

Chapter 10

The monetary system



Three distinct functions of money

- Medium of exchange
 - Avoids the very cumbersome process of barter, which stems from the double coincidence of wants
- Unit of account
 - Used as a common denominator for the value and the relative value of goods and services or credits/debts
 - A candy bar might be worth 3 lollypops and a trip to France might be worth 2 trips to the Canadian rockies: wouldn't it be easier to compare the value of all of these in terms of \$?

- Think of a measuring device ('yardstick')
- Store of value
 - Brings in the dimension of time (with deferred payments)
 - Usually production and exchange are not simultaneous activities, especially with investment activity
 - Money should allow a claim on goods and services in the future
 - In other words, it has to hold most of its value over time

- Caution: it is very easy to confuse the latter two functions of money
 - Thus it is a candidate for an exam question

History of Money

- Challenge has always been to give money a relatively stable value
 - It always has to be *supported* by something
- Commodity or metallic money
 - Gold and silver were the recognizable benchmark, or base commodities, which had intrinsic value in addition to the exchange value
 - One could redeem (convert) paper currency for gold

- Paper money developed as a more portable form
- Now almost all money is *Fiat* money
 - Intrinsically worthless, so it cannot be converted
 - Is it valuable because the government says that it is legal tender? NO!
 - The signature means nothing - there's a signature on worthless currencies

- What gives fiat money value?
 - People's *faith* that they can exchange it for concrete goods and services

- **Confidence** in the value of the currency now and in the future is crucial. Without it, *chaos*
 - Ensured by reasonably low inflation and adequate levels of economic activity
 - Hyperinflation leads to economic and social and political catastrophe

Monetary aggregates

- There are several definitions of the money supply. In decreasing order of liquidity
 - M1 = currency + DD (demand deposits)
 - M2 = M1 + TD (term deposits) + savings deposits
- These are stock quantities, and hence cannot be compared to GDP figures, which are flow quantities

Banking system structure

- 2 major types of actors
 - The central bank (the Bank of Canada)
 - Depository institution: any organization that serves as a liaison between savers and borrowers
 - Chartered banks
 - trust companies
 - financial co-ops

- Functions of the central bank
 - Issue currency
 - Act as the bankers' bank
 - Act as banker for the federal government
 - Regulate the supply of money through monetary policy
- Monetary policy is deliberate, purposeful action by the Bank of Canada to regulate the supply of money

Fractional reserve system

- Fractional reserves are a critical element of our financial system
- If the commercial banks were to hold 100 % of their deposits for safe-keeping, and did not issue any loans, the money supply would be unaffected....
- But they DO make loans, big time!

- The loans outstanding are very highly leveraged
 - Leverage means lending Peter's money to Paul, so there are multiple claims on the initial money involved
 - The loans are illiquid; only a small fraction of the outstanding loans are convertible into cash
 - Liquid assets can be converted into cash immediately at very little cost

- For a bank, liquid assets are its government bonds and commercial bills
- To meet the liquidity needs of depositors, banks hold *reserves* in the form of cash
 - On a typical day, only a very small fraction of their deposits will be redeemed.
- Holding these reserves has its benefits and its costs (they cannot be lent to borrowers) so...

-Banks face a tradeoff between maintaining confidence in the financial integrity of their institution (solvency) and earning profits by making loans

- In the past, there were regulations for required reserves. Now there are only targets for reserves
 - A *desired ratio* of reserves to total deposits
- Any reserves in excess of these targets are called excess reserves
- it is from these excess reserves that money can be created by expanding *Credit*

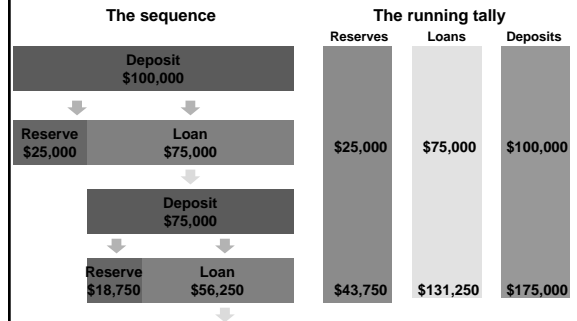
Money creation

- In order for the supply of money to expand (contract), there must be a net injection (withdrawal) of funds from outside (inside) the financial system.
- Illustration
 - Suppose that there is a net increase of \$100,000 to the Canadian banking system.

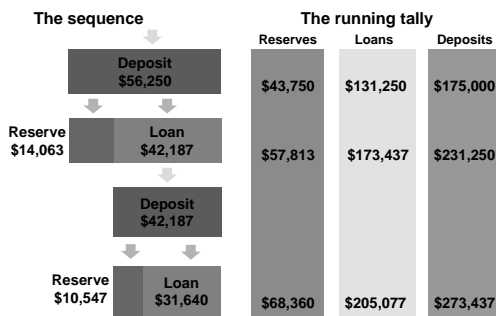
- Suppose that a bank has a target reserve ratio of 25%.
- In round one, \$25,000 is kept on reserve, and \$75,000 is loaned out to borrowers
- In round two, this new \$75,000 loan is deposited elsewhere by the borrower, and \$18,750 is kept on reserve, \$56,250 is loaned out again, etc.

- We have a series of loans which turn into deposits...
 - Which in turn are transformed into loans after setting aside reserves...
 - Which in turn are transformed into deposits...
 - etc. (page 229)
- At each round, the total amount of credit (loans) expands by a factor of 75% of the loan made during the preceding round

The Multiple Creation of Bank Deposits



The Multiple Creation of Bank Deposits



- At each round, 25% of this new loan leaks out of circulation in the form of reserves
- At the end of this **Multiplier** process, total loans increase by \$300,000, total reserves increase by \$100,000, and total deposits increase by their sum
- This is the multiplier process for money markets.

- It stops when Δ total reserves withdrawn from circulation and withheld in the form of reserves = amount of original reserves injected into the banking system
- Multiplier = Δ cumulative deposits / Δ original deposits (Definition)
 - Δ original deposits = Δ reserves at the end of the process

- Value of the multiplier = $1 / \text{desired reserve ratio}$
 - Assuming that no excess reserves and no cash are held
- Back to the illustration:
 - Cumulative change in deposits = 400,000;
 - Initial change in deposits = 100,000
 - Desired reserve ratio = 0.25

- Multiplier = $1 / \text{desired reserve ratio} = 1 / 0.25 = 4 = 400,000 / 100,000$

- Money is destroyed by going in the opposite direction
 - A withdrawal of reserves from the banking system sets off the process in reverse
 - When reserves are insufficient, banks call back loans

- *Essence of this process:* Excess Reserves are loaned out
 - The more (fewer) excess reserves, the more (less) credit that can be generated

Monetary policy

- How does the central bank affect the money supply, and hence interest rates?
- It has a lot less power than it used to have, given the integration of world financial markets.
 - With mobile capital, investors search for the highest rate of return

- It can influence SHORT term interest rates
- long term interest rates are determined in world capital markets
- It cannot control the demand for money - only the supply of money.

Objectives of monetary policy

- Objective used to be to achieve low interest rates during recessions (the recessionary gap) and high interest rates during booms (the inflationary gap)
 - 'Loosening or tightening of the monetary screws'
- Current objective is primarily to achieve "price stability", including 'asset price stability'
 - Anti-inflation

Primary instruments of monetary policy

- open market operations is a potent instrument
- Changes in reserve requirements
- Changes in the 'bank rate' that it charges on the loans that it makes
 - It also targets the 'overnight rate', which refers to the interest rate that a commercial bank pays when it borrows money from another one.

Open market operations

- To increase (decrease) the money supply, the central bank has to **inject** (withdraw) new reserves into (from) the financial system from (to) outside of it
- The Bank of Canada can trade in either bonds or foreign currency
 - The latter are called foreign exchange market operations

- The central bank can **buy** bonds

- new reserves are injected into the financial system
- commercial banks have excess reserves, placing them in a position to expand credit
- the money creation process (with the multiplier) commences

- The central bank can **sell** bonds,

- reserves are withdrawn from the financial system
- commercial banks desire more reserves, forced to contract credit
- they call back loans, the money destruction process (with the multiplier) commences

Other instrument of monetary policy

- Changing the overnight or the bank rate

- Raising those rates that they charge to commercial banks makes it more expensive for them to expand credit, so the quantity of reserves available for lending, as does the supply of money contracts

- cutting those rates that they charge to commercial banks makes it less expensive for them to expand credit, so the quantity of reserves available for lending rises, as does the supply of money

- Changes in these rates of interest are viewed as the indicator for short-term interest rates throughout the money market