

Money, Money Demand, Money Supply, and Central Banking

Econ 202 Lectures 7 and 8

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- 1 What is Money?
- 2 Money Demand
- 3 Money Supply
- 4 The Bank Balance Sheet
 - Basics of Bank Management
 - Central Banking

What is Money?

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Definition: Income

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Definition: Income

Income is the *flow* of money, interest rate and maturity payments per unit of time.

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 - imagine a barter economy
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- M1 (*transactions money*): It is all the forms of money that can be directly used for transactions.
- M2 (*broad money*): savings and short-term financial instruments.
what happens when a person moves \$100 from a savings account into a checking account?

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- M3: Longer-term assets
- MP3s?

What is **M1**?:

What is **M1**?: Currency and assets that can be used directly as a medium of exchange

Table 1 Measures of the Monetary Aggregates

	Value as of December 2002 (\$billions)
M1 = Currency	626.5
+ Traveler's checks	7.7
+ Demand deposits	290.7
+ Other checkable deposits	281.2
Total M1	1,206.1

M2 and M3

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What is **M3**?: Currency and assets that are less liquid – can not be turned into cash with little cost

M2 = M1

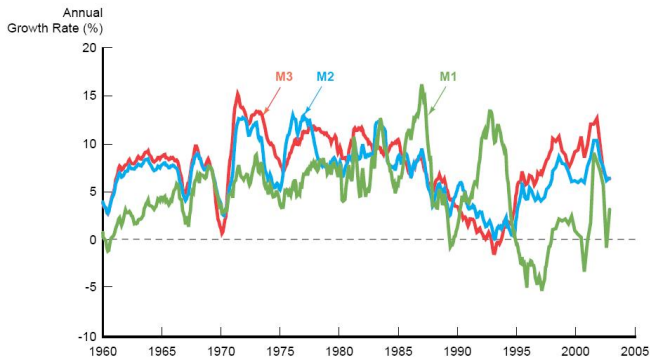
+ Small-denomination time deposits and repurchase agreements	1,332.3
+ Savings deposits and money market deposit accounts	2,340.4
+ Money market mutual fund shares (noninstitutional)	923.7
Total M2	5,802.5

M3 = M2

+ Large-denomination time deposits and repurchase agreements	1,105.2
+ Money market mutual fund shares (institutional)	767.7
+ Repurchase agreements	511.7
+ Eurodollars	341.1
Total M3	8,528.2

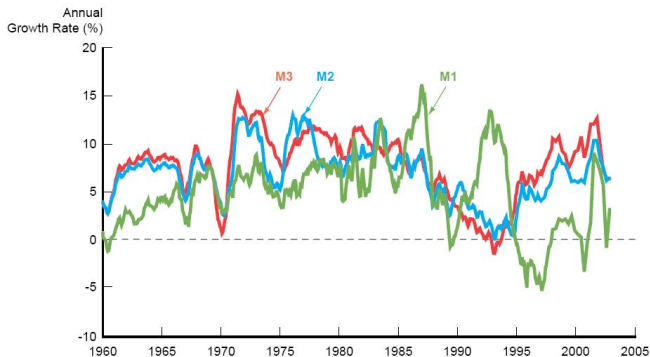
The Growth of Money Over Time

How do the monetary aggregates move over time?



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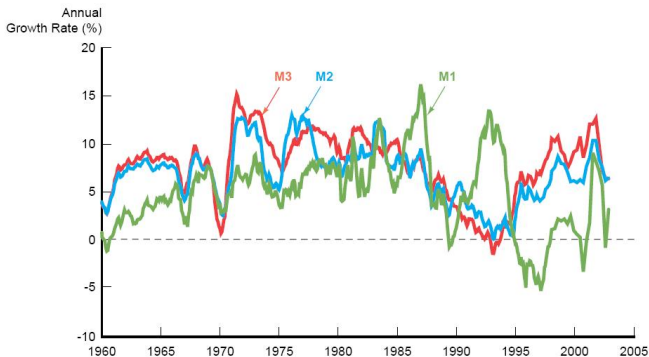
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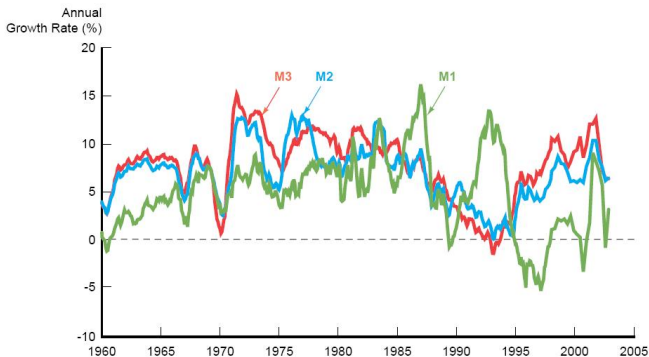
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The Growth of Money Over Time

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- today, the story is more complex
- money (measurement) matters. Why?

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Evolution of the payment system is evolution of money:

- **Commodity money:** precious metals or another valuable commodity
- **Paper money:** a guarantee that the piece of paper was convertible into coins or into a quantity of precious metal
- **Fiat money:** paper money issued by the government that are generally not convertible into precious metals but everyone accepts them as a medium of exchange
- **Checks:** an instruction to the bank to pay a specified amount of fiat money to the holder of the check
- **E-money:** electronic settlement of payment needs

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Can we think of advantages and disadvantages of each form of money?

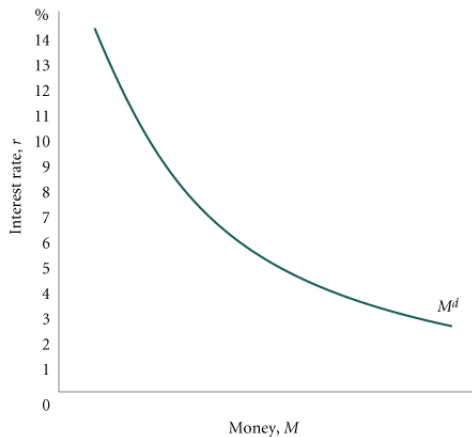
Why do people demand money?

Three main motives for holding money:

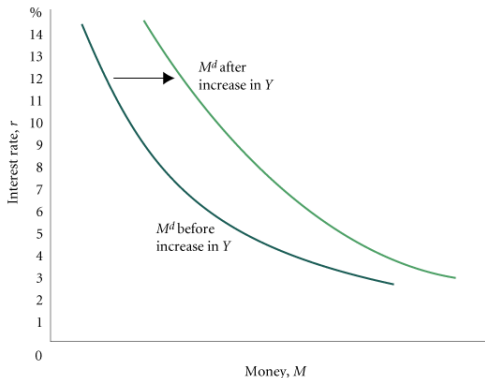
- ① *transaction motive*: money is useful for buying goods and services.
- ② *precautionary motive*: money can be useful in crisis times.
- ③ *speculative motive*: money **instruments** can bring interest rate.

Firms and households demand money.

Money demand - graphical representation

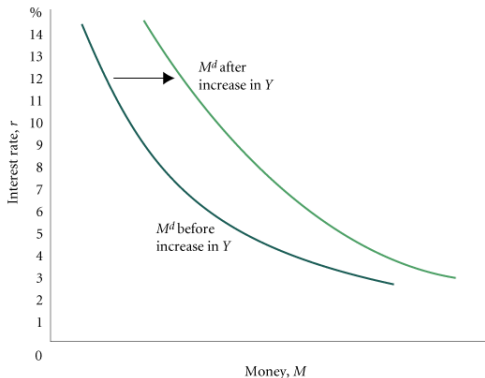


Changes in money demand



Increase in GDP increases money demand. Increase in prices also increases money demand. Why?

Changes in money demand

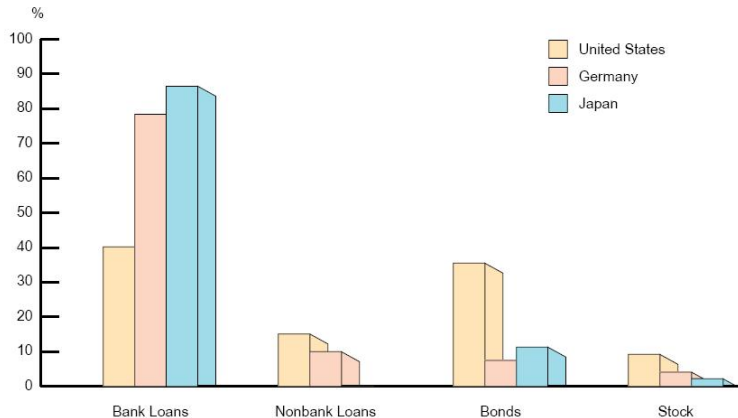


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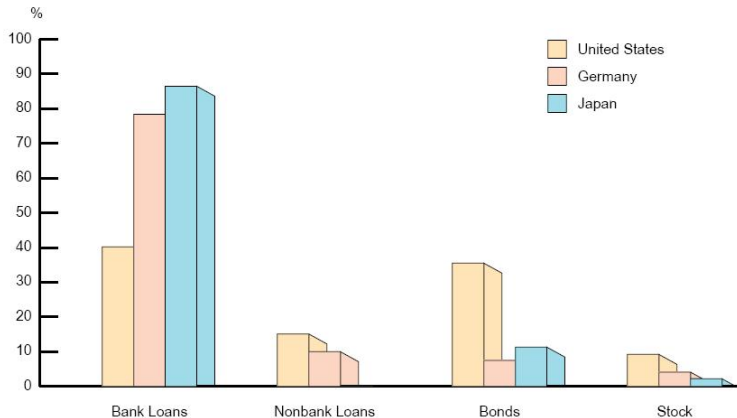
IMPORTANT: Changes in the interest rate correspond to movements along the M_d curve whereas changes in Y or P shift the M_d curve.

Banking as the Major Financial Intermediary

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Banks are the major source of financing everywhere in the world.

The Bank Ballance Sheet

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- ① Where do the money in the bank come from (Liabilities)
- ② What does the bank do with them (Assets)
- ③ How does the bank make profit
- ④ How is money created

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$$\textit{Total assets} = \textit{Total liabilities} + \textit{Capital}$$

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Assets are how the bank *uses* the acquired funds

The US Banking System Balance Sheet

Table 1 Balance Sheet of All Commercial Banks (items as a percentage of the total, January 2003)

Assets (Uses of Funds)*		Liabilities (Sources of Funds)	
Reserves and cash items	5	Checkable deposits	9
Securities		Nontransaction deposits	
U.S. government and agency	15	Small-denomination time deposits	
State and local government and		(< \$100,000) + savings deposits	42
other securities	10	Large-denomination time deposits	14
Loans		Borrowings	28
Commercial and industrial	14	Bank capital	7
Real estate	29		
Consumer	9		
Interbank	4		
Other	8		
Other assets (for example,			
physical capital)	6		
Total	100	Total	100

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What are the major elements?

Basics of Bank Management

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FIRST NATIONAL BANK			
Assets		Liabilities	
Required reserves	+\$10	Checkable deposits	+\$100
Excess reserves	+\$90		

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How does a bank make a profit?

How is money created?

	Panel 1		Panel 2		Panel 3	
	Assets	?Liabilities	Assets	?Liabilities	Assets	?Liabilities
Bank 1	Reserves 100	100 Deposits	Reserves 100 Loans 80	180 Deposits	Reserves 20 Loans 80	100 Deposits
Bank 2	Reserves 80	80 Deposits	Reserves 80 Loans 64	144 Deposits	Reserves 16 Loans 64	80 Deposits
Bank 3	Reserves 64	64 Deposits	Reserves 64 Loans 51.20	115.20 Deposits	Reserves 12.80 Loans 51.20	64 Deposits
Summary:	Loans	Deposits				
Bank 1	80	100				
Bank 2	64	80				
Bank 3	51.20	64				
Bank 4	40.96	51.20				
⋮	⋮	⋮				
Total	400.00	500.00				

Something multiplies the deposits. **Money multiplier:**

$$MM = \frac{1}{RR}$$

Managing money in the economy: the Central Bank

What does the central bank do?

Functions of the central bank:

- ① controlling the money supply
- ② clearing interbank payments
- ③ regulating the banking system
- ④ managing exchange rates
- ⑤ *lender of last resort*: providing liquidity to banks when necessary

Tools of monetary policy

How does the central bank do it?

Main monetary policy tools:

- ① set reserve requirements: direct effect on commercial banks' reserves
- ② determine discount rate: the interest rate for borrowing from the Central bank
- ③ make open market operations: buy and sell Government bonds

Reserve requirements effects

Federal Reserve				Commercial Banks			
Assets		Liabilities		Assets		Liabilities	
Government securities	\$200	\$100 Reserves		Reserves	\$100	\$500 Deposits	
		\$100 Currency		Loans	\$400		

Note: Money supply ($M1$) = Currency + Deposits = \$600.

How much are the reserve requirements (RR)?

Reserve requirements effects

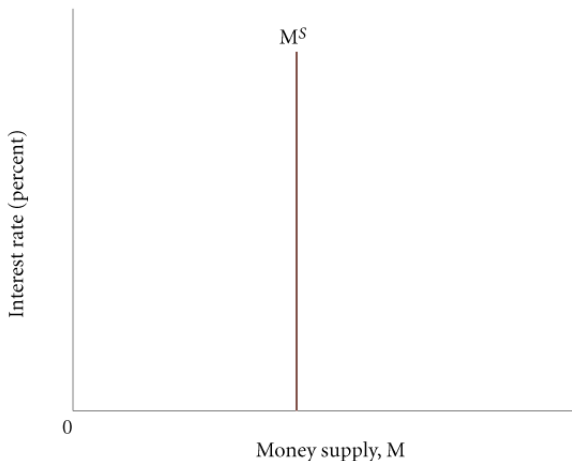
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How much are the reserve requirements (RR)? Suppose the RR are reduced to 10%. What happens to the Money Supply = Currency + Deposits?

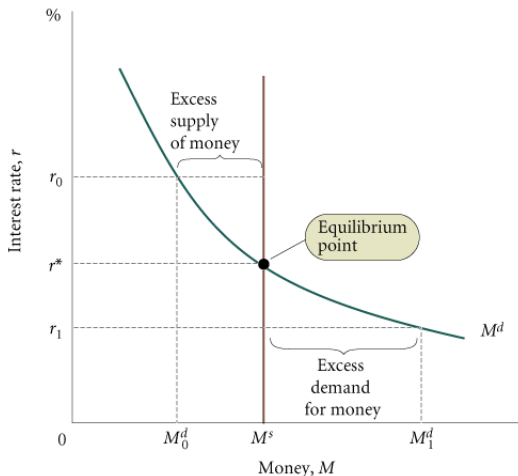
- 1 effect on currency = ?
- 2 effect on deposits = ?

The money supply curve



The M_S curve is vertical because the Central bank has control over the money supply.

Equilibrium on the money market



Why would the Fed want to change the interest rate? What impact would that have on the economy?

Web-links on central banking

The Federal Reserve (The FED): <http://www.federalreserve.gov/>

The European Central Bank (ECB): <http://www.ecb.int>

The Czech National Bank (CNB): <http://www.cnb.cz/en/index.html>

The National Bank of Kazakhstan (NBK): <http://www.nationalbank.kz>

The Bank of Russia (BoR): <http://www.cbr.ru/eng/>

The Bulgarian National Bank (BNB): <http://www.bnb.bg/>