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Finance I
Fall 2012

Session 25:
Investment Decisions

1. Recap

- **Final third of the semester:**
  - Present values, Future values, etc.
  - Bond valuation
  - Common stock valuation

- **Last topic:**
  - Decision making with a side of project valuation

2. Project Valuation

- **How would YOU value a project?**
  - Forecast cash flows generated by the project (direct and indirect?)
    - Include sinergies?
  - Calculate opportunity cost of capital
    - Depending on the sources of funds (WACC)
  - Calculate Present Value and Net Present Value

- **So, what happens if you have 2 projects with the SAME NPV… how would you choose between them?**

2. Decision Making

- **Several indicators**
  - Timing of cash flows (Payback and Discounted Payback)
  - Profitability (IRR, Profitability Index)
  - Others (Book returns, VaR, Real Options, Scenarios, etc.)

2. Decision Making

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- **Payback period**
  - Calculate how many periods (usually years) it takes to cover investment costs
  - Doesn’t consider cashflows after the payback period
  - Doesn’t account for risk or time value of money

- **Discounted payback period**
  - Calculates how many periods it takes to cover investment costs, considering the risk and time value of money
  - Uses the present value of the future cash flows
  - Doesn’t consider cashflows after the payback period

- **Rule: choose projects with lower payback period**

2. Decision Making

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Internal Rate of Return (IRR) (TIR)

- The rate of return that makes the NPV equal to zero
- Rule: accept project with IRR equal or greater than the cost of opportunity
- Problems:
  - Multiple IRRs or no IRR
  - Higher IRR doesn't imply higher total return, just higher percentage return… would you rather invest 10 and receive 20 or invest 20 and receive 39?
  - IRR is impacted by the timings of the cashflows. A proyect with lower IRR can have a greater NPV, depending on the discount rate
  - Term structure of risk free rates and cost of opportunity

2. Decision Making

- **Profitability Index (PI)**
  - Net Present Value divided by Investment
  - Prioritizes investments according to Net Present Value Generation
  - Implement projects in order to maximize total PI, given a capital budget

2. Decision Making

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Book Return or Book Ratios

- Nonsense
- Considers book (accounting) values to calculate ratios
- As it’s determined by accounting rules, it’s biased according to the rules
- As cash flows are not determined by accounting rules, and cash flows are what determines value, then the accounting figures are a bad estimator of value
- DO NOT MAKE DECISIONS BASED ON ACCOUNTING FIGURES

2. Decision Making

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- **VaR (Value at Risk)**
  - What is the maximum amount the project could loose in a bad scenario (x% probability)
- **Scenarios**
  - Positive, Neutral, negative (instead of average as required by the NPV)
- **Montecarlo simulations**
  - Simulate many scenarios according to different probability distributions
- **Real Options**
  - Use option valuation methodology to account for future decision (expand, suspend, retreat, etc) regarding the project

3. Closing

- **Which should you use?**
  - Always prefer NPV
  - If restrained by capital budget, include Profitability Index to select best allocation of resources
  - IRR, but carefully
  - Others, very carefully

3. Closing

- **Next TA session:**
  - Exercises on making investment decisions

- **Next Monday**
  - RECAP of key contents
  - Bring questions… we may not answer them all on Monday, will continue on Wednesday