Capital Budgeting Rules

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Agenda

Capital Budgeting Rules

- Payback Period
- Hurdle Rate
- IRR
- NPV

Empirical Survey

Investment Rules

- Decision: Should the firm invest in this project?
- Conclusion: Accept all and only projects with a positive NPV

Decision Rules

- Payback Period
  - Number of periods it takes to recover initial investment
  - Accept if payback period is less than subjective threshold
- NPV
  - $NPV = PV(CF_t)$
  - Accept if $NPV > 0$
- IRR
  - r such that $NPV = 0$
  - Accept if IRR $>$ cost of capital
- Hurdle Rate
  - r^{Hurdle} adds a project risk-premium to the cost of capital
  - Accept if IRR $> r^{Hurdle}$

Decision Rules: Example

Project costs \$100 today and pays \$50 for next three years. $r = 10\%$

- Payback Period $= 2 \Rightarrow \$0 = -\$100 + \$50 + \$50$
- $NPV = -\$100 + \frac{\$50}{(1+10\%)^1} + \frac{\$50}{(1+10\%)^2} + \frac{\$50}{(1+10\%)^3} = \$24.34$
- $IRR = 23\% \Rightarrow \$0 = -\$100 + \frac{\$50}{(1+23\%)^1} + \frac{\$50}{(1+23\%)^2} + \frac{\$50}{(1+23\%)^3}$
- Hurdle Rate: $r^{Hurdle} = 10\% + rp$

Investment Rules

- NPV
  - Considers both time and risk of cash flows
  - Main rule we should use
- Payback Period
  - Subjective and does not consider time or risk
- Hurdle Rate
  - Subjective and rejects profitable projects
- IRR
  - Not good for complex cash flows
  - Not good for ranking mutually exclusive projects

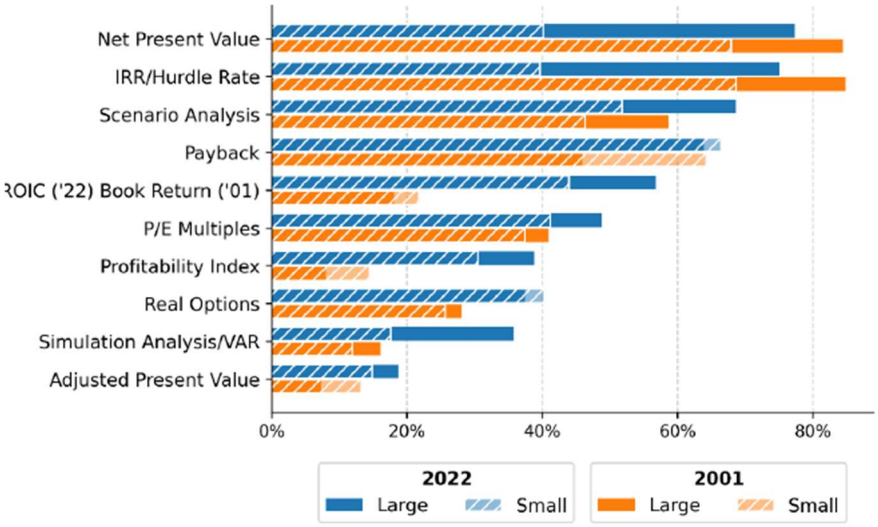
How do CFOs make Capital Budgeting Decisions?

- Survey by John Graham and Campbell Harvey at Duke's Fuqua Business School
- 392 companies
- In past (1977) surveys: fewer than 10% used NPV, more than 50% used IRR
- Now (2002): 75% use both NPV and IRR

How do CFOs make Capital Budgeting Decisions?

FIGURE 1 ■ SURVEY EVIDENCE ON THE POPULARITY OF DIFFERENT CAPITAL BUDGETING METHODS*

2022 Update


Net Present Value
IRR/Hurdle Rate
Scenario Analysis
Payback
ROIC ('22) Book Return ('01)
P/E Multiples
Profitability Index
Real Options
Simulation Analysis/VAR
Adjusted Present Value
0%
20%
40%
60%
80%
2022
Large
Small
2001
Large
Small