ACST101

WEEK 1- FINANCIAL SYSTEMS (CH 2)

Finance refers to how individuals, businesses and governments raise funds and invest it to maximise wealth. It incorporates corporate finance, asset pricing, financial markets and behavioural finance.

The **FINANCIAL SYSTEM** provides a marketplace for money, enabling transfer of purchasing power between market participants. The critical role of the financial system in the economy is to gather money from consumers/firms with surplus funds and channel the gathered money to those who need it.

THE DETERMINANTS OF INTEREST RATE LEVELS

INTEREST RATE: cost of borrowing

REAL RATE OF INTEREST: the nominal rate of interest adjusted to inflation (general increase in prices)

- The fundamental factors affecting interest rates are anything that will **CAUSE A SHIFT IN DEMAND (BORROWING) AND SUPPLY (LENDING) SUCH AS:**
  - **changes in technology**
  - **increase in productivity**
  - **tax rate**
    - decreased taxes for businesses will encourage further investment, shifting demand to the right and increasing interest rates
    - increased taxes on consumers will decrease money supply and increase interest rates
  - **greater government spending**
    - increased demand for borrowings thus increase in interest rates
  - **monetary policy**
  - **age of population**
  - **cultural differences** (i.e. Japans saving culture)

THE **FISHER EQUATION:**

Inflation can erode purchasing power. $50 today can buy 50 apples but $50 in five years may only buy 45 apples if inflation is positive over time. So nominal interest rates must compensate for inflation, in order to retain purchasing power. The Fisher Equation is the ***mathematical formula used to adjust the real rate of interest for the expected rate of inflation.***

Fisher Equation (Simplified or approximate version):

$$r \approx i - \Delta P_e \qquad (2.2)$$

Real rate= nominal rate - expected rate of inflation

Fisher Equation (Full version):

$$r = (1 + i) / (1 + \Delta Pe) - 1$$

Borrowers want high inflation- as you will be paying back the loan in dollars that have less buying power than those you received when you took out the loan.

Lenders want low inflation- as you will be receiving back the loan in dollars that have greater buying power than those you had when you lent the loan.

WEEK 2- TIME VALUE OF MONEY I (CH5)

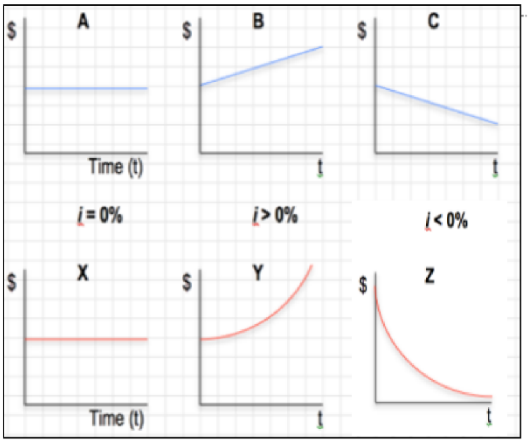
TIME VALUE OF MONEY: the idea that money available at present time is worth more than the same amount in the future due to its potential earning capacity.

- **TIME LINE:** identifies the rate of interest, magnitude and timing of cash flows.
- **FUTURE VALUE:** accumulated value. The value of an investment after it earns interest for one or more periods
- **PRESENT VALUE:** calculation of what you need today to get to a future specific goal (initial)

FUTURE VALUE

SIMPLE INTEREST V COMPOUND INTEREST

- SIMPLE INTEREST: interest earned on the original principal only
- COMPOUND INTEREST: interest earned on the original principal and on the interest earned.
- COMPOUNDING: process by which interest earned on an investment is reinvested, so in future periods interest is earned on the interest as well as the principal. (exponential)
- DISCOUNTING: process by which the present value of future cash flows is obtained i.e. it's the reverse (opposite) to compounding.



Simple interest

$$FV = PV(1 + i)^n$$

Compound interest

FUTURE VALUE EQUATIONS

❑ *FV* equations:

- **Simple Interest**

$$FV_n = PV_0 * (1 + i * n)$$

or

$$FV_n = PV_0 + (PV * i * n)$$

- **Compound interest:** compounding once per year. (Eqn 5.1)

$$FV_n = PV_0 * (1 + i)^n$$

- **Compound interest:** Compounding more frequently than once per year. (Eqn 5.2)

$$FV_n = PV_0 * (1 + i / m)^{(m * n)}$$

PV	Present Value i.e. latest balance amount
FV	Future Value
n	Number of years
m	Number of times interest is calculated per year
i	Nominal interest rate
i/m	Nominal rate per period
*n*m*	Total number of interest calculation periods

WEEK 2 EQUATIONS SUMMARY

FORMULA SUMMARY WEEK 2	
FV using Simple Interest	$FV_n = PV_0 * (1 + i * n)$
FV of a Single Amount (compounding once per period)	$FV_n = PV_0 * (1 + i)^n$
FV of a Single Amount (compounding more than once per period)	$FV_n = PV_0 * (1 + i / m)^{(m * n)}$
PV of a Single Amount (compounding once per period)	$PV_0 = \frac{FV_n}{(1+i)^n}$
PV of a Single Amount (compounding more than once per period)	$PV_0 = \frac{FV_n}{(1+i/m)^{n*m}}$
Reorganise to solve for n	$n = \frac{1}{m} * \ln\left(\frac{FV}{PV}\right) / \ln(1 + \frac{i}{m})$ or $n = \ln\left(\frac{FV}{PV}\right) / \ln(1 + i)$
Reorganise to solve for i	$i = m * (FV/PV)^{1/(m*n)} - 1$ or $= (FV/PV)^{1/n} - 1$
Future value with general growth rate	$FV_n = PV_0 * (1 + g)^n$
Rule of 72	$TDM = 72 / i$