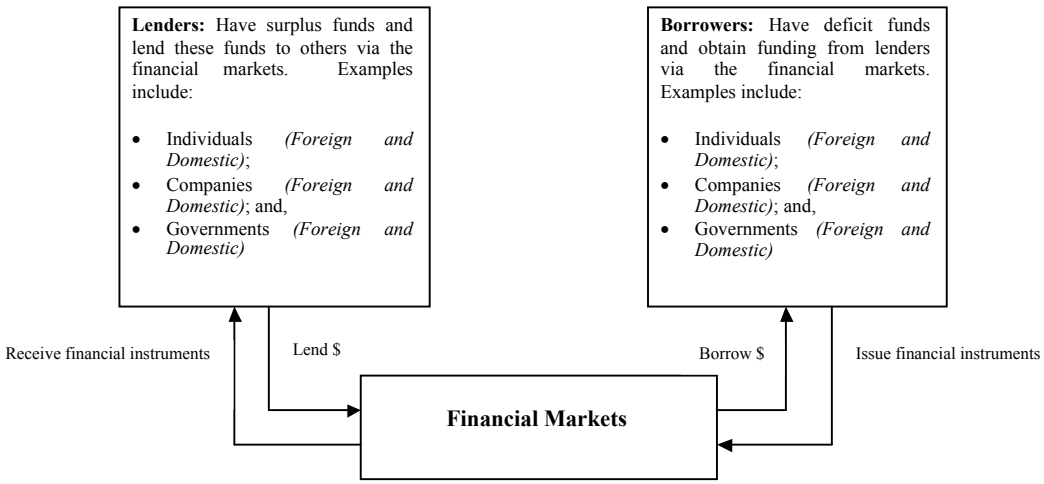
# FINM1001: Foundations of Finance Summary

## Introduction

### Financial Markets

- A **financial market** is a mechanism that facilitates the purchase and sale ("trading") of **financial instruments** including equity, debt instruments, derivatives and foreign currencies. The main roles of financial markets include:
    - **The bringing together of ***lenders*** *(savers)* and **borrowers**, aiding in the transfer of funds from people who wish to lend them to people who wish to borrow them (*capital raising*) **
    - The transference of risk between parties; and,
    - International trade.
- The three main parties in financial markets are:
    - **Lenders**: have more money than they want to consume now.
        - They loan excess money to borrowers in return for financial instruments and positive rates of return.
    - **Borrowers**: have less money than they want consume or invest now.
        - They then borrow from lenders to satisfy consumption or investment desires and in exchange pay a positive rate of return.
    - **Financial intermediaries**: help bring together individuals and businesses in the lending and borrowing of financial instruments. Examples include:
        - Commercial banks, building societies, credit unions, money market corporations, finance companies, insurance companies and superannuation funds.
- Flow of funds in financial markets:




- Types of financial markets include:
    - **Money Markets**: facilitate short-term borrowing and lending. Involves the exchange of debt instruments which mature in 1 year or less.

        - Examples: short term government debt market, interbank market, bills market, commercial paper market, negotiable CD market.
    - **Capital Markets**: facilitates medium-to-long term borrowing and lending. Involves exchange of debt and equity instrument which mature in more than 1 year.
        - Examples: corporate debt market, government debt market and equity market.
    - **Derivatives Market**: facilitates the transfer of risk between parties, and in doing so support both the money and capital market.
        - Involves 'locking in' the price of a given asset in advance.
        - Examples: contracts, futures contracts and options contracts.
    - **Foreign Exchange Markets**: facilitates international trade, which also supports the money and capital market.
        - Allows market participants to convert their money between currencies using the given *exchange rate.*
- Money and capital markets are further broken down into:
    - **Primary market**: the transaction of newly issued instruments and therefore is the act of raising funds.
    - **Secondary market**: transfer of existing instruments between holders. Does not raise funds, simply transfers ownership.

# Topic 1: Time Value of Money

- **PRINCIPLE**: $1 received now is more valuable than a $1 received in the future.
    - By investing the $1 now, **interest** can be generated causing an appreciation in value.

## Future Value of a Single Cash Flow

- As established before, interest increases the future value of money if invested now. The amount of interest depends on which of the following is used:
    - **Simple interest**: the amount of interest paid is only a function of the intial principal invested. Therefore, the interest payments are constant.
      e.g. Investment of $100 at 6% pa. would collect $6 of interest each year.
    - **Compound interest**: interest in successive periods is calculated as the principal as well as on interests earned in previous periods (think about it as interest on interest).
    - E.g. Investment of $100 at 6% p.a. would collect $6 interest in the first year and $6.36 the following year and so on.

### Future Value Single Cash Flow

**Simple Interest:**

$$Future\ Value = F_0(1 + r_s n)$$

**Compounding Interest:**

$$Future\ Value = F_o(1 + r)^n$$

### Present Value of a Single Cash Flow

**Simple Interest:**

$$Present\ Value = \frac{FV}{(1+rn)}$$

**Compounding Interest:**

$$Present\ Value = \frac{FV}{(1+r)^n}$$

## Future Value of Multiple Cash Flows

Example:
You will make three bank deposits in the next 3 years, with the first deposit to be made exactly 1 year from today. Further details of these deposits are provided in the table below. Calculate the total value of these deposits in exactly 3 years' time given interest is paid at a rate of 10% per annum (calculated at the end of each year).

- The first deposit ($100) will have been in the bank for exactly two years;
- The second deposit ($200) will have been in the bank for exactly one year; and,
- The third deposit ($500) will be deposited in the bank immediately before the time at which we wish calculate the total value of the deposits.

Solution:

- Given this, we can calculate the total value of these deposits in exactly three years' time as follows:

$FV_3$ = $\$100(1.1)^2 + \$200(1.1) + \$500$
= $\$121 + \$220 + \$500$
= $\$841$

## Annuities

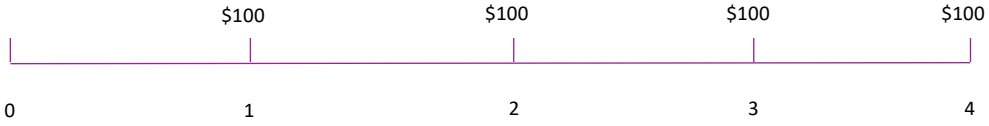
- A finite number of cash flows that are equal in value and are equally spaced are called annuities. There are three types we will look at:
  - Ordinary Annuities
  - Annuities Due
  - Deferred Annuities

### Future Value of Annuities Formula

$$FV = F\left[\frac{(1+r)^n - 1}{r}\right]$$

### Ordinary Annuities

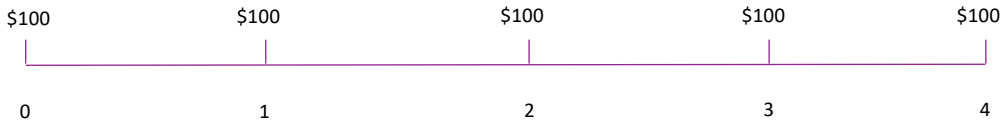
- The first cash flow begins one year from the start e.g. bank loan, mortgage.




$$PV = F\left[\frac{1-(1+r)^{-n}}{r}\right]$$

### Annuities Due

- Begins from day one e.g. rent requires payment up front.




$$PV = F + F\left[\frac{1-(1+r)^{-(n-1)}}{r}\right]$$

### Deferred Annuities

- First cash flow occurs sometime in the future (at *m*)
- "Buy now pay later"


$$PV = \frac{F\left[\frac{1-(1+r)^{-n}}{r}\right]}{(1+r)^{m-1}}$$

## Perpetuities

- Are a collection of **infinite** cash flows, of which are **equally spaced** and of **equal dollar value**.

### Ordinary Perpetuity

$$PV = \frac{F}{r}$$

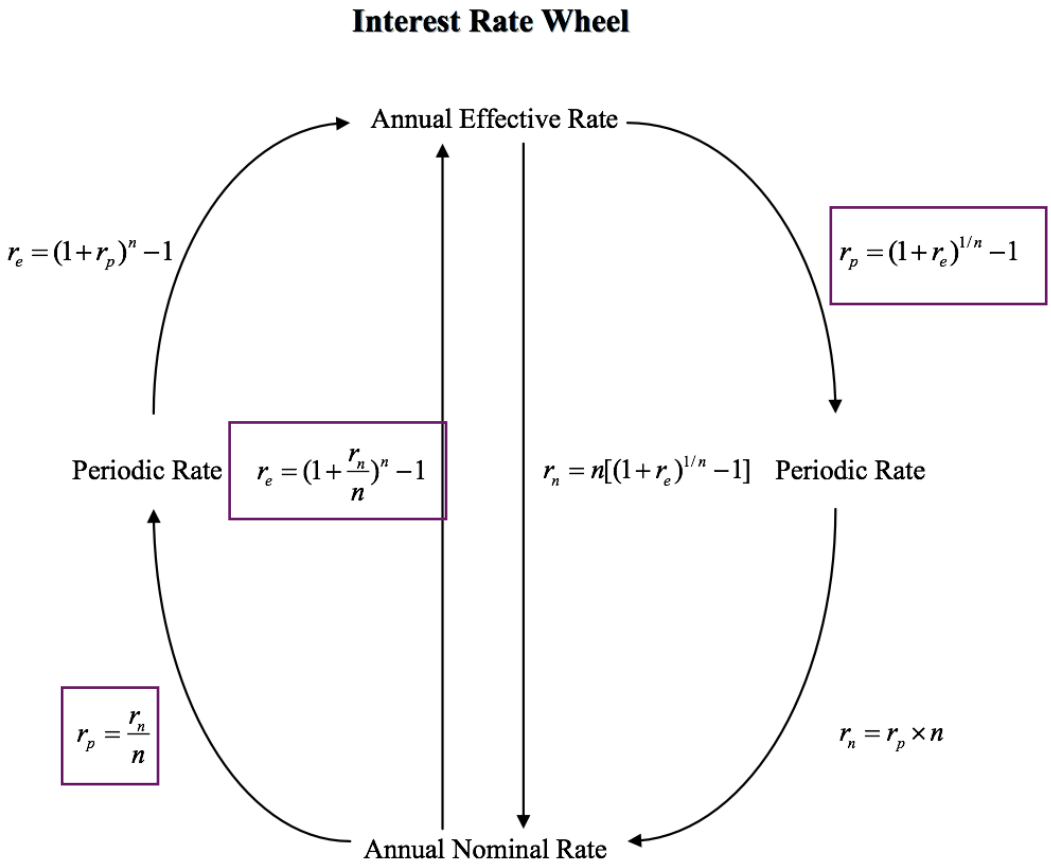
### Perpetuity Due

$$PV = F + \frac{F}{r}$$

### Deferred Perpetuity

$$PV = \frac{\left[\frac{F}{r}\right]}{(1+r)^{m-1}}$$

## Interest Rate Conversions




Where: $r_e$ = annual effective rate
$r_n$ = nominal annual rate
$r_p$ = periodic rate (eg monthly, quarterly, etc)
$n$ = number of compounding periods per annum

# Topic 2: Valuing Shares and Debt Instruments

## Corporations

- Differs from other forms of business organisations in 3 ways:
    - **Ownership is widely dispersed:** ownership can be easily transferred between shareholders. However, the transfer of a previously purchased share does not raise new funds – funds are only risen through new issues.
    - **Shareholders have little control over the operations of the company**: shareholders instead elect a board of directors who are responsible for the objectives and decisions of the business.
    - **Shareholders have limited or no liability:**
        - Limited liability – shareholders are only liable to losing what has been already paid to the company as part of their ownership.
        - No liability – shareholders are liable to pay any remaining calls on shares issued.