

## Lecture 2: Changes in MB

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## Monetary Policy

- **MB and MS**
- **Balance Sheet of the Fed**
- **Three major monetary tools**
  - **Open-market operations**
  - **Reserve ratio**
  - **Discount rate**
- **Reading: Chapter 17, 18**

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## The Money Supply Process



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## The Fed and the Monetary Base

- The Fed can control the M1 supply by changing MB.
- $MB = C$  (currency in circulation) +  $R$  (reserves held by banks).

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## Fed's Balance Sheet

- The Fed's principal liabilities are C and R.
- The Fed's principal assets are government securities and discount loans.
- Changes in securities and discount loans are the major cause of monetary base changes.

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## Balance Sheet of the Fed (a Simple Version)

ASSETS	LIABILITIES
US government securities Discount loans to banks	Currency in circulation Reserves

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## The Federal Reserve's Balance Sheet

Assets		Liabilities	
Securities (U.S. Treasury, government agency, and bankers' acceptances)	684.8	Currency outstanding	655.2
Discount loans	0.04	U.S. Treasury deposits	10.6
Items in the process of collection	8.2	Foreign and other deposits	0.6
Other Federal Reserve assets	40.0	Deferred availability credit items	8.1
Gold and SDR certificate accounts	13.2	Other Federal Reserve liabilities and capital accounts	40.8
Coin	1.0	Deposits by depository institutions	31.9
	<u>\$747.2</u>		<u>\$747.2</u>

Source: Data are for April 30, 2003, and are taken from Federal Reserve Bulletin, July 2003, p. A10.

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## MB and the Fed's Balance Sheet

$$\begin{aligned} MB &= C + R = \text{currency in circulation} + \text{reserves} \\ &= (\text{fed notes in circulation} + \text{treasury coin in circulation}) \\ &\quad + (\text{deposits with the Fed by depository institutions} + \text{vault cash}) \end{aligned}$$

- **currency outstanding** in the fed's balance sheet = Fed notes = **fed notes in circulation** + vault cash
- **treasury coin outstanding** = **treasury coin in circulation** + **coin held by the Fed**
- **reserves** = **deposits with the Fed by depository institutions** + vault cash

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## MB and the Fed's Balance Sheet

$$MB = (\text{currency outstanding} - \text{vault cash}) + (\text{treasury coin outstanding} - \text{coin}) + (\text{deposits with the Fed by depository institutions} + \text{vault cash})$$

$$= \text{currency outstanding} + (\text{treasury currency outstanding} - \text{coin}) + \text{deposits with the Fed by depository institutions}$$

$$= \text{Fed notes} + (\text{treasury currency outstanding} - \text{coin}) + \text{deposits with the Fed by depository institutions}$$

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## MB and the Fed's Balance Sheet

- The simple expression,  $B = C + R$ , can be expanded to

$$\begin{aligned} B &= \text{Federal Reserve Notes} \\ &\quad + \text{Reserve deposits by depository institutions} \\ &\quad + \text{Treasury currency outstanding} \\ &\quad - \text{Coin held by the Fed} \end{aligned}$$

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## MB and the Fed's Balance Sheet

- The above expression can be expanded to include all sources of monetary base changes.

$$B = \text{securities} + \text{discount loans} + \text{Federal Reserve float} + \text{other Federal Reserve assets} + \text{gold and SDR certificates} + \text{Treasury currency outstanding} - \text{U.S. Treasury deposits} - \text{foreign and other deposits} - \text{other Federal Reserve liabilities and capital accounts};$$

$$\text{Federal Reserve float} = (\text{cash items in the process of collection}) - (\text{deferred availability cash items})$$

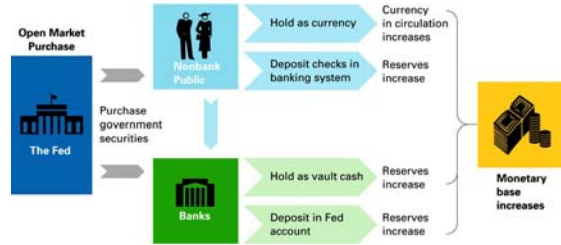
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## Changing the Monetary Base

- The Fed changes MB by changing the levels of its assets.
- In an open market purchase the Fed buys government bonds and increases MB.
- In an open market sale the Fed sells government bonds and decreases MB.
- The Fed can also change MB through changes in discount loans.

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## The Effect of Open Market Operations



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## Open Market Purchase from a Bank

Hooville National Bank	
Assets	Liabilities
Securities -\$5B Reserves +\$5B	

Our bank will have \$5 billion less of securities but a \$5 billion credit with the Fed.

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## Fed's Open Market Purchase from a Bank

The Fed	
Assets	Liabilities
Securities +\$5B	Reserves +\$5B

If Fed buys \$5 billion worth of securities from our bank, the Fed will have \$5 billion more securities and \$5 billion more in reserves, the seller's credit for the securities.

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## Open Market Purchase from a Non-bank

Joe Q. Public	
Assets	Liabilities
Securities -\$5B Checkable Deposits +\$5B	

If Fed buys \$5 billion worth of securities from Joe Q. Public, Mr. Public will have \$5 billion less of securities but a \$5 billion credit with his bank.

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## Open Market Purchase from a Non-bank

Hooville National Bank	
Assets	Liabilities
Reserves +\$5B	Checkable Deposits +\$5B

The Fed will pay for the securities with a check. Let's assume that Joe Q. Public does not want \$5B in cash. He will have to deposit it in a bank, which will have \$5B more cash reserves

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## Fed's Open Market Purchase from a non-bank

The Fed	
Assets	Liabilities
Securities +\$5B	Reserves +\$5B

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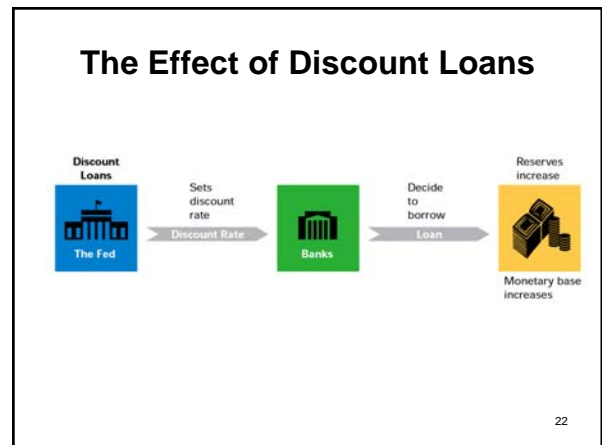
### What if Joe wants cash?

Joe			
Assets		Liabilities	
Securities -\$5B Currency +\$5B			
The Fed			
Assets		Liabilities	
Securities +\$5B		Currency in circulation +\$5B	

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- ### Therefore ...
- Effect on reserves depends on how the Fed must pay for the securities
  - BUT effect on MB always the same:
    - when Fed BUYS securities, MB increases by the amount of the purchase
    - when Fed SELLS securities, MB decreases by the amount of the sale
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- ### Three Major Monetary Tools
- Open-market operations
  - The required reserve ratio
    - Affects the size of ER
    - Changes the size of m
  - The discount rate: the interest rate that the Fed charges to commercial banks that borrow from the Fed
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- ### Easy Monetary Policy
- Occurs when the Fed increases MS by
    1. Buying securities
    2. Lowering the required reserve ratio
    3. Reducing the discount rate
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- ### Tight Monetary Policy
- Occurs when the Fed decreases MS by
    1. Selling securities
    2. Raising the required reserve ratio
    3. Raising the discount rate
- Open Market Operations give the Fed most control of the three.
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