is required to keep Treasury prices high.
- D) the Fed's goals do not include high employment, making labor unions a critic of the Fed.

**[Q3]** (Spring 2011) Having interest rate stability

- A) guarantees full employment
- B) allows for less uncertainty about future planing
- C) leads to demands to curtail the Fed's power
- D) leads to problems in financial markets

**Chapter 14**

**[Q1]** (Spring 2010) Over the long run, the primary determinant of movements in the money supply is the

- A) Required reserve ratio
- B) Currency ratio
- C) Excess reserves ratio
- D) Non-borrowed base

**[Q2]** (Spring 2011) The relationship between borrowed reserves, the non-borrowed monetary base, and the monetary base is

- A)  $BR = MB - MB_n$
- B)  $MB = MB_n - BR$
- C)  $BR = MB_n - MB$
- D)  $MB = BR - MB_n$

**[Q3]** (Spring 2010) In the simple deposit expansion model, a decline in checkable deposits of \$1,000 when the required reserve ratio is equal to 10 percent implies that the Fed

- A) sold \$1,000 in government bonds
- B) sold \$100 in government bonds

- C) purchased \$1,000 in government bonds
- D) purchased \$100 in government bonds

**[Q4]** (Spring 2010) If the required reserve ratio is 15%, currency in circulation is \$400 billion, checkable deposits are \$800 billion, and excess reserves total \$0.8billion, then the M1 money multiplier is

- A) 0.651
- B) 2.5
- C) 1.67
- D) 2.3

**[Q5]** (Spring 2010) The sum of the Fed's monetary liabilities and the US Treasury's monetary liabilities is called

- A) bank reserves
- B) currency in circulation
- C) the monetary base
- D) the money supply

**[Q6]** (Spring 2010) High-powered money minus currency in circulation equals

- A) the borrowed base
- B) reserves
- C) the non-borrowed base
- D) discount loans

**[Q7]** (Fall 2010) The formula that links checkable deposits to the money supply is

- A)  $D = (1 + c) \times M$
- B)  $M = \frac{1}{1+c} \times D$
- C)  $M = \frac{1+c}{D}$
- D)  $D = \frac{1}{1+c} \times M$

**[Q8]** (Fall 2010) The actual execution of open market operations is done at

- A) the Federal Reserve Bank of New York.
- B) the Federal Reserve Bank of Philadelphia.
- C) the Board of Governors in Washington, D.C.
- D) the Federal Reserve Bank of Boston.

**[Q9]** (Fall 2010) There are two ways in which the Fed can provide additional reserve to the banking system: it can \_\_\_\_\_ government bonds or it can \_\_\_\_\_ discount loans to commercial banks.

- A) Purchase; call in
- B) Sell; extend
- C) Sell; call in
- D) Purchase;extend

**[Q10]** (Fall 2010) The equation that shows the amount of the monetary base needed to support existing levels of checkable deposits, excess reserves, and currency is

A)  $MB = (r \times D) - ER - C$

B)  $MB = (r \times D) + ER + C$

C)  $MB = (r + D) + ER - C$

D)  $MB = \frac{r}{D} + ER + C$