Money Supply and Money Demand

Intermediate Macroeconomic Theory
Macroeconomic Analysis

University of North Texas

- The money supply equals currency plus demand (checking account) deposits: $M = C + D$

- Since the money supply includes demand deposits, the banking system plays an important role

- Reserves (R): the portion of deposits that banks have not lent

- Banking System

  1. 100-percent-reserve banking: a system in which banks hold all deposits as reserves

  2. Fractional-reserve banking: a system in which banks hold a fraction of their deposits as reserves

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     - All deposits are held as reserves

     - Banks accept deposits, place the money in reserve, and leave the money there until the depositor makes a withdrawal

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- Fractional-reserve banking: banks use some of their deposits to make loans (banks can charge interest on the loans)

- A fractional reserve banking system creates money

- The process of money creation

- Banks are the only financial institutions that directly influence the money supply

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- The process of money creation
    - Assuming that the reserve-deposit ratio (rr) is constant
    - Each $1 of reserves generate $1/rr$ of money

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- The process of money creation

- Banks are the only financial institutions that directly influence the money supply

- Exogenous variables

  1. Monetary base: $B = C + R$

  2. Reserve-deposit ratio: $rr = R/D$

  3. Currency-deposit ratio: $cr = C/D$

- The model

  $\Rightarrow M = m \times B$, where $m = \frac{cr+1}{cr+rr}$

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     - Controlled by the central bank

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A Model of the Money Supply

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- Exogenous variables

    1. Monetary base: $B = C + R$
    2. Reserve-deposit ratio: $rr = R/D$

        - Depends on regulations and bank policies
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  (i) The money supply is proportional to B

- Exogenous variables
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  $\Rightarrow M = m \times B$, where $m = \frac{cr+1}{cr+rr}$

  (ii) The lower Reserve-deposit ratio (rr), the more loans banks make, and the more money banks create from every dollar of reserve

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  (iii) The lower currency-deposit ratio (cr), the fewer dollars of the monetary base the public holds as currency, the more base dollars banks hold as reserves, and the more money banks can create

1. [Money Supply](#)

2. [A Model of the Money Supply](#)

3. [Three Instruments of Monetary Policy](#)

4. [Money Demand](#)

1. **Open-market operations:** the purchase or sale of government bonds by the Federal Reserve

2. **Reserve requirements:** Fed regulations that require banks to hold a minimum reserve-deposit ratio

3. **The discount rate:** The interest rate that the Fed charges on loans it makes to banks

   $\Rightarrow$ Open-market operations is used most frequently used and reserve requirements is least frequently used

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   - If Fed buys bonds from the public, it pays with new dollars, increasing B and therefore M

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Three Instruments of Monetary Policy

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   - Reserve requirements affect rr

   - If Fed reduces reserve requirements, then banks can make more loans and "create" more money from each deposit

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   - When banks borrow from the Fed, their reserves increase, allowing them to make more loans and "create" more money

   - The Fed can increase B by lowering the discount rate to induce banks to borrow more reserves from the Fed

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- Two types of theories

  1. Portfolio theories:

     - emphasize "store of value" function

     - relevant for $M2, M3$

  2. Transactions theories:

     - Emphasize "medium of exchange" function

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- People hold money as part of their portfolio of asset

- Money offers a safe return (no risk), whereas the prices of stock and bonds may rise or fall (risky)

- Money demand function: $(M/P)^d = L(r_s, r_b, \pi^e, W)$

  1. r_s: expected real return on stock

  2. r_b: expected real return on bond

  3. π^e: expected inflation rate

  4. W: real wealth

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Money Demand
Portfolio Theories of Money Demand

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- Money is a dominated asset because people hold money, unlike other assets, to make purchase

- Money has the cost of earning a low rate of return and the benefit of making transactions more convenient

- Baumol-Tobin model of cash management:

    1. The benefit of holding money: convenience

    2. The cost of holding money: the foregone interest they would have received

$\Rightarrow$ money demand depends positively on expenditure (income) and negatively on the interest rate

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  $\Rightarrow$ People decide how much money to hold by trading off these costs and benefits

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