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EE212 Principles of Macroeconomics, 2/2016 (Sec. 046401)

Problem Sets 2 :

Chapter 5. Monetary Policy

1. What is money supply? State whether Money supply is stock or flow variable and explain why.

   ANSWER. Money supply is money held by the hand of the public.

   Money supply is a stock concept. It is money held by the hand of the public at a point of time. It is the stock of money supply in the hand of public ready for economic actiivities.

2. Define Narrow Money (M1).

   ANSWER.M1 = currency in circulation + demand deposits

3. Assume that Hometown Bank has demand deposits of $3,000,000, a reserve requirement of 10 percent and actual reserves of $800,000. Determine the bank's required reserves and excess reserves.

   ANSWER.Reserves $= 0.1 \times 3,000,000 = 300,000$.

   Excess reserves $= 800,000 - 300,000 = 500,000$.

4. A person makes a deposit of $4, 000 and the required reserve ratio is 2%. According to the simple money creation model, what is the final total change in deposits?

   ANSWER. **CORRECTION.**

   total deposits $= \dfrac{\text{intital deposits}}{\text{legal reserve ratio}} = \dfrac{4,000}{0.02} = \$200,000$. Deposits will increase by 200,000, of which 196,000 banking system creates and the rest 4,000 is caused by the action of the depositor. [Money supply will increase by 196,000.]

5. Suppose that Lloyd Bank has reserves totaling $100,000 on $1,000,000 of deposits. Lloyd Bank lends out $900,000. The reserve requirement is 10 percent. Can **this bank** make any new loans? Explain.

   ANSWER. No, it cannot because with a 10 percent reserve requirement, the $100,000 in actual reserves is exactly equal to the $100,000 in required reserves it must hold on deposits of $1,000,000.

6. Suppose Stefan deposits $20,000 into Lloyd Bank. Suppose banks lends out all of its excess reserve. The reserve requirement is 5 percent. By how much will the banking system can increase total loans? What is the final total deposits in the banking system? How much money creation that the banking system can create? Show your work.

   ANSWER. The total deposits in the banking system will be

   total deposits $= \dfrac{\text{intital deposits}}{\text{legal reserve ratio}} = \dfrac{20,000}{0.05} = \$400,000.$

   total money creation =total deposits -intial deposits $= \$400,000. - 20,000 = 380,000$.

7. Suppose that Stefan, fearing an impending financial crisis, withdraws $20,000 from his account at Lloyd Bank and buries the cash in his backyard. The reserve requirement is 10 percent. Suppose the bank lends out all of its excess reserve. By how much will the bank have to reduce its loans? Calculate the maximum amount the money supply may contract as a result. Show your work.

   ANSWER. Total deposits will decreased by $= \dfrac{\text{initial deposits (withdraw)}}{\text{legal reserve ratio}} = \dfrac{20,000}{0.1} = \$200,000.$

The bank has to call loans back by =(1-legal reserve ration)total deposits=(1-0.1)×\$200,000=180,000.

$\Delta M = \Delta DD + \Delta$currency in circulation $= (-200,000) + 20,000 = -180,000.$

Hence, money supply will decreased by 180,000.

8. Suppose there is 2,000 million baht in the hand of the public.

   (a) People want to hold only cash. They do not want to deposit money in a bank. What is the money supply of the economy?

   ANSWER

   $$\begin{array}{rcccc} \textbf{Money Supply} & = & \textbf{currency in circulation} & + & \textbf{demand deposits} \\ & = & 2,000 & + & 0 \\ & = & 2,000\,\textbf{million Baht} & & \end{array}$$

   (b) Suppose people decide to deposit 1,500 million Baht in to the banking system. Required reserve ratio = 0.1. Assuming that the banking system has the potential to create deposits to the maximum. Calculate the total deposits in the banking system, money multiplier, and the deposits created by banks. What is the money supply of the economy?

   ANSWER

   Total demand deposits in the banking system $= \dfrac{\text{initial deposits}}{\text{legal reserve rato}} = \dfrac{1,500}{0.1} = 15,000$ million baht.

   The deposits created by banks = total deposits - initial deposits = 15,000 - 1,500 = 13,500 million baht.

   The money multiplier $= \dfrac{1}{rr} = \dfrac{1}{0.1} = 10.$

   $$\begin{array}{rcc} \text{Money supply} & = & \text{currency in circulation + demand deposits} \\ & = & (2,000 - 1,500) + 15,000 \\ & = & 500 + 15,000 \\ & = & 15,500. \end{array}$$

   Total money supply is 15,500 million Baht.

9. Why is the potential money multiplier (the maximum money multiplier $= \dfrac{1}{\text{legal reserve ratio}}$) probably larger than the actual money multiplier?

   ANSWER. "The potential money multiplier equal to 1/LRR, where LRR is the legal reserve requirement, is probably larger than the actual money multiplier for three reasons. **First,** banks may choose to hold excess reserves over and above their legal reserves in an effort to be cautious. **Second**, potential borrowers may choose not to borrow the excess reserves that banks have to lend. Finally, not all the money that is loaned by banks is redeposited in other banks, and this will limit the extent of the money creation process."

10. Suppose the central bank of China recently announced the reduction of required reserve ratio from 20% to 10%.

    (a) How does money creation that the banking system in China would change? (Hint: calculate money multiplier)

    ANSWER.

    original money multiplier $= \dfrac{1}{0.2} = 5$

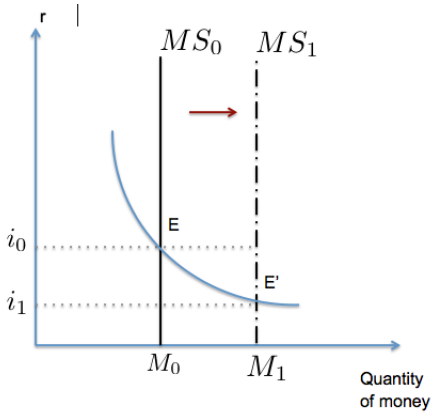
    new money multiplier $= \dfrac{1}{0.1} = 10.$

    China commercial banks will be able to make more loans. Banking system will create more money through deposit creation process. Banks make more loans and people deposits back into the banking system. The new money multiplier is twice of the original money multiplier. Therefore, given that the other thing remain constant and the banking system has the potential to crease demand deposits to the maximum, demand deposits will increase by two times. Money supply will increase.

(b) How does this policy affect the money market? Explain adjustment from the original equilibrium to the new equilibrium. Graphically Illustrate.

ANSWER.

From question (a), banking system will create more deposits. Money supply is then increased.



- Money supply shift to the right.
- At the orginal interest rate (r_0), interest rate is *greater* than the new equilibrium interest rate (r_1).
- There will be excess money supply.
- Agents will buy more bonds,
- Then bond price increases.
- Therefore, the interest rate decreases.
- As interest rate decreases, money demand increases (movement along money demand curve from point E to E').
- At the new equilibrium E', money demand = money supply.

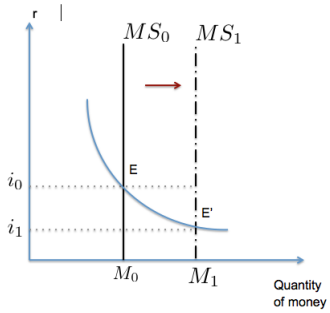
11. Given the other things remain constant, if each of this following situation happens, how will the equilibrium in the money market change? Graphically illustrate and explain. (If the space provided is not enough, please attach separate paper sheets.)

    (a) Central bank buys bond from the public.

    (b) Real output (Y) increases.

    (c) Price level decreases.

(a) ANSWER. Central bank buys bond from the public. This will increase money in the hand of the public. Money supply increases.



- Money supply shift to the right from MS0 to MS1.
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- Then bond price increases.
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- As interest rate decreases, money demand increases (movement along money demand curve from point E to E').
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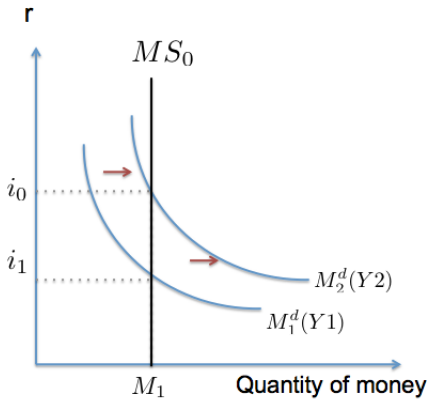
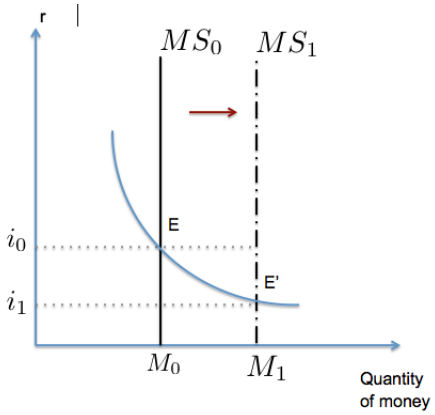
(b) **ANSWER.** Real output (Y) increases. Money Demand increases. Money demand shifts to the right.



- Real output increases from Y_1 to Y_2. Money demand shift to the right from $M_1^d(Y_1)$ to $M_2^d(Y_2)$.
- At the orginal interest rate (r_0), interest rate is *lower* than the new equilibrium interest rate (r_1).
- There will be excess money demand.
- Agents will sell more bonds,
- Then bond price decreases.
- Therefore, the interest rate increases.
- As interest rate increases, money demand decreases (movement along money demand curve from point E to E').
- At the new equilibrium E', money demand = money supply.

(c) **ANSWER.** Price level decreases. Given nominal money supply remains constant, real money supply increases. Money supply shifts to the right.



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