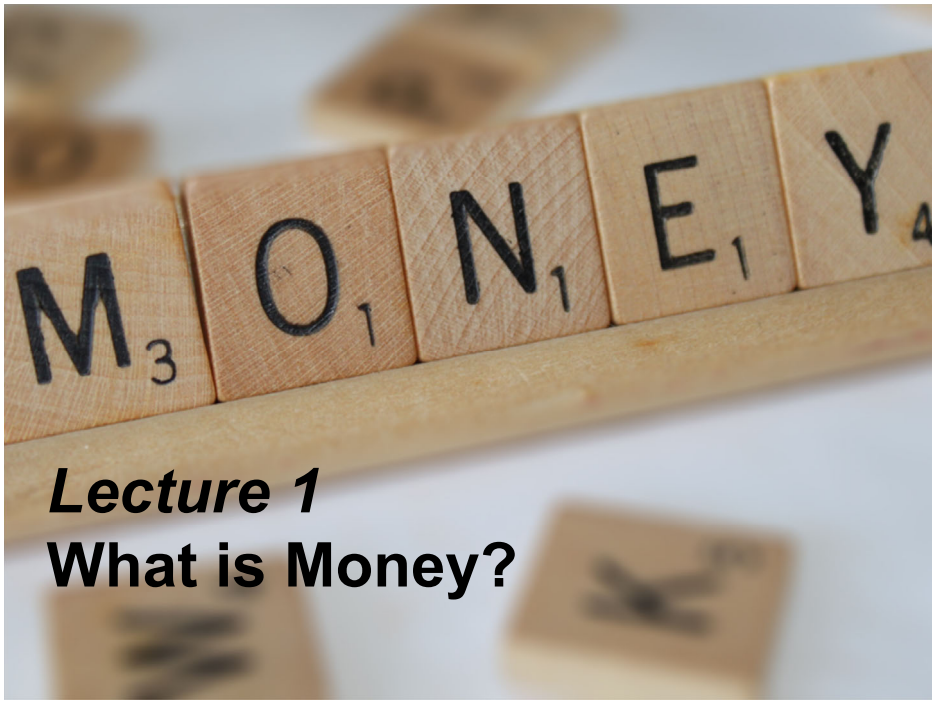

Lecture 1

What is Money?

Content

- What is money?
- Functions of money
- Evolution of the payment system
- Measuring money

Readings

- Mishkin (2015), The Economics of Money, Banking, and Financial Markets, 11th edition, Pearson, Chapters 1+ 3
- Cecchetti and Schoenholtz (2014), Money, Banking, and Financial Markets, 4th edition, McGraw-Hill, Chapters 1+ 2

What is money?

anything accepted as a mean of payment

- Money (=money supply) - any vehicle used as a means of exchange to pay for goods, services or debts.
  - A rather broad definition
- In today's society, any asset that can quickly be transferred into cash is considered money.
- The more liquid an asset is, the closer it is to money.

What is money?

- Money (a stock concept) is different from:
- **Wealth**: the total collection of pieces of property that serve to store value
- **Income**: flow of earnings per unit of time (a flow concept)

Functions of Money

- Medium of exchange (only money)
- Unit of Account
- Store of Value

Is crypto currency (Bitcoin) money? No, it does not satisfy all 3 functions of money (medium of exchange, unit of account, store of value). It is not generally accepted as a mean of payment because the Central Bank does not allow.

Medium of exchange

- In the *barter economy* where goods are traded for goods, there are very many prices (one in terms of each good); and you need to find someone willing to trade what you want for what you have to offer (*double coincidence of wants*)
- By eliminating barter, this function of money increases efficiency in a society.

Medium of exchange

- As human societies started to engage in exchange, money had to be invented.
- Any technological change that reduces transaction costs increases the wealth of the society.
- Any technological change that allows people to specialize also increases wealth.

Unit of Account

- We use money to measure the value of goods and services.
- Suppose we had 4 goods and no money. How do we measure the price of each good?
  - A in terms of B
  - B in terms of C
  - C in terms of D
  - A in terms of C
  - A in terms of D
  - B in terms of D

  N!/2(N-2)!
- Money allows to quote prices in terms of currency only.
- The benefits of this function of money grow as the economy becomes more complex of exchange.

Store of Value

- All assets are stored value.
- Money, although without any return, is still desirable to hold because it allows purchases immediately.
- Although other stores of value are sometimes better than money, we hold money because it is liquid.
- Other assets take time (transaction costs) to use as a payment for purchases.
- The more liquid an asset is, the less transaction cost it carries.
- Inflation erodes the value of money.

Store of Value

- Liquidity is *a measure of the ease with which an asset can be turned into a means of payment.*
  - The more costly it is to convert an asset into money, the less liquid it is.
- Financial institutions use:
  - Market liquidity - the ability to sell assets for money.
  - Funding liquidity - ability to borrow money to buy securities or make loans.

Store of Value

Yugoslavia's hyperinflation

- Between October 1, 1993 and January 24, 1995 prices increased by 5 quadrillion percent.
- That's a 5 with 15 zeroes after it.

The Payments System

- The payments system is a web of arrangements that allow for the exchange of goods and services, as well as assets.
  - It is critical this functions well.
- Money is at the heart of the payments system.

The Payments System

The possible methods of payment are:

1. Commodity and Fiat Monies
2. Checks
3. Electronic Payments

Commodity and Fiat Monies

- Commodity monies are things with intrinsic value.
  - Included items like silk, butter, salt…
- To be successful, must be:
  - Usable by most people,
  - Able to be made into standardized quantities,
  - Durable,
  - Easily transportable, and
  - Divisible into smaller units.

Commodity and Fiat Monies

- Gold has been the most common as it meets these requirements.
- In 1656, Stockholm Banco issued Europe's first paper money
  - King of Sweden printed too many to try to finance a war and the bank failed.
- In 1775, the Continental Congress of the United States of America issues "continentals" to finance the Revolutionary War.

Commodity and Fiat Monies

A Revolutionary War "continental" issued by the Continental Congress in 1775. The new government of the United States eventually printed $200 million worth, and by 1781 they no longer had any value.

An assignat issued by the French Revolutionary Government in 1793. Faced with the need to finance wars and food shortages, the government eventually printed 40 billion of them and by the late 1790s they were worthless.

Commodity and Fiat Monies

- Because of huge quantities issued, people became suspicious of government-issued paper money.
- In 1862, the Confederate and the Union governments printed money with no backing.
- After the Civil War, the US reverted to using gold as money.

Commodity and Fiat Monies

- Gold coins and notes, backed by gold, were used into the 20th century.
- Today's paper money is called fiat money, because its value comes from government decree, or *fiat*.
- We are willing to accept these bills as payment because the government stands behind its paper money.
- In the end, money is about **trust**.

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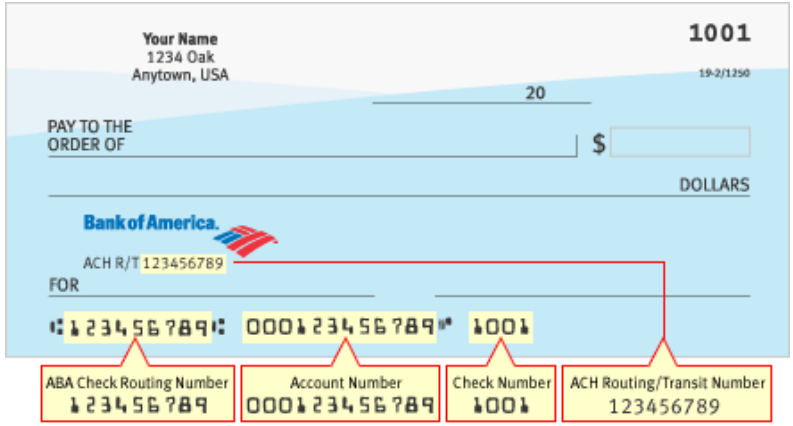
Commodity and Fiat Monies

Checks

- A check is an instruction to the bank to take funds from your account and transfer them to another account.
  - A check is therefore not a final payment as currency is.
- A check sets in motion a series of transactions as seen in Figure 1.1.

Check examples



Check examples

Check examples

Electronic Money

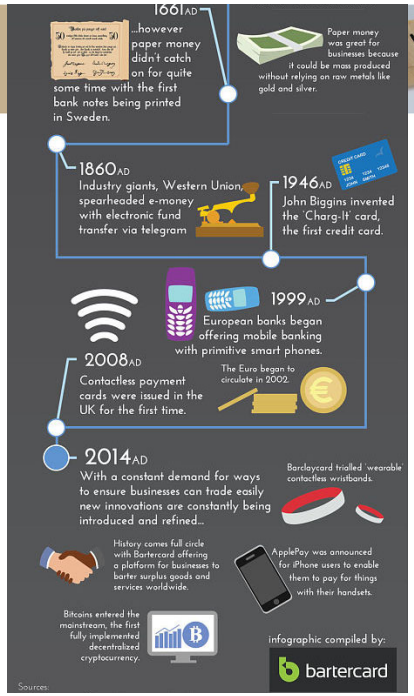
- Debit Cards
  - Instant transfer from your checking account to merchant's checking account.
- Stored Value Card
  - Gift cards.
- Electronic Cash
  - Account set up on a person's PC from her bank whereby she can buy products over the Internet.
- Electronic Checks
  - Checks written on PC and sent through the Internet.

IN THE NEWS
Dad, Can You Text Me $200?

- Technological advances create new methods of payment.
- Cell phones and other types of hand-held mobile devices are providing access to the payments system.
- What will be next?

FYI Are We Headed for a Cashless Society?

- Predictions of a cashless society have been around for decades, but they have not come to fruition
- Although e-money might be more convenient and efficient than a payments system based on paper, several factors work against the disappearance of the paper system
- Still, the use of e-money will likely still increase in the future

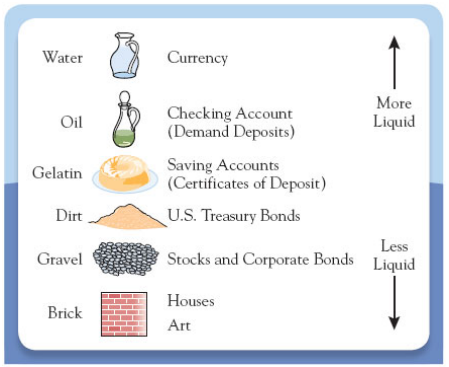


Measuring Money

- Changes in the amount of money in the economy are related to changes in interest rates, economic growth, and most important, **inflation**.
- With inflation, you need more units of money to buy the same basket of goods you bought a month or a year ago. Put another way, inflation makes money less valuable.
- And the primary cause of inflation is the issuance of too much money. To use the insight that money growth is somehow related to inflation, we must be able to measure how much money is circulating.
- This is no easy task

Measuring Money

- Defining money means defining *liquidity*
- Different definitions of money are based upon degree of liquidity
- Drawing the line in different places has led to several measure of money called the *money aggregates*



Measuring Money

- M1: Currency, demand deposits, travelers checks.
- M2: M1, saving deposits, small time deposits, retail MMMF.
- M3: M2, large time deposits, repos, Eurodollar deposits, institutional MMMF.
- MZM: M2, institutional MMMF minus small time deposits.
- Growth rates of these aggregates do not always go hand in hand, making monetary policy difficult since signals are conflicting.

Money Definitions in the US

TABLE 1 Measures of the Monetary Aggregates

	Value as of August 18, 2014, ($ billions)
M1 = Currency	1,206.1
+ Traveler's checks	3.3
+ Demand deposits	1,089.9
+ Other checkable deposits	477.4
Total M1	2,776.7
M2 = M1	
+ Small-denomination time deposits	533.0
+ Savings deposits and money market deposit accounts	7,338.2
+ Money market mutual fund shares (retail)	642.5
Total M2	11,290.4

Source: http://www.federalreserve.gov/releases/h6/hist.

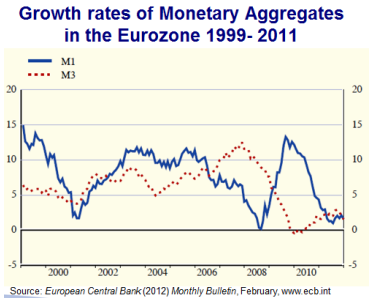
Money Definitions in the Eurozone, end of Dec 2011

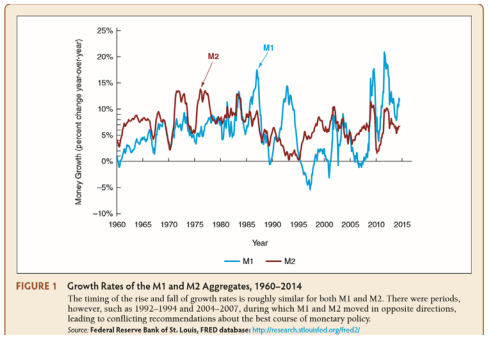
Name	Components	Size (€bn)
Reserves	Currency with monetary financial institutions (MFIs) + MFIs' holdings of deposits with the central bank	207.7
M1	Currency in circulation outside MFIs + non-MFI's holdings of sight deposits	4,782.1
M2	M1 + non-MFIs' holdings of time deposits	8,572.8
M3	M2 + non-MFIs' holdings of repurchase agreements, money market instruments and bonds with < 2 years to maturity	9,724.3

Source: *European Central Bank* (2012) *Monthly Bulletin*, February, Tables 1.4 and 2.3 www.ecb.int

Measuring Money

- Growth rates of these aggregates do not always go hand in hand, making monetary policy difficult since signals are conflicting.





Reliability of the Money Data

- Revisions are issued because:
  - Small depository institutions report infrequently
  - Adjustments must be made for seasonal variation
- We probably should not pay much attention to short-run movements in the money supply numbers, but should be concerned only with longer-run movements

Growth Rate of M2: Initial and Revised Series, 2008 (%, annual rate)

Period		Initial Rate	Revised Rate	Difference Revised Rate − Initial Rate
July	2007	4.1	4	−0.1
August	2007	10.6	8.2	−2.4
September	2007	5.2	6.2	1
October	2007	4.4	4	−0.4
November	2007	5.4	6.4	1
December	2007	5.9	5.9	0
January	2008	9.6	9.6	0
February	2008	19.9	19.7	−0.2
March	2008	14.7	13.4	−1.3
April	2008	3.7	3.3	−0.4
May	2008	2.3	2.4	0.1
June	2008	−3.7	−3.9	−0.2
Average		6.8	6.6	−0.2

Source: Federal Reserve Bulletin, various issues, Table 1.1 line 6: www.federalreserve.gov/pubs/supplement/default.htm.