Project Selection and Portfolio Management

Chapter 3

Project Selection

Screening models help managers pick winners from a pool of projects. Screening models are ***numeric*** or ***nonnumeric*** and should have:

Realism

Capability

Flexibility

Ease of use

Cost effectiveness

Comparability

Screening & Selection Issues

- Risk – unpredictability to the firm
- Commercial – market potential
- Internal operating – changes in firm ops
- Additional – image, patent, fit, etc.

All models only ***partially reflect reality*** and have ***both objective and subjective*** factors imbedded

Approaches to Project Screening

- Checklist
- Simple scoring models
- Analytic hierarchy process
- Profile models
- Financial models

Checklist Model

A checklist is a list of criteria applied to possible projects.

- ✓ Requires agreement on *criteria*
- ✓ Assumes all criteria are *equally important*

Checklists are valuable for recording opinions and encouraging discussion

Simple Scoring Models

Each project receives a score that is the weighted sum of its grade on a list of criteria. Scoring models require:

- agreement on *criteria*
- agreement on *weights* for criteria
- a *score* assigned for each criteria

$$Score = \sum (Weight \times Score)$$

Relative scores can be misleading!

Analytic Hierarchy Process

The AHP is a four step process:

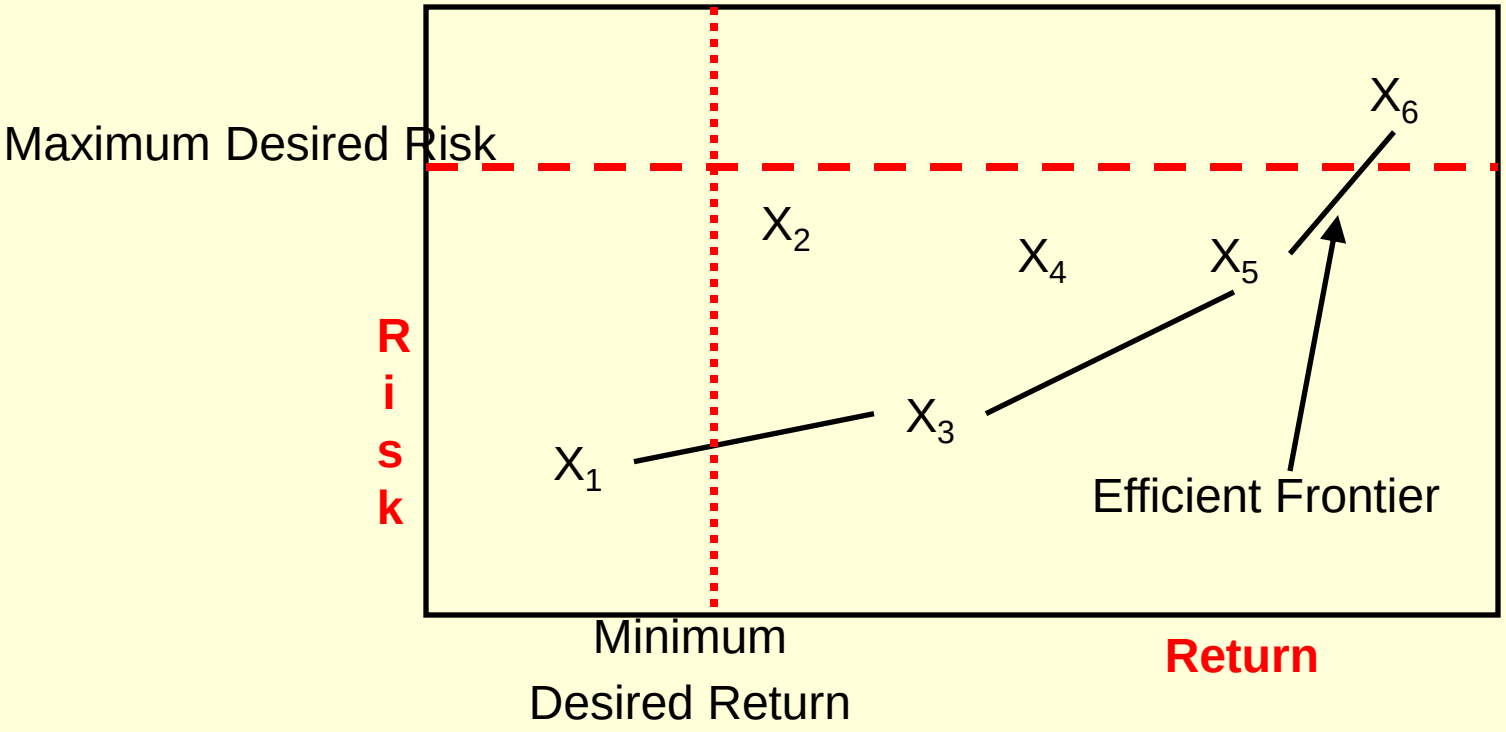
1. Construct a hierarchy of *criteria and subcriteria*
2. *Allocate weights* to criteria
3. Assign *numerical values* to evaluation dimensions
4. *Scores determined* by summing the products of numeric evaluations and weights

Unlike the simple scoring model, these scores are comparable!

Profile Models

Show risk/return options for projects. Requires:

- *Criteria* selection as axes
- *Rating* each project on criteria



Financial Models

Based on the time value of money principal

- Payback period
- Net present value
- Internal rate of return
- Options models

All of these models use discounted cash flows

Payback Period

Determines *how long* it takes for a project to reach a breakeven point

$$Payback\ Period = \frac{Investment}{Annual\ Cash\ Savings}$$

Cash flows should be discounted

Lower numbers are better ***(faster payback)***

Payback Period Example

A project requires an initial investment of $200,000 and will generate cash savings of $75,000 each year for the next five years. What is the payback period?

Year	Cash Flow	Cumulative
0	($200,000)	($200,000)
1	$75,000	($125,000)
2	$75,000	($50,000)
3	$75,000	$25,000

Divide the cumulative amount by the cash flow amount in the third year and subtract from 3 to find out the moment the project breaks even.

$$3 - \frac{25,000}{75,000} = 2.67 \; years$$

Net Present Value

Projects the change in the firm's stock value if a project is undertaken.

$$NPV = I_o + \sum \frac{F_t}{(1 + r + p_t)^t}$$

where

F_t = *net cash flow for period* t

R = *required rate of return*

I = *initial cash investment*

P_t = *inflation rate during period* t

Higher NPV values are better!

Net Present Value Example

Should you invest $60,000 in a project that will return $15,000 per year for five years? You have a minimum return of 8% and expect inflation to hold steady at 3% over the next five years.

Year	Net flow	Discount	NPV
0	-$60,000	1.0000	-$60,000.00
1	$15,000	0.9009	$13,513.51
2	$15,000	0.8116	$12,174.34
3	$15,000	0.7312	$10,967.87
4	$15,000	0.6587	$9,880.96
5	$15,000	0.5935	$8,901.77
			-$4,561.54

The NPV column total is -$4561, so don't invest!

Internal Rate of Return

A project must meet a *minimum rate of return* before it is worthy of consideration.

$$IO = \sum_{n=1}^{t} \frac{ACF_t}{(1+IRR)t}$$

Higher IRR values are better!

where

ACF_t = *annual after tax cash flow for time period t*

IO = *initial cash outlay*

n = *project's expected life*

IRR = *the project's internal rate of return*

Internal Rate of Return Example

A project that costs $40,000 will generate cash flows of $14,000 for the next four years. You have a rate of return requirement of 17%; does this project meet the threshold?

Year	Net flow	Discount	NPV
0	-$40,000	1.0000	-$40,000.00
1	$14,000	0.9009	$12,173.91
2	$14,000	0.8116	$10,586.01
3	$14,000	0.7312	$9,205.23
4	$14,000	0.6587	$8,004.55
			-$30.30

This table has been calculated using a discount rate of 15%

The project doesn't meet our 17% requirement and should not be considered further.

Options Models

NPV and IRR methods don't account for failure to make a positive return on investment. Options models allow for this possibility.

Options models address:

1. *Can the project be postponed?*
2. *Will future information help decide?*

Project Portfolio Management

The systematic process of selecting, supporting, and managing the firm's collection of projects.

Portfolio management requires:

- decision making
- prioritization
- review
- realignment
- reprioritization

Keys to Successful Project Portfolio Management

- **Flexible structure** and freedom of communication
- **Low-cost** environmental scanning
- **Time-paced** transition

Problems in Implementing Portfolio Management

- Conservative technical communities
- Out of sync projects and portfolios
- Unpromising projects
- Scarce resources