Chpt4. TVM-Single Payments

Time Value of money	*Individuals prefer to receive a dollar today to receiving that same dollar promised in a year's time.*
Interest	*The cost of funds to a borrower or part of the return for a lender or investor*
Mortgage	*recover money by selling property*
Term Loan	*bank loan with maturity*[due date]

4.1 Simple Interest & Future Value

Future Value	*amount received later*, cash value of investment at future date: $FV=P(1+rn)$
Simple Interest	*Interest calculated on the original amount*. $I=(P)(r)(n)$
Money Markets	*short-term debt markets*: companies can borrow/ invest in the short-term.
Formula	$FV = P(1 + rn)$

4.2 Simple Interest & Present Value

Present Value	*amount today*: needed cash today, to yield a particular value at future.
Discounts	*to find the present value of future amount*: inverse for compounding interest.
Formula	$PV = FV/(1+rn)$

Working out/ Calculating how much the money we expect to receive in the future is worth today.

4.3 Compound Interest & FV

Compounded Interest	*Interest is stacking*: It is then added to the principal
Compounding	*Process of finding future amounts where interest is paid on interest already earned.*
Opportunity Cost	*best market yield achieve through alternative course of action*: Market Yield is often benchmarked for opportunity costs
Formula	$FV = PV(1+r)^n$

Working out/ calculating future value through interest for each period (plus any interest), then added to the principal.

4.4 PV of a single payment

Discounting	*The process of finding current amounts by the process of present value.*
Formula	$PV = FV / (1+r)^n$
Formula2	$PV = FV \times (1+r)^{-n}$

4.5 Compounding frequency

Coupon	*Interest paid, based on a percentage of a bond's face value.*
Zero-coupon Bond	*single-payment*: no interest payment during its lifetime since interest is included with the repayment of principal at maturity.
Maturity	*Deadline*:The date when security will be payed.
Formula	$FV = PV \times (1 + r/m)^{m \times n}$
Formula2	$PV = FV / (1 + r/m)^{m \times n}$

When compounding period per year is increased by *semi-annually, quarterly, monthly or daily.*

PV formula can be used to calculate the current value of a zero-coupon bond.

4.6 Continuous compounding/ discounting

Formula	$FV = PV (PV \times e^{r \times n})$
or	$FV = PVe^{rn}$

When compounding frequency is increased to a very large number of (infinity).

Where e is constant, e = 2.718

4.7 Nominal & Effective Interest Rates

Nominal Rate	*contractual rate, ignores compounding. includes inflation*: quoted rate
Effective Rate	*actual rate, accounts compounding. includes adjustments*: adjustments to nominal rate for the frequency of compounding.
Annual Percentage Rate (APR)	*contractual rate, ignores compounding. when short-term rates are annualized*
Rate of Return	*rate of profit/ loss from investment*
Formula	$r_e = (1 + r/m)^m - 1$

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4.8 Unknown Interest Rate

Formula	$r = (FV/PV)^{1/n} - 1$

FV and PV is given, but find interest rate.