COST OF CAPITAL (Brief overview)

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- <u>Cost of Capital</u> The return the firm's investors could expect to earn if they invested in securities with comparable degrees of risk
- Capital Structure The firm's mix of long term financing and equity financing
- The cost of capital represents the overall cost of financing to the firm
- The cost of capital is normally the relevant discount rate to use in analyzing an investment
- The overall cost of capital is a weighted average of the various sources:
 - WACC = Weighted Average Cost of Capital
 - WACC = After-tax cost x weights

Need

- Investment (capital budgeting) decisions neither the NPV rule nor the IRR rule can be implemented without knowledge of the appropriate discount rate
- Financing decisions the optimal/target capital structure minimizes the cost of capital
- Operating decisions cost of capital is used by regulatory agencies in order to determine the "fair" return in some regulated industries (e.g. electric utilities)

Debt:

- The cost of debt to the firm is the effective yield to maturity (or interest rate) paid to its bondholders
- Since interest is tax deductible to the firm, the actual cost of debt is less than the yield to maturity:
 - After-tax cost of debt = yield x (1 tax rate)
- The cost of debt should also be adjusted for flotation costs (associated with issuing new bonds)

	<u>with stock</u>	<u> </u>	<u>with debt</u>
EBIT	400,000	400,000	
- interest expense	0	<u>(50,000)</u>	
EBT	400,000		350,000
- taxes (34%)	(136,000)	<u>(119,000)</u>	
EAT	264,000		231,000

with stock	with debt			
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- interest expense	0	(50,000)		
EBT	400,000		350,000	
- taxes (34%)	<u>(136,000)</u>	(119,000)		
EAT	264,000)	231,000	
- dividends	(50,000)		0	
Retained earnings	214,000	231,00	00	

Debenture

• Kd = {Interest(1-Tax Rate) + (Redeemable Value - Net Sale Proceeds)/N} (Redeemable Value + Net Sale Proceeds)/2

$$Kd = {I (1-t) + (RV - SP)/N} (RV + SP)/2$$

Preference Share:

$$Kp = {Dp (1+Dt) + (RV - SP)/N}$$

$$(RV + SP)/2$$

Retained Earnings:

- Why is there a cost for retained earnings?
- Earnings can be reinvested or paid out as dividends
- Investors could buy other securities, and earn a return.
- Thus, there is an *opportunity* cost if earnings are retained
- Common stock equity is available through retained earnings (R/E) or by issuing new common stock:
 - Common equity = R/E + New common stock

New Stock:

- The cost of new common stock is *higher* than the cost of retained earnings because of flotation costs
 - selling and distribution costs (such as sales commissions) for the new securities

WACC:

- WACC weights the cost of equity and the cost of debt by the percentage of each used in a firm's capital structure
- WACC=(E/V) x KE + (D/V) x KD x (1-TC)
 - (E/V)= Equity % of total value
 - (D/V)=Debt % of total value
 - (1-Tc)=After-tax % or reciprocal of corp tax rate Tc. The after-tax rate must be considered because interest on corporate debt is deductible
- WACC should be based on market rates and valuation, not on book values of debt or equity
- Book values may not reflect the current marketplace
- WACC will reflect what a firm needs to earn on a new investment. But the new investment should also reflect a risk level similar to the firm's Beta used to calculate the firm's RE.
- The WACC is not constant

It changes in accordance with the risk of the company and with the floatation costs of new capital

Optimal Capital Structure:

- The optimal (best) situation is associated with the minimum overall cost of capital:
 - Optimum capital structure means the lowest WACC
- Usually occurs with 30-50% debt in a firm's capital structure
- WACC is also referred to as the required rate of return or the discount rate