COMM 298 INTRO TO FINANCE
2016 WINTER TERM2 [FINAL]

BY LEAH ZHANG

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INTRODUCTION

- **Tutor**:
  - Leah Zhang
  - 3rd year Finance student
  - Final grade for COMM 298 – 98%

- **Review Session**:
  - Content:
    1. Course material
    2. Sample questions
    3. Past exams
  - Timeline:
    2 hours in total
    First half: formulas, sample questions
    10-minute break: feedback form
    Second half: sample questions, past exams, Q&A
  - Outside of review session:
    1. Office hour
    2. Email leahw.zhang@gmail.com

SUMMARY

Investment Decision Rules

- Payback period (initial investment – CF) [benchmark = management's #]
  - Payback decision: "management's #"
- Discounted payback period (initial investment – CF) [benchmark = management's #]
  - How long does it take to get the initial cost back after you bring all of the CFs to the present value?
- NPV (CF – initial investment) [benchmark = 0]
  - NPV = PV – I → initial investment cost
  - r = o.c.c. → opportunity cost of capital
  - NPV > 0, accept
    NPV < 0, reject
    NPV = 0, indifferent
- PI (profitability index)
  - $PI_1 = \frac{PV\ of\ inflows}{PV\ of\ outflows}$

    OR

    $PI_2 = \frac{NPV}{PV\ of\ outflows}$

    *NOTE: $PI_2 = PI_1 - 1$
- IRR (internal rate of return) [benchmark = o.c.c. as given in the question]
  - To calculate IRR, makes NPV = 0
  - IRR > o.c.c., accept
    IRR < o.c.c., reject
    IRR = o.c.c., indifferent
  - IRR is useless when dealing with mutually exclusive projects → NPV better
  - Multiple IRRs: CF signs change more than once
- MIRR [benchmark = o.c.c. as given in the question]

1) Take the CFs (except the 1st one) to the end of the project and add them up → terminal value
2) Find the r that equates the cost with the terminal value for the life of the project → MIRR

- Nominal & Real CF:
  - $NPV = -C_0 + \frac{C1}{(1+Rnominal)} + \frac{C2}{(1+Rnominal)^2} + \frac{C3}{(1+Rnominal)^3}$

    $= -C_0 + \frac{C1/(1+pi)}{(1+Rreal)} + \frac{C2/(1+pi)^2}{(1+Rreal)^2} + \frac{C3/(1+pi)^3}{(1+Rreal)^3}$

Cash Flow Estimation

- Incremental CFs
  - with project CF – w/o project CF
  - 1. Capital expenditures (purchase asset)

    2. Sunk cost

    3. Opportunity cost

    4. Financing cost (interest expenses when borrowing money)

    5. Taxes

    6. Side effects (negative side effect: erosion/cannibalization)

    7. NWC
- Working Capital
  - 3 types: inventories
    account receivable (AR)
    account payable (AP)
  - NWC = inventory + AR – AP

Some Lessons from Capital Market History

- Returns
  - Dollar return = Dividend + Change in Market Value $(P_1 - P_0)$
  - Percentage return = $\frac{Dollar\ return}{Beginning\ Market\ Value}$

$$= \frac{Dt+(Pt-Pt-1)}{Pt-1}$$

$$= \frac{Dt}{Pt-1} + \frac{Pt-Pt-1}{Pt-1}$$

= dividend yield + capital gains yield

- Expected Returns
  - $E[R] = P_1R_1 + P_2R_2 + \dots + P_nR_n$
    $= \sum_{i=1}^{n} PiRi$
- Expected Return Estimation from Data
  - $E[R] = \frac{\sum_{i=1}^{T} Ri}{T}$
    $= \frac{R1+R2+\cdots+RT}{T}$
    $= \frac{1}{T}R_1 + \frac{1}{T}R_2 + \dots + \frac{1}{T}R_T$

*$R_{real} \cong R_{nominal} - \pi$

- Risk
  - Variance: $\sigma^2 = P_1(R_1 - E[R])^2 + P_2(R_2 - E[R])^2 + \dots + P_n(R_n - E[R])^2$
    $= \sum_{i=1}^{n} Pi(Ri - E[R])^2$
  - Standard deviation (volatility): $\sigma = \sqrt{VAR}$

    $\sigma \rightarrow 68\%$

    $2\sigma \rightarrow 95\%$

    $3\sigma \rightarrow 99\%$
- Risk Measurement from Data
  - Simple variance:

$$\sigma^2 = \frac{(R1-R\ average)^2+(R2-R\ average)^2+\cdots+(RT-R\ average)^2}{T-1}$$

$$= \frac{1}{T-1}(R_1 - R\ average)^2 + \frac{1}{T-1}(R_2 - R\ average)^2 + \dots + \frac{1}{T-1}(R_T - R\ average)^2$$

  - Sample standard deviation: $\sigma = \sqrt{VAR}$
- Risk-return Tradeoff
  - Positive relationship between risk and return
- Risk Premium
  - $E[R] = r_f + (E[R] - r_f)$

*$r_f \rightarrow$ treasury bill

Sample Questions

Sample Questions

Question 1.

Consider an investment that costs $100,000 and has a cash inflow of $25,000 every year for 5 years. The required return is 9%, and required payback is 4 years.

a. What is the payback period? What is the discounted payback period?
b. What is the NPV?
c. What is the IRR?
d. Should we accept the project? What decision rule should be the primary decision method?

Question 2.

An investment project has the following cash flows: CF_0 = -1,000,000; C_{01} – C_{08} = 200,000 each.

a. If the required rate of return is 12%, what decision should be made using NPV?
b. How would the IRR decision rule be used for this project, and what decision would be reached?
c. How are the above two decisions related?

Question 3.

You believe that the future price of Prime Resources depends on whether they find gold in the Yukon, and this will happen with 0.50 probability. If they strike gold, Prime's price one year from now will be $3; if they don't strike gold, it will be $1.50. If the current price is $2 and you expect a dividend of $0.20 regardless of whether they find gold, what is your expected return over the next year if you buy Prime Resources stock today?

Question 4.

Suppose returns on Pixie Corp. shares have the following probability distribution

r	P(r)
-0.05	0.10
0.00	0.15
0.10	0.50
0.15	0.15
0.20	0.10

a. Calculate the expected return for Pixie.

b. Calculate the standard deviation of Pixie's return.

c. Suppose new information has been released on Pixie Corp. that indicate that its returns have been recorded 5% lower than they should be. **That is, each entry column 1 in the above table is 5% less than it should be.** What will happen to Pixie's expected return? What about its standard deviation?

Question 5.

A stock is currently selling for $10 and has a beta of 1.6. The risk-free rate is 4% over the next year and the market risk premium, $E(R_M) - r_f$, is 10%.

a. What is the stock's expected return?
b. If the stock price is to remain unchanged over the next year, what must dividend payments be on this stock?

Question 6.

The risk free rate is 4%, and the required return on the market is 12%.

a. What is the required return on an asset with a beta of 1.5?
b. What is the reward/risk ratio?
c. What is the required return on a portfolio consisting of 40% of the asset above and the rest in an asset with an average amount of systematic risk?

Question 7.

The Down and Out Co. just issued a dividend of $2.40 per share on its common stock. The company is expected to maintain a constant 5.5 percent growth rate in its dividends indefinitely. If the stock sells for $52 a share, what is the company's cost of equity?

Question 8.

Mullineaux Corporation has a target capital structure of 60 percent common stock, 5 percent preferred stock, and 35 percent debt. Its cost of equity is 14 percent, the cost of preferred stock is 6 percent, and the cost of debt is 8 percent. Assume tax rate is 0.

What is Mullineaux's WACC?

PAST EXAM?
Q & A?

PLEASE FILL OUT THE FEEDBACK FORM!