

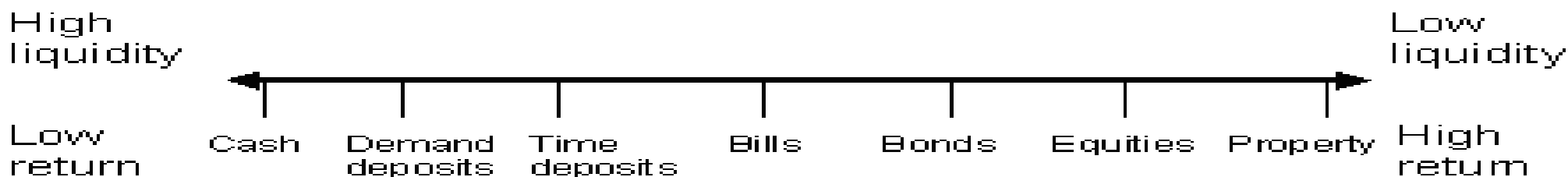
# Money: Functions & Characteristics

- **Money:** a commodity, an asset which is used economy-wide<sup>1</sup> for payments. "Money is a matter of functions four: a medium, a measure, a standard, a store":
- **Functions of Money:** .....
  - ✓ **Medium of Exchange:** money is the asset used to make transactions - all sales and purchases happen in exchange for money;
  - ✓ **Unit of Account:** money measures economic values - it is used to designate all prices, wages and debts;
  - ✓ **Store of Value:** money can be held for later use - it is the means of saving and accumulating of wealth;
  - ✓ **Standard of Deferred Payment:** money is a form of designating future payments, such as interest receipts, loan repayments, or contractual obligations. ....
- **Characteristics of Money:**
  - ✓ durable, so that value is not lost by spoilage;
  - ✓ recognizable and of standard quality;
  - ✓ easily divisible to match any prices;
  - ✓ portable and transportable, or valuable relative to its weight;
  - ✓ difficult to counterfeit;
  - ✓ scarce, not to lose its value.

# Demand for Money

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- Opportunity cost of holding money in cash – earning interest. The price of money is the interest rate
- Real ( $r$ ) vs. Nominal ( $n$ ) interest rates:  $r = n - i$
- Variety of interest rates originate *portfolio allocation problem*: expected return, term (maturity), risk, liquidity, asset demand - Equities and other assets.

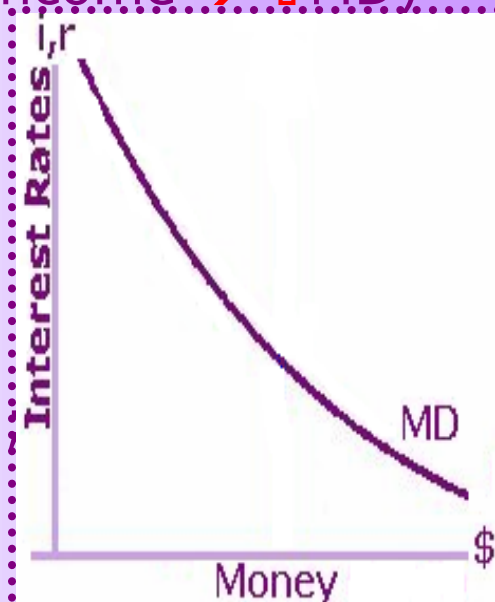


## ➤ Sources of Money Demand:

- ✓ Transactions Demand ( $\uparrow r \rightarrow \downarrow$  quantity of MD;  $\uparrow P$ , Income  $\rightarrow \uparrow$  MD)
- ✓ Assets Demand ( $\uparrow r$  of alternative assets  $\rightarrow \downarrow$  MD)

## ➤ Determinants of Money Demand:

- ✓ Income:  $\uparrow$  Income  $\rightarrow \uparrow$  MD;
- ✓ Wealth:  $\uparrow$  Wealth  $\rightarrow \uparrow$  MD;
- ✓ Prices:  $\uparrow P \rightarrow \uparrow$  MD;
- ✓ Interest Rates (nominal):  $\uparrow i \rightarrow \uparrow$  MD;
- ✓ Liquidity:  $\uparrow$  M liquidity  $\rightarrow \uparrow$  MD,  $\uparrow$  alternative  $\rightarrow \downarrow$  MD;
- ✓ Risk:  $\uparrow$  M risk  $\rightarrow \downarrow$  MD,  $\uparrow$  alternative  $\rightarrow \downarrow$  MD;
- ✓ Efficiency of Payments:  $\uparrow$  efficiency  $\rightarrow \downarrow$  MD



# Supply of Money & Money Market

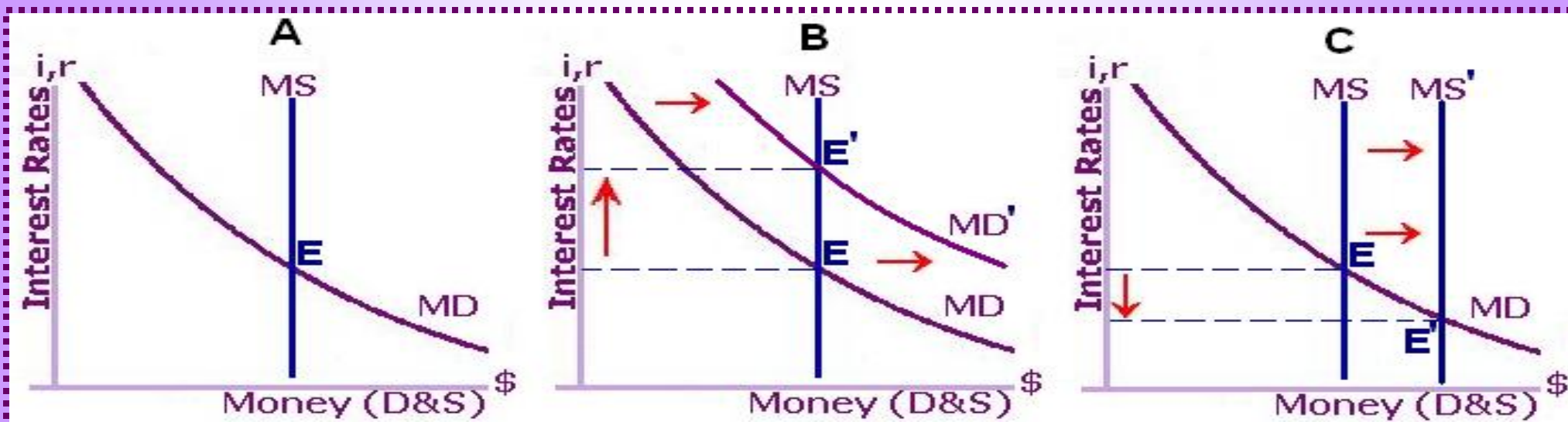
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## ➤ Three ways to supply money:

- ✓ *direct injection of cash* (coins and banknotes) in circulation (printing money);
- ✓ *open market operations*: indirect withdrawal or injection of cash through selling and buying government securities;
- ✓ *regulating credit & reserve requirements* of banking sector.

## ➤ Monetary aggregates: quantitative measures of the supply of money.

- ✓  $M_1$  ("**narrow**" money): currency (coins and paper cash) and demand deposits (checking accounts) which can immediately be converted into currency or used for cashless payments;
- ✓  $M_2$  ("**intermediate**" money):  $M_1$  plus savings and fixed-term accounts which cannot be immediately converted into components of narrow money;
- ✓  $M_3$  ("**broad**" money):  $M_1, M_2$  plus "**near money**" - any other valuable securities that are even less liquid than term deposits.



# Process of Money Supply

- **Banking and MS:**
  - ✓ fractional-reserve banking;
  - ✓ reserve requirements
  - ✓ the process of deposit creation;
  - ✓ money multiplier.

- **Money Multiplier:**
  - ✓ Example: if a reserve requirement is 20%: a \$1,000 cash deposit creates account balances equal to \$5,000 with resulting increase in the money supply of:  
\$5,000 - \$1,000 = \$4,000

	New Deposit	New Loan	New Reserves
1 <sup>st</sup> Bank	1,000.0	900.0	100.0
2 <sup>nd</sup> Bank	900.0	810.0	90.0
3 <sup>rd</sup> Bank	810.0	729.0	81.0
4 <sup>th</sup> Bank	729.0	656.1	72.9
5 <sup>th</sup> Bank	656.1	590.5	65.6
6 <sup>th</sup> Bank	590.5	531.4	59.0
7 <sup>th</sup> Bank	531.4	478.3	53.1
8 <sup>th</sup> Bank	478.3	430.5	47.8
9 <sup>th</sup> Bank	430.5	387.4	43.0
10 <sup>th</sup> Bank	387.4	348.7	38.7
	...	...	...
	10,000.0	9,000.0	1,000.0

$$D \times \left( 1 + \left[ \frac{9}{10} \right] + \left[ \frac{9}{10} \right]^2 + \dots + \left[ \frac{9}{10} \right]^n \right) = D \times \frac{1}{\left[ 1 - \frac{9}{10} \right]} = D \times \frac{1}{R}$$

# Related Topics: Time Value of Money

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➤ **The Present Value is the \$\$ value today of a stream of income over time**

$$PV = \frac{N_1}{(1+i)} + \frac{N_2}{(1+i)^2} + \dots + \frac{N_t}{(1+i)^t}$$

✓ **Example 1: PV of \$100K @10% received 10 years from now:**

$$PV = \frac{\$100,000}{(1 + .10)^{10}} = \$38,550$$

✓ **Example 2: Manhattan deal**

Year: 2007	Manhattan	\$100,000,000,000
Year: 1626	Years: 381	\$24
4%	\$32,381.56	\$74,116,263
6%	\$22.83	\$105,134,658,313
8%	\$0.02	\$130,215,319,909,015

$$V_{1626} = \frac{PV_{2007}}{(1+i)^{381}}$$

$$PV_{1626} * (1+i)^{381} = FV_{2007}$$

➤ **Important Conclusion:** Increase of the interest rate depresses the market price of an asset

# Key Concepts

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- ✓ *definition of money*
- ✓ *functions of money, characteristics of money*
- ✓ *demand for money*
- ✓ *liquidity, risk, rate of return, portfolio allocation*
- ✓ *determinants of money demand*
- ✓ *money supply, monetary aggregates*
- ✓ *process of money supply, money multiplier*
- ✓ *money market*
- ✓ *price of money: real vs. nominal interest rate*
- ✓ *shifts in money demand and money supply, monetary policy*
- ✓ *time value of money*

## **Course Web Support:**

<http://www.skylinecollege.info/mosesov/macro/>

<http://www.mhhe.com/economics/samuels17/students/Ch25.mhtml>