Ein622(Corporate Finance) Important Formulas

FORMULA:
The quick ratio is defined as follows:
Quick Ratio = (Current Assets – Inventory)/ Current Liabilitie
FORMULA:
Receivables Turnover = Annual Credit Sales / Accounts Receivable
FORMULA:
The collection period also can be written as:
Average Collection Period = 365 / Receivables Turnover
FORMULA:
Inventory Period = Annual Cost of Goods Sold / Average Inventory
The inventory period also can be written as:
Inventory Period = 365/Inventory Turnover
FORMULA:
Inventory Turnover = Cost of Goods Sold/Inventory
Leverage or Long term solvency Ratios
FORMULA:
1. The debt ratio is defined as total debt divided by total assets:
Debt Ratio = Total Debt/Total Assets
FORMULA:
2. The debt-to-equity ratio is total debt divided by total equity:
Debt-to-Equity Ratio = Total Debt/Total Equity
FORMULA:
Interest Coverage = EBIT/Interest Charges
FORMULA:
Gross Profit Margin = Sales - Cost of Goods Sold/Sales
FORMULA:
Return on Assets = Net Income/Total Assets
FORMULA:
Return on Equity = Net Income/Equity
Market Ratios:
FORMULA:
Earning Per Share:
This explains the portion of net income attributable to one common share. It is calculated as:
EPS = net income / No. of O/S shares
FORMULA:
P/E ratio = price per share/EPS
FORMULA:
Market to Book Value:
= MV per share/BV per share
FORMULA:
Present Value (PV) = discount factor. C1
PV = 1 / 1+r. C1
C1 denotes the expected payoff at period 1 & Discount Factor = 1 / 1+r
FORMULA:
Future value (FV) without compounding:
Fv= pv(1+rt)
Where *PV* is the present value or principal, *t* is the time in years, and *r* stands for the per annum interest rate.

To determine future value when interest is compounded:
Fv=pv (1+i)n
Where *PV* is the present value, *n* is the number of compounding periods, and *i* stands for the interest rate per period.
The relationship between *i* and *r* is:
I=r/X
X is the number of periods in one year. If interest is compounded annually, *X* = 1. If interest is Compounded semiannually, *X* = 2. If interest is compounded quarterly, *X* = 4. If interest is compounded
Monthly, *X* = 12 and so on
Similarly, the relationship between *n* and *t* is:
n=t x X
FORMULA:
Present value of annuity = C [(1/r) - (1/r ((1+r) t))]
FORMULA:
Future value of annuity = Ax [(1+i) n -1]
IA is the annuity.
FORMULA:
Present value of perpetuity=C/r
Where C is the annual return in dollars and r is the discount rate.
FORMULA:
The Effective Annual Rate (EAR) = [1 + i/n) n – 1
Where n is the number of times (or periods) interest is compounded during the year and i is the interest rate per period
FORMULA:
Bond price=Po =C + F
(1+r) t (1+r) T
The periodic coupon payments C, each of which is made once every period;The par or face value F, which is payable at maturity of the bond after T periods.
FORMULA:
Coupon yield = C / F
FORMULA:
Current yield= Annual coupon payment(s) divided by bond price.
Current yield = C / P0
FORMULA:
MARKET price=Po =C + F
(1+YTM) t (1+YTM) T
FORMULA:
ir = in — pe
where: in = nominal interest rate
ir = real interest rate
pe = expected or projected inflation over the yeaR
DIVIDEND DISCOUNT MODEL:
After One year
P0 = Div + P1 / (1 + r)
After 2 years the value of stock is:

=div1/ (1+r) + div2+P2/ (1+r) 2
After 3 years the value of stock is:
=div1/ (1+r) + div2/ (1+r) 2 + div3+P3/ (1+r) 3

Zero GROWTH MODEL

If the value of stock is the PV of all future dividend then
PV = DIV / r
When company pay out everything as dividend then earnings and dividend will be equal and PV can be calculated as:
PV = EPS / r

CONSTANT GROWHT MODEL:

P0 = D1 x (1+g) / (r – g) or Po = D1 / (r –g)
And P1 = D2/ (r –g)

FORMULA:

Net Present Value is found by subtracting the required investment:
NPV = PV – required investment
The formula for calculating NPV can be written as:
NPV = Co + C1 / 1 + r
Where:
Co = the cash flow at time o or investment and therefore cash outflow
r = the discount rate/the required minimum rate of return on investment
The discount factor r can be calculated using:
q (t, i) =1/ (1+i) t

FORMULA:

WACC is calculated by multiplying the cost of each capital component by its proportional weight and then summing:
WACC = E / V * Re + D / V * Rd * (1 – Tc)
Where:
Re = cost of equity
Rd = cost of debt
E = market value of the firm's equity
D = market value of the firm's debt
V=E+D
E/V = percentage of financing that is equity
D/V = percentage of financing that is debt
Tc = corporate tax rate

FORMULA:

The IRR is found by trial and error.
Sum of C - Io-0
(1+r) t
Where r = IRR
IRR of an annuity:
Q (n, r)=Io/C
Where:
Q (n, r) is the discount factor
Io is the initial outlay
C is the uniform annual receipt (C1 = C2 =....= Cn).

FORMULA:
FORMULA:
The Contribution per Unit can be worked out using
Contribution = Price per Unit - Variable Costs per Unit
FORMULA:
Break-even quantity is calculated by:
Total fixed costs / (price - average variable costs)
FORMULA:
The variance explained is 1 minus the unexplained variance:
Variance Explained = 1 - Var (e) / Var (M)
Where:
Var (M) = variance of manager returns
Var (e) = variance of excess return of manager over benchmark
FORMULA:
If we create a portfolio comprising of an Asset A and risk free asset. ,We calculate expected return on portfolio by changing the investment level in both assets The expected return will be
E(r) = %a x E(r) A + %b x Rf
And the beta of this portfolio can be computed as:
Bp =% Ax Ba + %B x Bb
Bb=0 since risk-free asset has zero beta
FORMULA:
Reward to Risk = (ER a - ER rf) / BETA a
Slope of curve OF **Expected Return** OF ASSET A= Era – Rf / Ba
FORMULA:
COST OF EQUITY= DIVIDEND PER SHARE (FOR NEXT YEAR) + DIVIDEND GROWTH
CURRENT MARKET VALUE OF THE STOCK
FORMULA:
The other way to compute the cost of equity is SML (security market line) which tells us that the required rate of return on a risky investment depends on three things.
i) The risk free rate, Rf
ii) Market risk premium, (Erm – Rf)
iii) Systematic risk of the asset known as beta, B
Using SML we can write the equation as under:
Ere = Rf + Be x (Erm – Rf)
Where
Ere = is expected return on equity.
Be = is Beta of equity
FORMULA:
Dividend from preferred stock is essentially perpetuity.
· Cost of preferred stock can be calculated from the following
· R = D/ Po
After-tax Cost of DebtA
fter-tax cost of debt = Interest rate x (1 - tax rate)
FORMULA:

PV = benefit / WACC – g

FORMULA:

Formula to un-gear equity Beta =Gbeta x (E / E + D(1-t))

Gbeta = Geared beta

E = Weight of equity in capital structure

D = Weight of debt in capital structure

T = Tax rate

FORMULA:

The CAPM is usually expressed:

· β, Beta, is the measure of asset sensitivity to a movement in the overall market; Beta is usually found via regression on historical data. Betas exceeding one signify more than average "risk ness";

betas below one indicate lower than average.

· is the market premium, the historically observed excess return of the market over the risk-free rate

M & M Model with Taxes

With Taxes

VL=VU+TCB

Proposition 1:

· *VL is the value of a levered firm.*

· *VU is the value of an un-levered firm.*

· *TCB is the tax rate(T_C) x the value of debt (B)*

This means that there are advantages for firms to be levered, since corporations can deduct interest payments. Therefore leverage lowers tax payments. Dividend payments are non-deductible.

Proposition 2:

· *Rs - is the cost of equity.*

· *r*0 *is the cost of capital for an all equity firm.*

· *rB is the cost of debt.*

· *B*/*S - is the debt-to-equity ratio.*

· *Tc - is the tax rate.*

Capital Market Line The CML is illustrated above, with return **μp** on the y axis, and risk **σp** on

the x axis.

One can prove that the CML is the optimal CAL and that its equation is:

Security Characteristic Line

The **Security Characteristic Line** (**SCL**) represents the relationship between the **market return**

(rM) and the return of a given asset i (ri) at a given time t. In general, it is reasonable to assume that the

SCL is a straight line and can be illustrated as a statistical equation: where αi is called the asset's alpha coefficient and βi the asset's beta coefficient

FORMULA:

WORKING CAPITAL = CURRENT ASSETS - CURRENT LIABILITIES

FORMULA:

Securities Market Line

The relationship between Beta & required return is plotted on the securities market line (SML) which shows expected return as a function of β. The intercept is the risk-free rate available for the market, while the slope is . The Securities market line can be regarded as representing a single-factor model of the asset price, where Beta is exposure to changes in value of the Market. The equation of the SML is thus

FORMULA:

Capital Allocation Line

The **Capital Allocation Line** (**CAL**) is the line that connects all portfolios that can be formed using a risky asset and a risk-less asset. It can be proven that it is a straight line and that it has the following equation.

In this formula P is the risky portfolio, F is the risk-less portfolio and C is a combination of portfolios P and F.