Money

ECO 301: Money and Banking

Goals

- Specific Goals:
  - Learn how quantity of money in the economy is measured.
  - Use supply and demand analysis to determine how changes in money market influence interest rates.
- Learning Objectives:
  - LO2: Define different measures of money, and analyze a market for money to predict changes in interest rates and the quantity of money in the economy.
  - LO3: Predict changes in interest rates using fundamental economic theories including present value calculations, behavior towards risk, and supply and demand models of money and bond markets.

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Reading

- Chapter 2.

What is money?

- Money is a commodity or token that is generally acceptable as a means of payment.
- It may or may not have an inherent value.
  - Today the U.S. dollar has no inherent value.
  - In prisons cigarettes are sometimes used as money. Cigarettes have an inherent value.
  - From 1889-1932 and from 1946-1971 the U.S. would redeem dollars for gold. (Gold Standard).
  - Since the late 1970s no country in the world redeems their currency for anything of value.
- Money has three important functions:
  - Medium of exchange
  - Unit of account
  - Store of value.

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Functions of money

- Medium of exchange: eliminate the need for a double coincidence of wants.
- Unit of account: an agreed measure for stating the relative prices of goods and services.
  - Necessary in order for consumers to maximize utility.
- Store of value:
  - Money can be held and used for later consumption.
  - Money is not unique in this aspect. Stamps, baseball cards, houses, even computers and TV's can be stores of value.
  - With inflation, the value of money falls. Therefore currencies that undergo hyper-inflation cannot meet this function.

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Forms of money

- Two primary forms of money:
- Currency
- Deposits at banks and other depository institutions.
- Stupid trivia:
  - Largest denomination bill the Fed prints is the $100.
  - Largest denomination ever printed was the $10,000. Still some in circulation.
  - How many bills do not have presidents on them?

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    - $10,000 bill has Salmon P. Chase (Secretary of the treasury under Lincoln).

Official Measures of money

- Two measures of money called **M1** and **M2**
- M1: currency + checking deposits and traveler's checks.
- These types of assets can be used as immediate means of payment.
- M2: M1 + time deposits, savings deposits, and money market mutual funds.
- The additional items in M2 can *quickly* be converted into a means of payment.
- **Liquidity**: the property of an asset being quickly converted to a means of payment.

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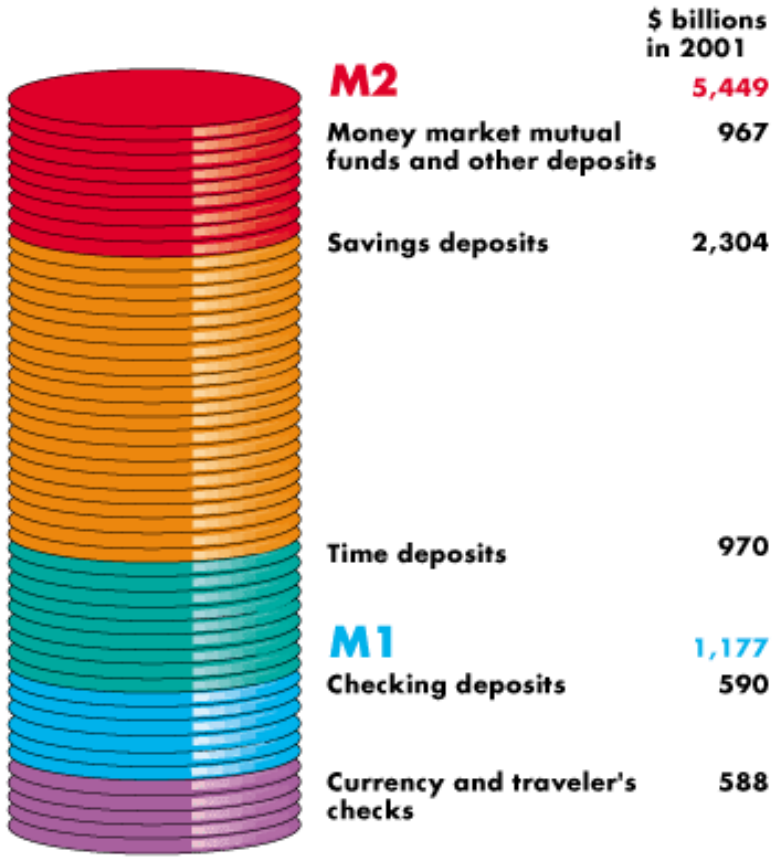

What is not included in money

- Checks are not money. The balances in the checking accounts are money.
- Credit cards are not money.
  - When you pay with a credit card, you don't give the merchant money, the credit card company does.
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Real vs. nominal money

- **Nominal money**: quantity of money measured in dollars.
- **Real money**: real purchasing power of money.

$$\text{Real money} = \frac{\text{Nominal money}}{\text{Price level}}$$

- What should we use as a price for real money?
- What will be the shape of the money demand curve?

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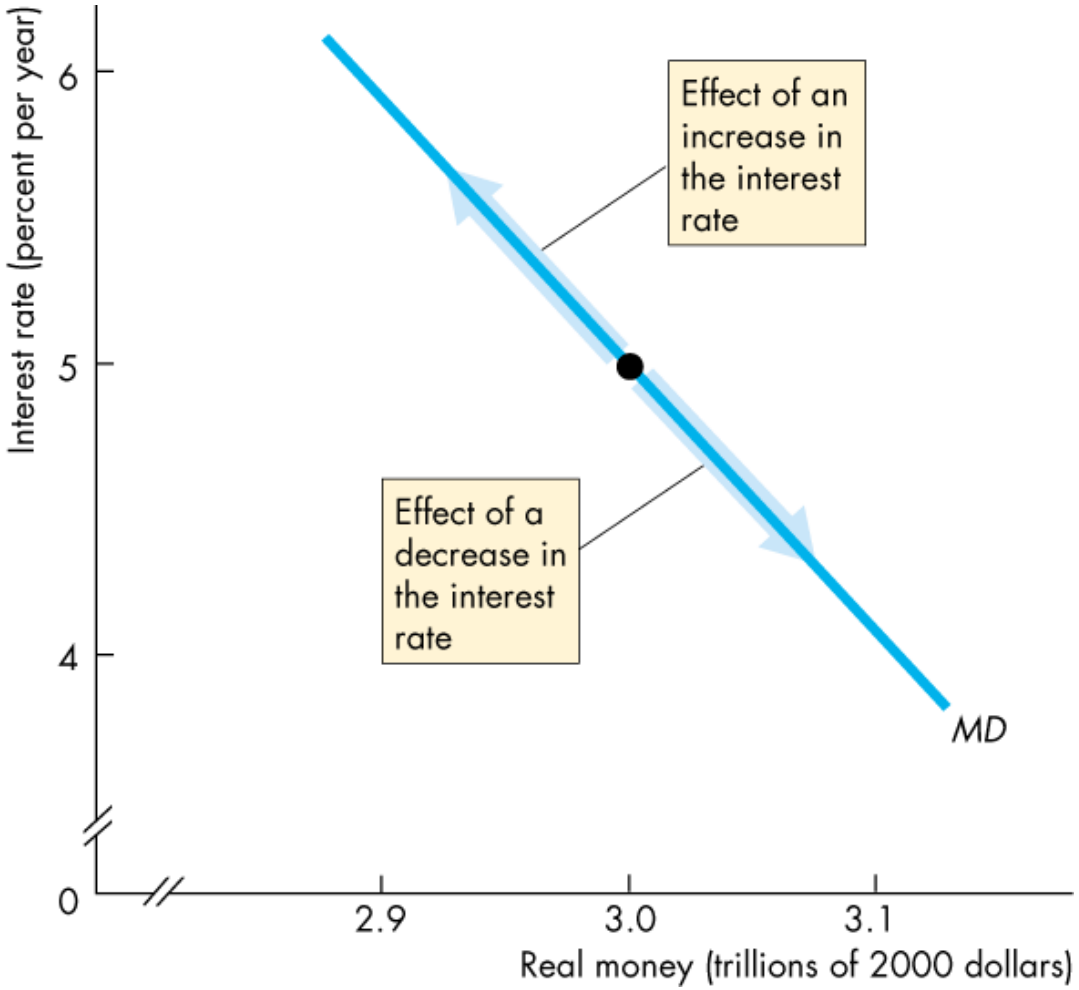
Real money demand



Influences of money holding

- The price level: only influences nominal money demand.
- The interest rate. Shift or movement?
- Real GDP.
  - How will an increase in real GDP affect the money demand curve?
- Financial innovation.
  - Examples: ATM's, online banking, automatic transfers between checking and savings accounts, credit and debit cards.
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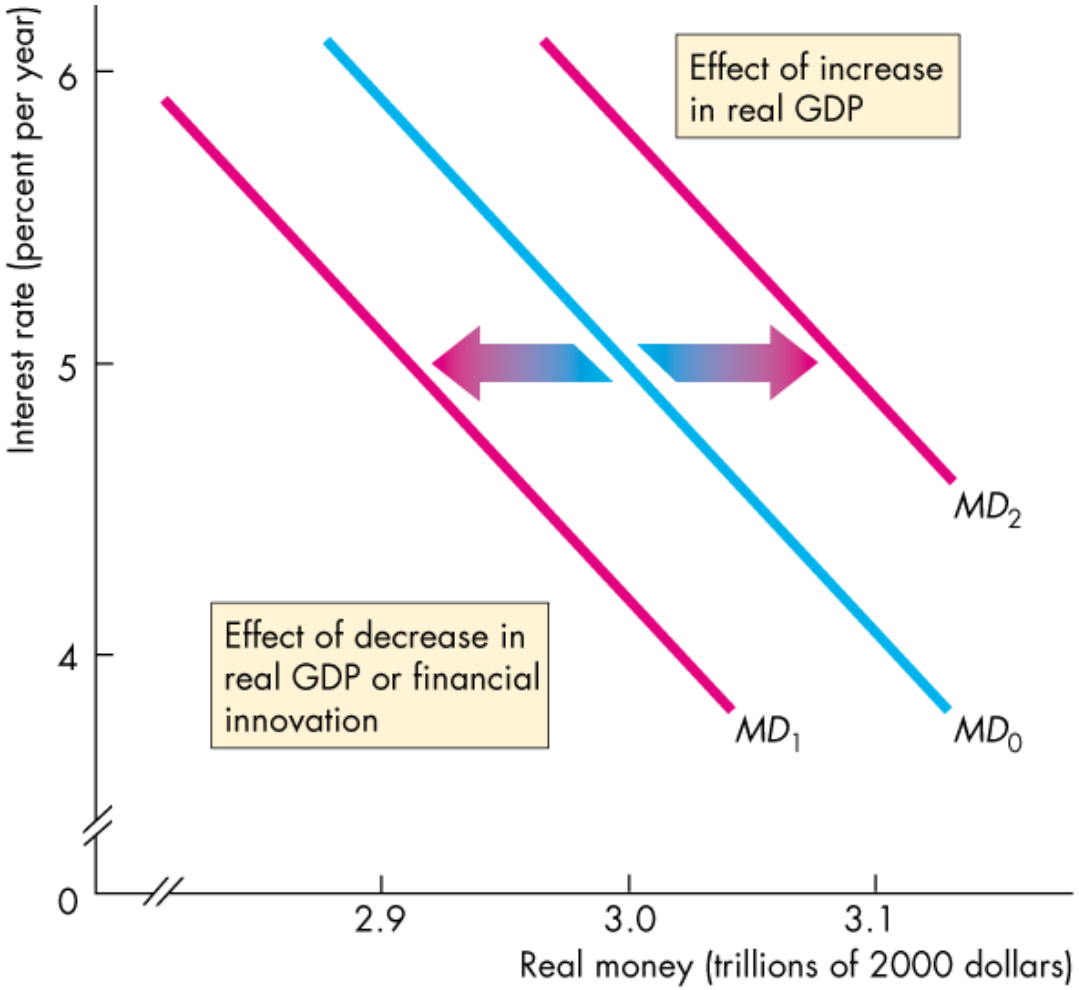
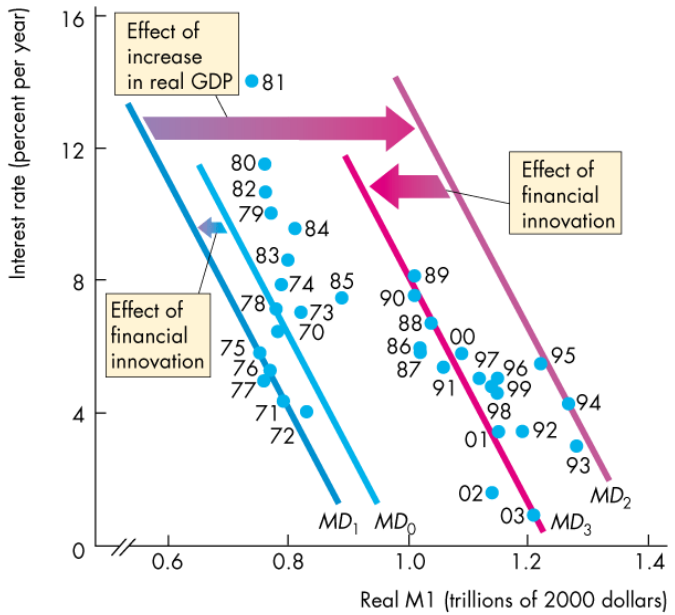
Shifts in money demand



Demand for M1 in the U.S.

1. In 1970, MD_1
2. Financial innovation in early 70s $\rightarrow$ MD_1
3. Late 80s though the 90s increase in real GDP $\rightarrow$ MD_2
4. Financial innovations in the 90s and 2000s $\rightarrow$ MD_3



(a) M1 demand

Money Supply

- Nominal money supply determined?

- What about real money supply?
- In the short run the price level is fixed.
- What is the shape of the money supply curve?

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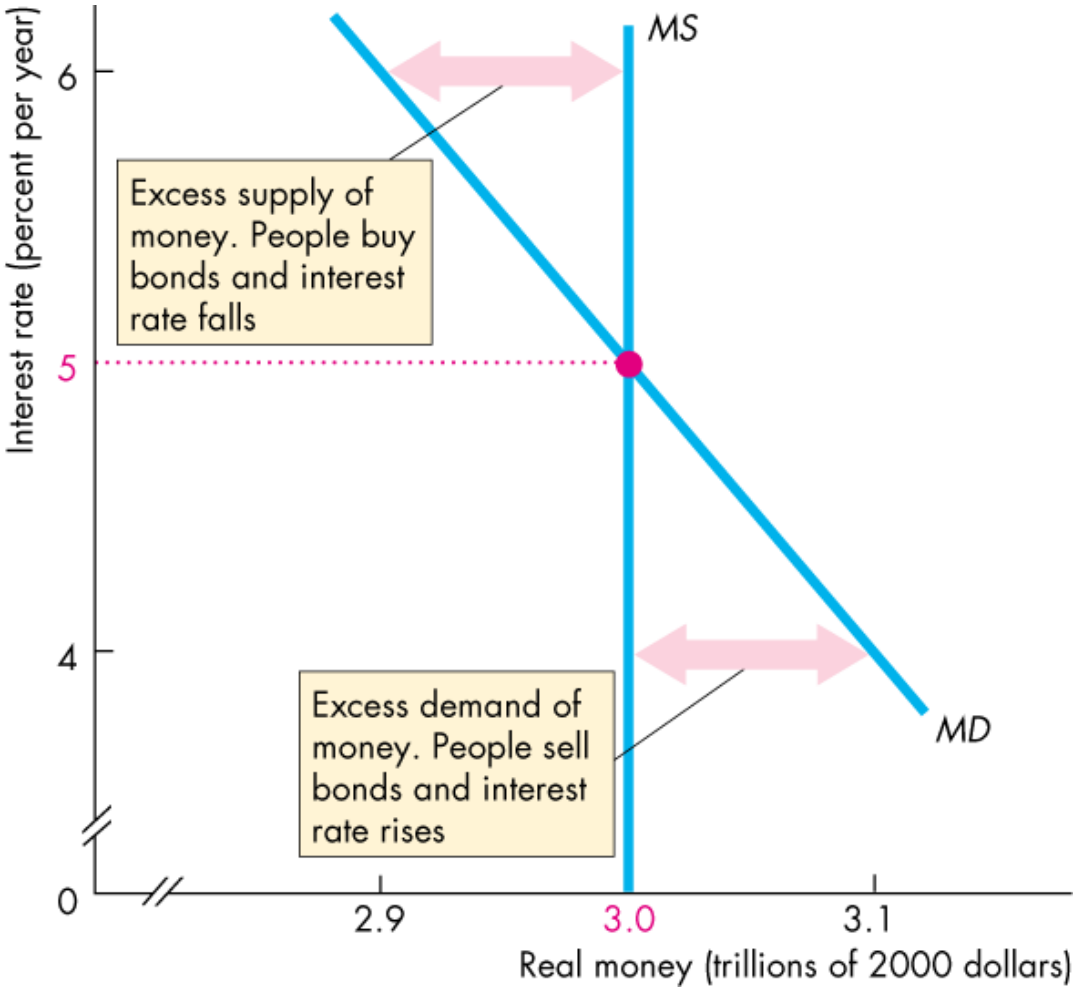
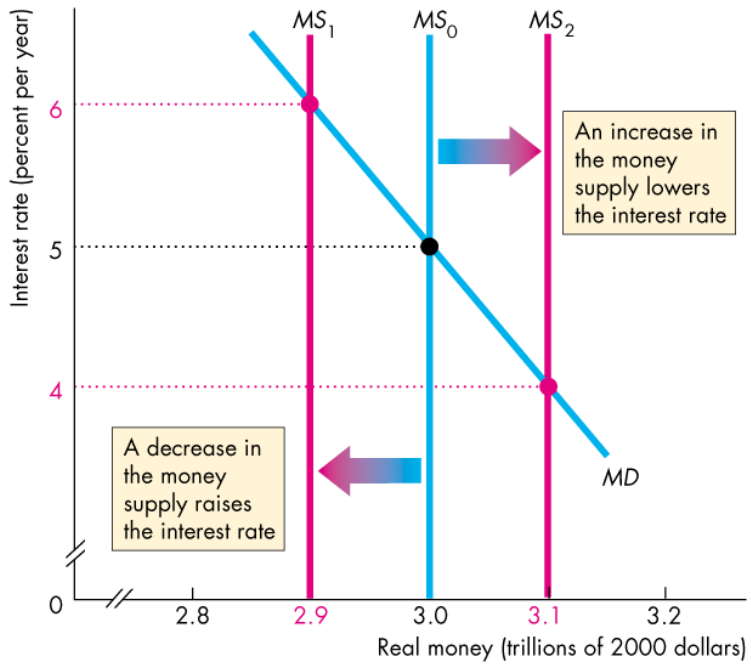
Money market equilibrium



Monetary policy

- **Contractionary monetary policy**: decrease in the money supply.
  - Fed conducts an open market _____ of bonds.
  - Shifts money supply from $MS_0 \rightarrow MS_1$.
- **Expansionary monetary policy**: increase in the money supply.
  - Fed conducts an open market _____ of bonds.
  - Shifts money supply from $MS_0 \rightarrow MS_2$.



Velocity of Money

- **Velocity of money:** the average number of times a dollar is re-spent in a given year to purchase the total amount of goods and services produced in the economy.
- Equation of exchange: total nominal quantity of money exchanged in the economy should equal the nominal value of aggregate production.

$$MV = PY$$

  - M: Total money supply.
  - V: Velocity of money.
  - P: Price level.
  - Y: Real GDP.

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Quantity Theory of Money

- Quantity Theory of Money: classical theory of the relationship between money, prices, and output.
- Assumes velocity of money is constant: determined by institutions and technology that govern how transactions are conducted.
- Assumes wages and prices are perfectly flexible: real GDP is determined by a country's production possibilities.
- If V is fixed, Y is fixed, what must happen if money supply doubles?
- Quantity theory of money: increases in money supply lead *only* to an equal percentage increases in prices.

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Quantity Theory of Money Demand

- Rearrange equation of exchange:

$$\frac{M_d}{P} = \frac{1}{V} Y$$

- Money demand depends on:
  - Y: real GDP and therefore income.
  - Financial technology.
- What will be the shape of the real money demand function?

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Quantity Theory and Timing

- Is this a long-run theory or a short-run theory?
- If V is determined by technology, financial institutions, laws, etc - these are likely fixed in the *short run*, but not long run.
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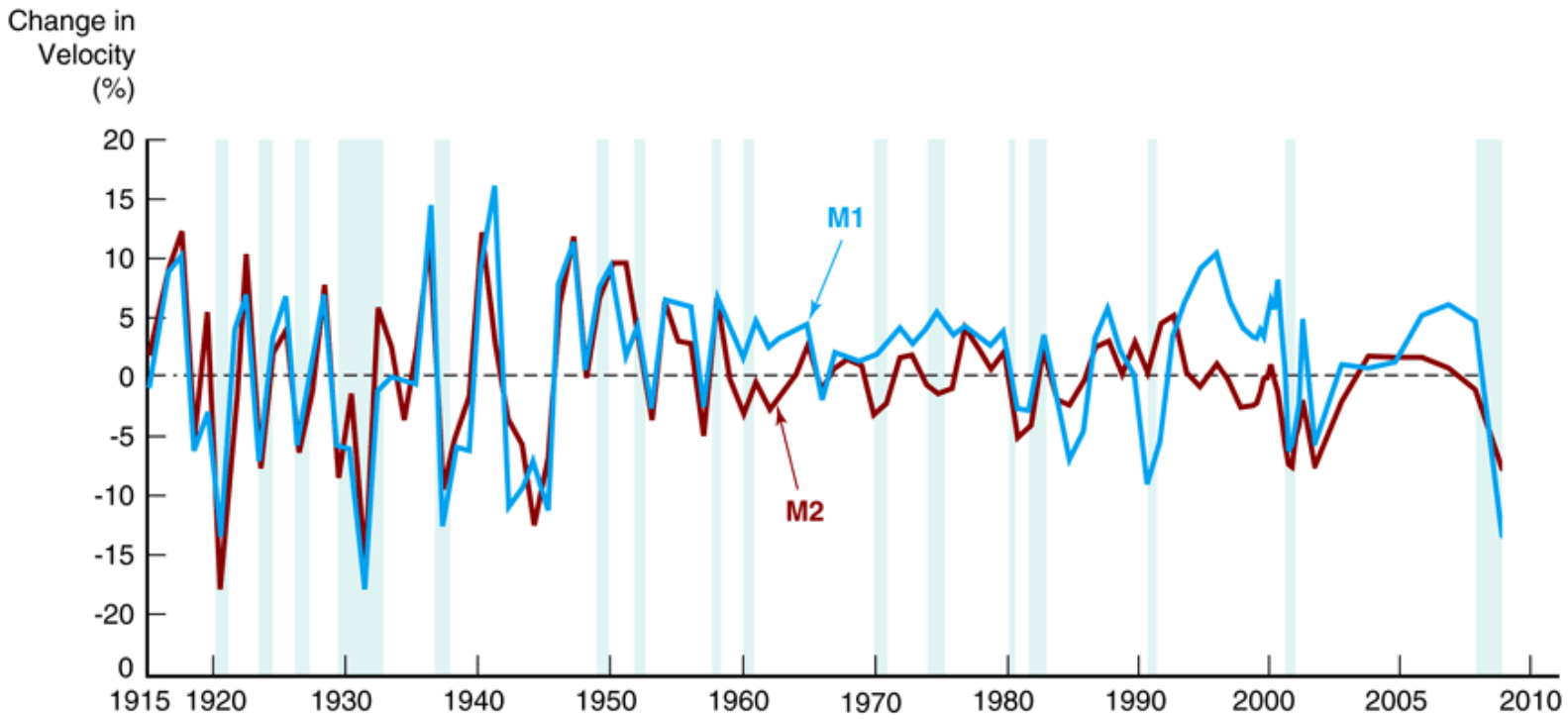
Historical Look at Velocity



- Velocity of money is *not constant* in short run nor long run.
- Velocity of money tends to fall during recessions.

Quantity Theory and Velocity

- Demand side determinants of velocity.
  - Expected inflation: if people expect money to lose value, they will try to convert money quickly to either goods or interest bearing assets.
  - Interest rate: this is the opportunity cost of holding money. Larger interest rates will cause people to want to convert money more quickly.
- What will be the shape of the real money demand curve?
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