CHAPTER 5
THE MONETARY SYSTEM

What Money Is and Why It's Important

- Without money, trade would require barter, the exchange of one good or service for another.
- Every transaction would require a double coincidence of wants – the unlikely occurrence that two people each have a good the other wants.
- Most people would have to spend time searching for others to trade with.
- This searching is unnecessary with money.

The meaning of money

- The set of assets that people regularly use to buy g&s from other people.

- **Eg:**
  - Cash in your wallet => money?
  - Shares you owned at Microsoft Corp => money?

The kinds of Money

Commodity money: takes the form of a commodity with intrinsic value.

- **Eg:** gold coins.

Fiat money: money without intrinsic value, used as money because of govt decree.

- **Eg:** the U.S. dollar

The Functions of Money

- **Medium of exchange:** an item buyers give to sellers when they want to purchase g&s.

The Functions of Money

- **Store of value:** an item people can use to transfer purchasing power from the present to the future.

The Functions of Money

- **Unit of account:** the yardstick people use to post prices and record debts.

Measures of the U.S. Money Supply

- **M1:** currency, demand deposits, traveler's checks, and other checkable deposits.

- **M2:** M1 plus saving deposits, small time deposits, money market mutual funds.

Why do people divide money supply into 2?
- Based on liquidity of money, due time (day of money withdrawal)

Central Banks & Monetary Policy

- **Central bank:** an institution that oversees the banking system and regulates the money supply.
- **Monetary policy:** the setting of the money supply by policymakers in the central bank.
- **Federal Reserve (Fed):** the central bank of the U.S.

Hệ thống ngân hàng 2 cấp: Ngân hàng Nhà nước (quản lí lượng cung tiền, triển khai các chính sách tiền tệ), ngân hàng thương mại (nhận tiền gửi và cho vay cá nhân, tổ chức)

The Money Supply

- The **money supply** (or **money stock**): the quantity of money available in the economy.
- What assets should be considered part of the money supply?
  - **Currency:** the paper bills and coins in the hands of the (non-bank) public.
  - **Demand deposits:** balances in bank accounts that depositors can access on demand by writing a check.

Commercial Banks

- **Commercial Banks** are financial intermediaries who do business on money.
- Main operations are to receive deposits and to make loan out.

1000 USD -> CB -> keep reserves -> make loan out
Why reserves? -> obey the regulations of the Central Bank

Bank Reserves

- In a **fractional reserve banking system**, banks keep a fraction of deposits as **reserves** and use the rest to make loans.

- The Fed establishes **reserve requirements**, regulations on the minimum amount of reserves that banks must hold against deposits.

- Banks may hold more than this minimum amount if they choose

Bank Reserves

- The **reserve ratio, *R***
  = fraction of deposits that banks hold as reserves.
  = total reserves as a percentage of total deposits.

Bank T-account

- T-account: a simplified accounting statement that shows a bank's assets & liabilities.
- **Eg:**

FIRST NATIONAL BANK			
Assets		Liabilities	
Reserves	$10	Deposits	$100
Loans	$ 90		

- Banks' liabilities include deposits, assets include loans & reserves.
- In this example, ***R*** = $10/$100 = 10%

Bank and the Money Supply: An Example

- Suppose $100 of currency is in circulation
- To determine banks' impact on money supply, we calculate the money supply in *3 different cases*:
  1. No banking system.
  2. 100% reserve banking system: banks hold 100% of deposits as reserves, make no loans.
  3. Fractional reserve banking system.

Bank and the Money Supply: An Example

- **CASE 1:** No banking system

  Public holds the $100 as currency

  Money supply = $100.

Bank and the Money Supply: An Example

- **CASE 2:** 100% reserve banking system

  Public deposits the $100 at First National Bank (FNB).

  - FNB holds 100% of deposit as reserves:

FIRST NATIONAL BANK			
Assets		Liabilities	
Reserves	$100	Deposits	$100
Loans	$ 0		

  - Money supply = currency + deposits

    = $0 +$100 = $100

In a 100% reserve banking system, banks do not affect size of money supply.

Bank and the Money Supply: An Example

CASE 3: Fractional reserve banking system

Assumptions:

1. Reserve ratio are the same in all commercial banks.
2. People don’t use cash to exchange but money through banks.
3. CBs make loans all deposits of customers after excluding the reserve.

Bank and the Money Supply: An Example

- **CASE 3:** Fractional reserve banking system

Suppose R = 10%. FNB loans all but 10% of the deposit:

FIRST NATIONAL BANK			
Assets		Liabilities	
Reserves	$ 10	Deposits	$100
Loans	$ 90		

Money supply **= $190 (!!!)**

Deposits have $100 in deposits,

Borrowers have $90 in currency.

Bank and the Money Supply: An Example

- **CASE 3: *Fraction reserve banking system***

  How did the money supply suddenly grow?

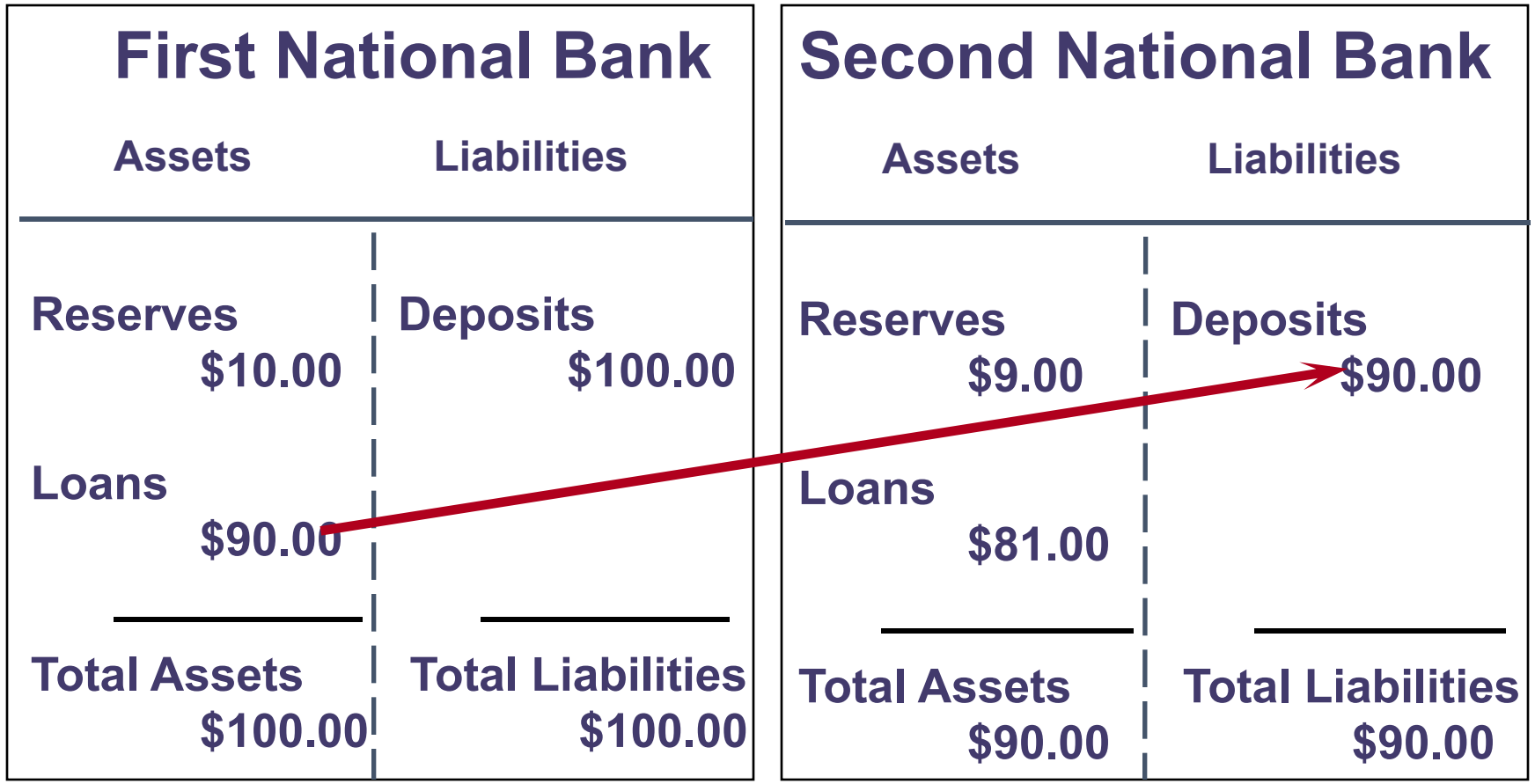
  When banks make loans, they create money.

  The borrower gets:

  - $90 in currency (an asset counted in the money supply)
  - $90 in new debt (a liability)

A fractional reserve banking system creates money, but not wealth.

Bank and the Money Supply: An Example



Money Supply = $190.00!

Bank and the Money Supply: An Example

- **CASE 3: *Fraction reserve banking system***

  Suppose borrower deposits the $90 at Second National Bank (SNB).

  - Initially, SNB's T-account looks like this:

SECOND NATIONAL BANK			
Assets		Liabilities	
Reserves	$ 9	Deposits	$90
Loans	$ 81		

  - If ***R*** = 10% for SNB, it will loan all but 10% of the deposit.

Bank and the Money Supply: An Example

- **CASE 3: *Fraction reserve banking system***
  - The borrower deposits $81 at Third National Bank (TNB)
  - Initially, TNB's T-account looks like this:

THIRD NATIONAL BANK			
Assets		Liabilities	
Reserves	$ 8.10	Deposits	$ 81
Loans	$ 72.90		

  - If ***R*** = r deposits the $81 at Third National Bank (TNB).
  - 10% for TNB, it will loan all but 10% of the deposit.

Bank and the Money Supply: An Example

- **CASE 3: *Fraction reserve banking system***

  The process continues, and money is created with each new loan.

  Original deposit = $ 100.00

  FNB lending = $ 90.00

  SNB lending = $ 81.00

  TNB lending = $ 72.90

  …

  Total money supply = $ 1000.00

phương tiện thanh toán

The Money Multiplier

- **Money multiplier:** the amount of money the banking system generates with each dollar of reserves.
- The money multiplier equals 1/***R***.
- In our example,
  - ***R*** = 10%
  - Money multiplier = 1/***R*** = 10

ACTIVE LEARNING

While cleaning your apartment, you look under the sofa cushion find a $50 bill. You deposit the bill in your checking account, R=20%.

A. What is the maximum amount that the money supply could increase?

B. What is the minimum amount that the money supply could increase?

ACTIVE LEARNING - ANSWER

- You deposit $50 in your checking account.

A. If banks hold no excess reserves, then money multiplier = 1/R = 1/0.2 = 5

The maximum possible increase in deposit is: 5 x $50 = $250

But money supply also includes currency, which falls by $50.

Hence, max increase in money supply = $200.

ACTIVE LEARNING - ANSWER

- You deposit $50 in your checking account

A. What is the maximum amount that the money supply could increase? **$200**

B. What is the minimum amount that the money supply could increase? **$0**

If your bank makes no loans from your deposit, currency falls by $50, deposits increase by $50, money supply does not change.

MSmin = 50 *1/1=50
1/1 ?? gửi vào bank và bank giữ lại 100% không make loans => no change

The Fed's 3 tools of Monetary Control

mua (và bán) trái phiếu chính phủ -> đưa ra một lượng tiền mới vào nền kinh tế -> tăng MS (và ngược lại)

1. **Open- Market Operations (OMOs):** the purchase and sale of U.S. government bonds by the Fed.
   - ***To increase money supply:*** Fed buys govt bonds, paying with new dollars.
   - ***To reduce money supply:*** Fed sells govt bonds, taking dollars out of circulation, and the process works in reverse.

The Fed's 3 tools of Monetary Control

2. Reserve Requirements (RR): affect how much money banks can create by making loans.

- ***To increase money supply:*** Fed ↓ RR.
  - Banks make more loans from each $ & money supply.
- ***To decrease money supply:*** Fed ↑RR

  ⇒The process works in reverse.

The Fed's 3 tools of Monetary Control

3. The Discount Rate: the interest rate on loans the Fed makes to banks.

cho vay nhiều, dự trữ vừa đủ

- ***To increase money supply:*** Fed↓ discount rate, which encourages banks to borrow more reserves from Fed.
- ***To reduce money supply:*** Fed can↑discount rate.

hạn chế lượng tiền cho vay ra ngoài quá nhiều, dự trữ nhiều hơn để đảm bảo khả năng thanh khoản của ngân hàng thương mại -> giảm cung tiền trong nền kinh tế

MONETARY MARKET

Money Demand: MD

- refer to the total amount of means of payment which individuals wish to hold, at a given interest rate and other econmic factors.

FACTORS AFFECT MONEY DEMAND

- **Price level P**

$P\uparrow \rightarrow MD\uparrow$

$P\downarrow \rightarrow MD\downarrow$

- **Interest rate**

$i\uparrow \rightarrow MD\downarrow$

$i\downarrow \rightarrow MD\uparrow$

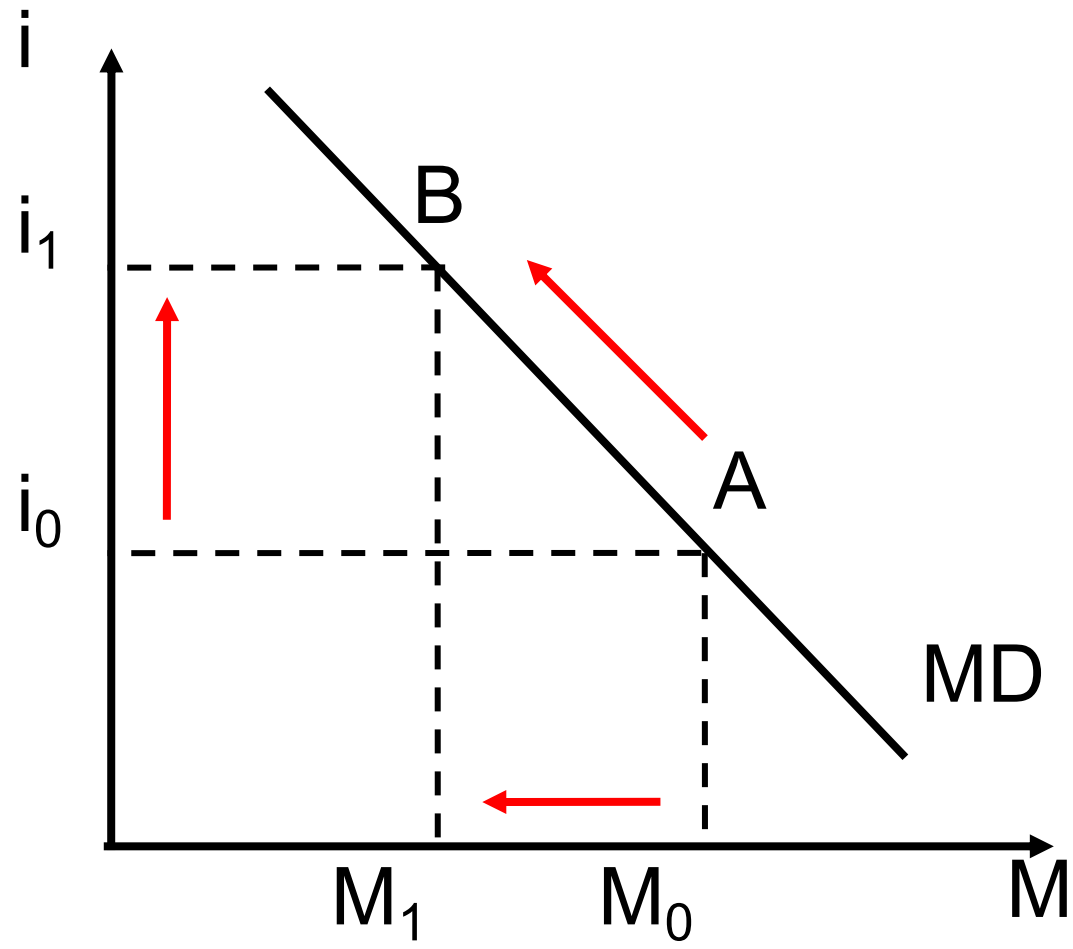
- **Income**

$Y\uparrow \rightarrow MD\uparrow$

$Y\downarrow \rightarrow MD\downarrow$

$$\mathbf{MDr = MDn/P = L(Y,i) = kY - hi}$$

MONEY DEMAND CURVE

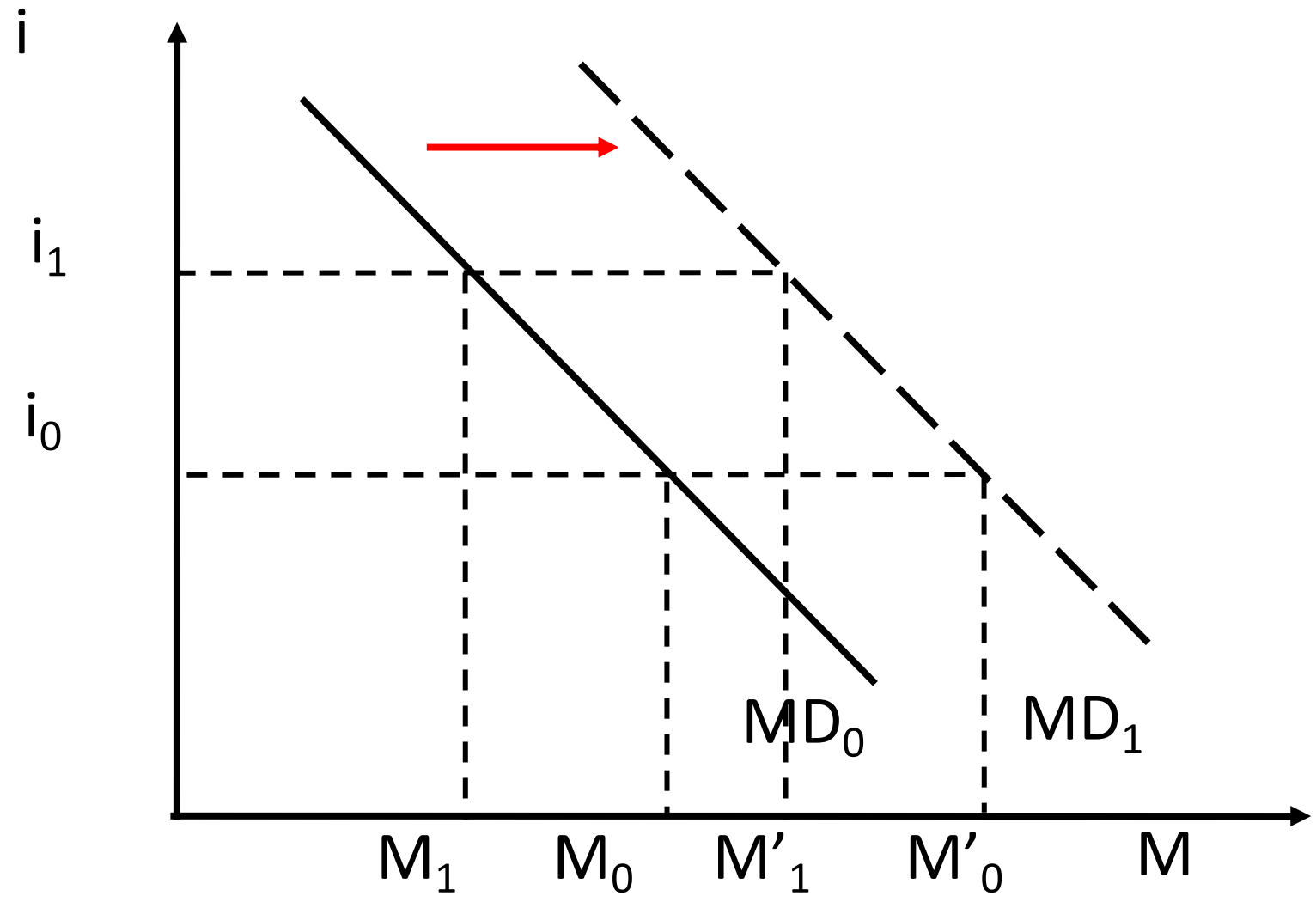


MONEY DEMAND CURVE

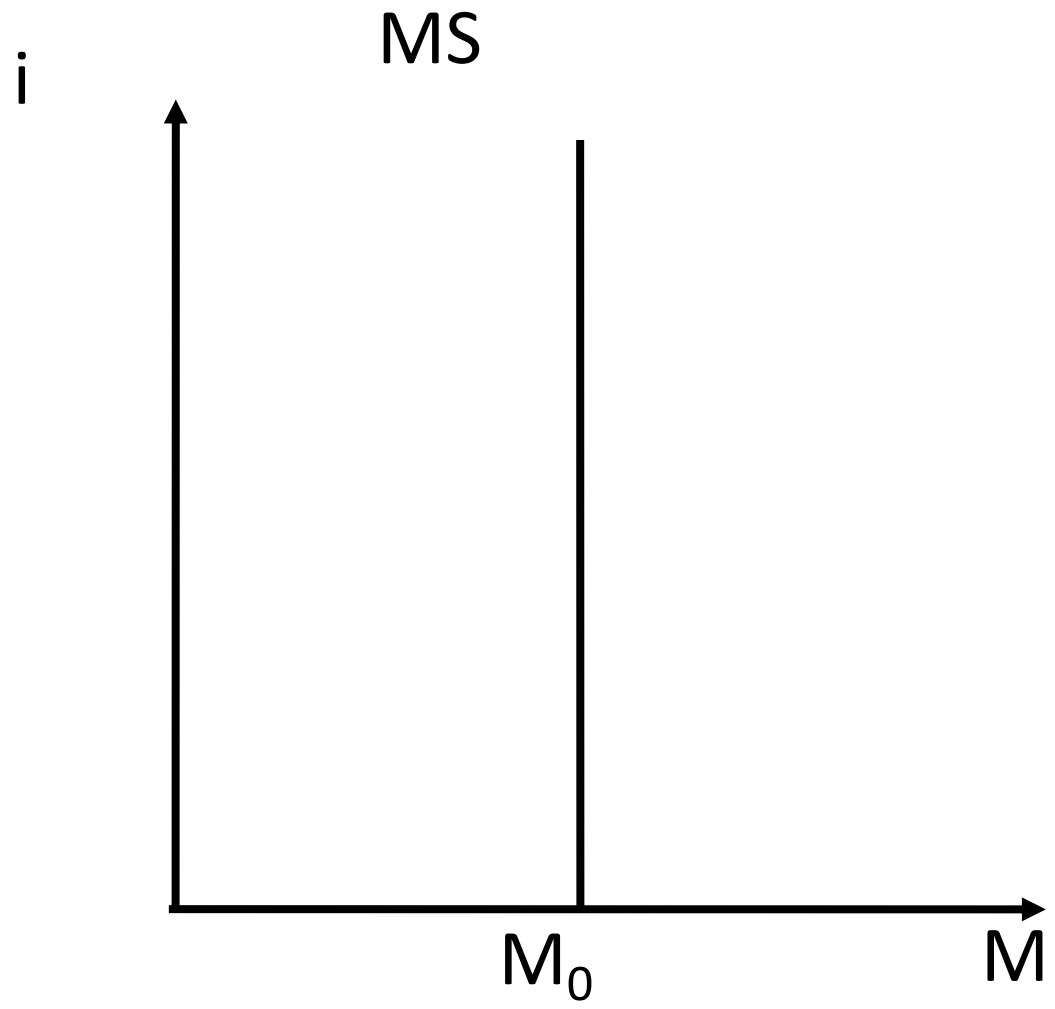
In short:

- When i changes, other factors remain unchanged -> a movement along MD.
- When i remain unchanged, other factors change -> a shift of MD.

A SHIFT OF MONEY DEMAND CURVE



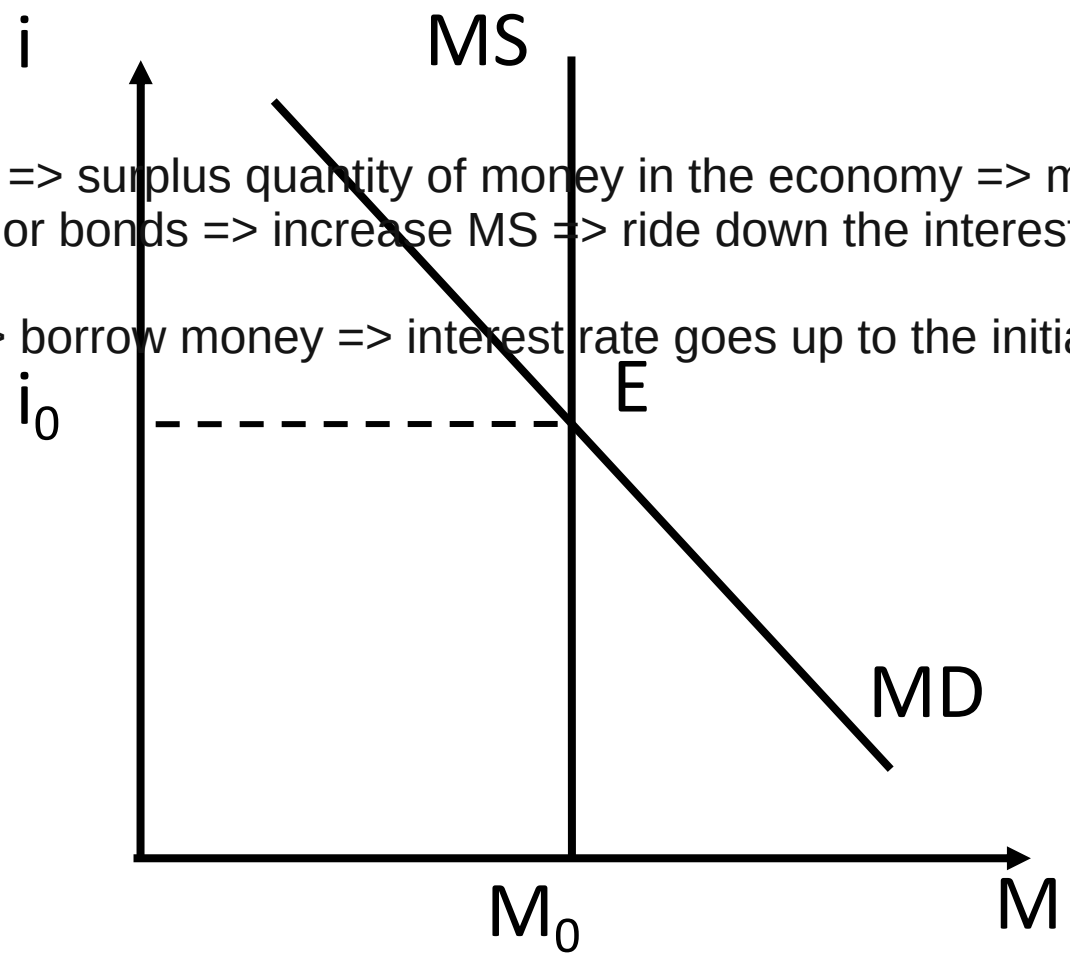
MONEY SUPPLY CURVE



THE EQUILIBRIUM IN THE MONEY MARKET

as interest rate is higher, MS > MD => surplus quantity of money in the economy => more money than they need -> depose in the bank or buy stock or bonds => increase MS => ride down the interest rate to the initial point

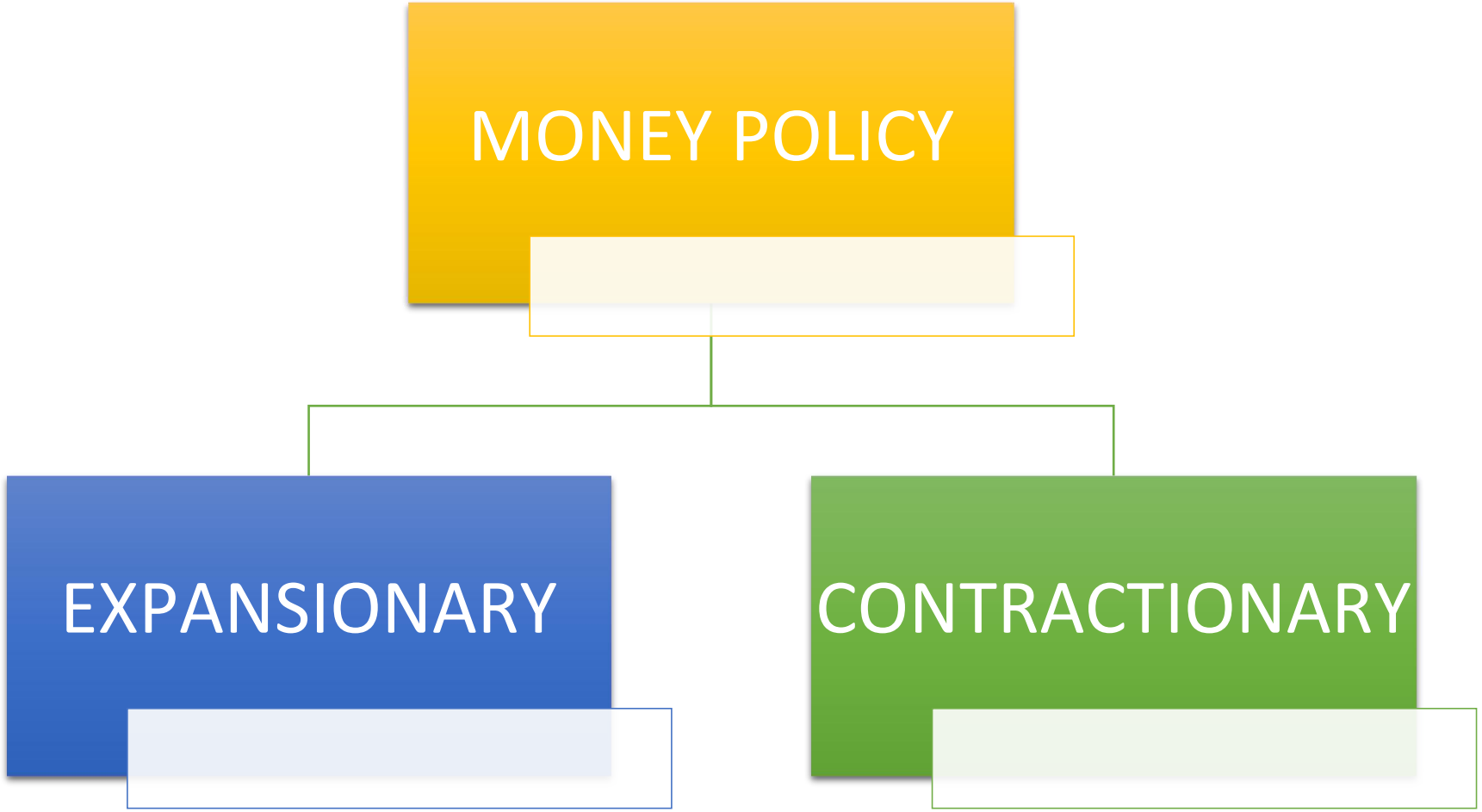
in contrast, there will be a deficit => borrow money => interest rate goes up to the initial point



MONEY POLICY

- **MONEY POLICY** involves Central Bank's usage of tools to impact on the money market through which they influence the aggregate demand and the output.
- **Policy objectives:**
  - ❑ Stability of the currency
  - ❑ Full employment
  - ❑ Economic prosperity and welfare

MONEY POLICY



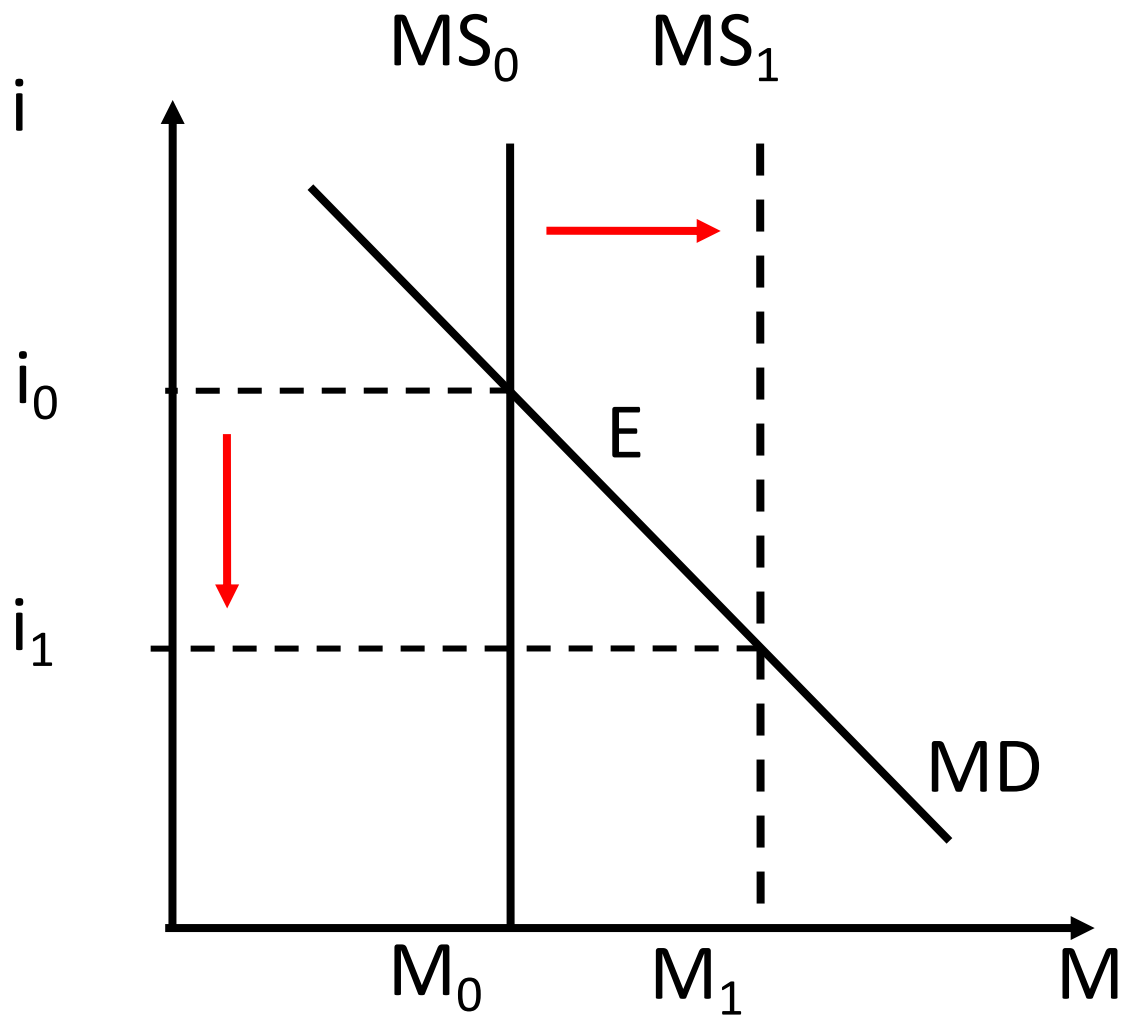
EXPANSIONARY MONEY POLICY

suy thoái, khủng hoảng vì i thấp hơn i tiềm năng => gia tăng cung tiền

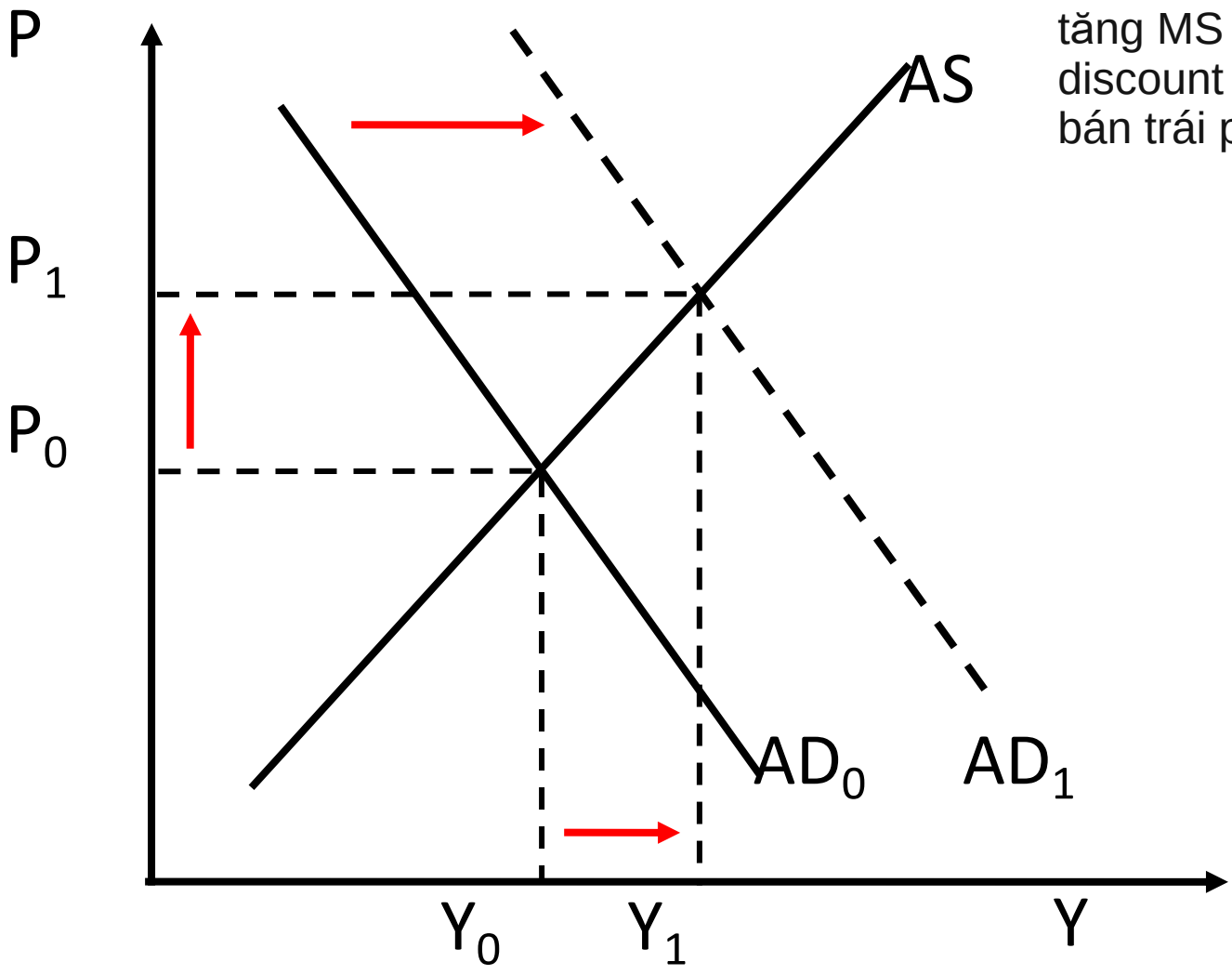
- This policy involves CB' usage of tools in order to increase the money supply.
- **Application:** during the depression (Y<Y*)
- **Mechanism:**

$$Y < Y^*: MS \uparrow \rightarrow i \downarrow \rightarrow I \uparrow \rightarrow AD \uparrow \rightarrow \begin{cases} Y \uparrow \\ u \downarrow \\ P \uparrow \end{cases}$$

Mechanism



Mechanism



tăng MS - giảm rrr, giảm discount rate, tăng cường mua bán trái phiếu chính phủ

Mechanism

- **To increase money supply, CB can:**
  - ☐ Buy Government bonds
  - ☐ Decrease required reserve ratio
  - ☐ Decrease discount rate

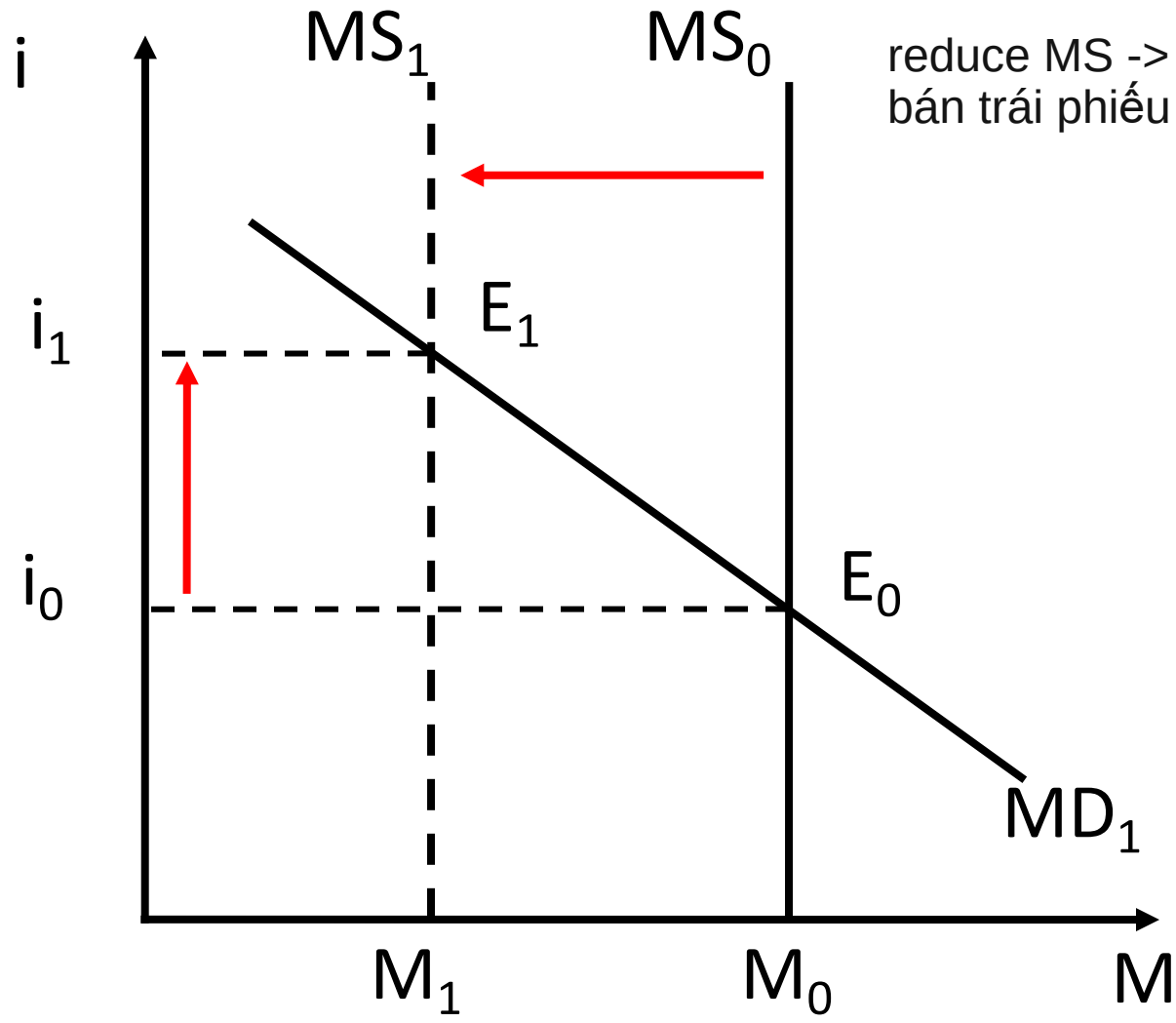
CONTRACTIONARY MONEY POLICY

nền kinh tế tăng trưởng nóng, mức lạm phát cao => cắt giảm cung tiền, hạn chế đầu tư

- This policy involves CB' usage of tools in order to decrease the money supply.
- **Application:** the economy face with high inflation (Y>Y*)
- **Mechanism:**

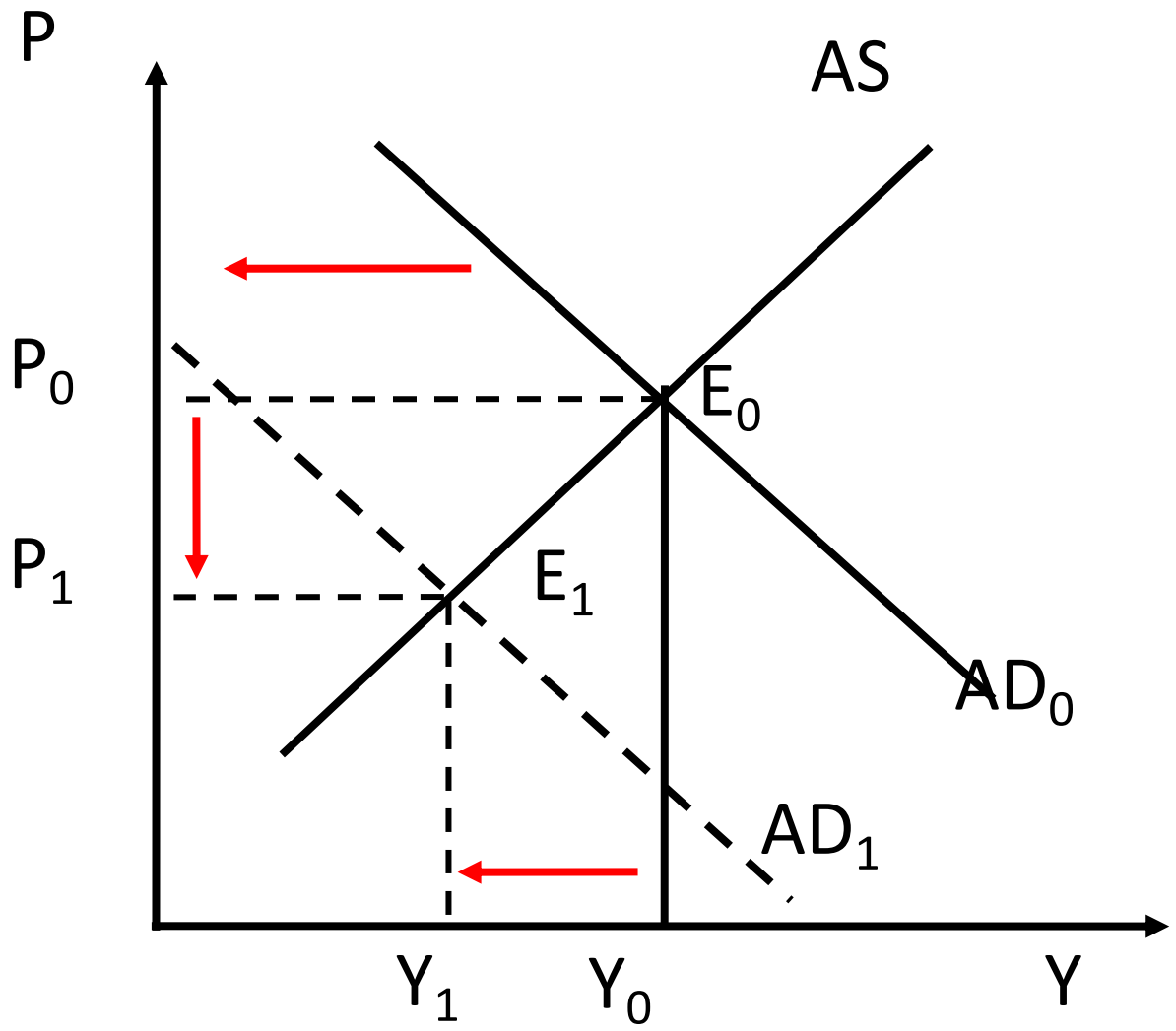
$$\begin{bmatrix} Y > Y^* \\ P\uparrow \end{bmatrix} : MS\downarrow \rightarrow i\uparrow \rightarrow I\downarrow \rightarrow AD\downarrow \rightarrow \begin{Bmatrix} P\downarrow \\ Y\downarrow \\ u\uparrow \end{Bmatrix}$$

Mechanism



reduce MS -> tăng rr, tăng discount rate, bán trái phiếu chính phủ

Mechanism



Mechanism

- **To decrease money supply, CB can:**
  - ☐ Sell Government bonds
  - ☐ Increase required reserve ratio
  - ☐ Increase discount rate

Summary

- Money includes currency and various types of bank deposits.
- The Federal Reserve is the central bank of the U.S., is responsible for regulating the monetary system.
- The Fed controls the money supply mainl through open-market operations. Purchasing govt bonds increases the money supply, selling govt bonds decreases it.

Summary

- In a fractional reserve banking system, banks create money when they make loans. Bank reserves have a multiplier effect on the money supply.