ECONOMIC INVESTMENT APPRAISAL

or

Beyond the Bottom Line!

Robert Marks

Week

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Package

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Package
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Prerequisites

How I Teach —

Topics introduced through lectures:

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No class on Monday November 27; makeup TBA.

This Week: We Cover ...

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5. The use of *opportunity cost*, not accounting cost, in CBA.

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Five Principles

(See Landsburg in the Package.)

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Only Individuals Matter

+

All Individuals Matter Equally: (a $ is a $)

(We'll return to these during the term.)

Making Decisions

Making Decisions

***The Analyst/Decision Maker* can:**

1. **set priorities $\rightarrow$ weightings**
2. **generate a set of alternatives**
3. **choose "best" alternative**
4. **but *how*?**
5. **need a *performance measurement*.**

Is this a tall order?

e.g. choosing chemical-processing equipment

e.g. choosing a word-processing system

—

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(emergence of standards e.g. MS Word)

2. How Can We Compare:

- the pluses & minuses ?
- the advantages & disadvantages ?
- the benefits & costs ? ?

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The finance boys & girls: "The $ bottom line!"

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but is that sufficient?

(it's necessary—why?)

But what if:

- **market prices $\neq$ social values?**
-

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Then use techniques of Cost-Benefit Analysis

(Examples)

$\rightarrow$ **Prescriptive "ought"**

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(Examples)

$\rightarrow$ **Prescriptive "ought"**

not

Descriptive "is"

Objectives of the Decision Maker

Let us distinguish first:

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"what is" – descriptive from

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   - **if social discount rate ≠ private discount rate**

Cost-Benefit Analysis:

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A: welfare of each individual, ideally

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$\rightarrow$ a common unit to measure aggregate costs & benefits: *shadow prices*.

Shadow Prices

$

market prices ≠ necessarily shadow prices
(*social* benefits & costs at the margin)

how | **to identify / measure / compare** | **changes in people's welfare ?**

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→ the Pareto Principle

3. Potential Pareto Improvement Criterion (PPIC)

[see C&B Ch. 1, FP Ch. 1.5, 4.1; S&W, Ch. 7]

a *Pareto Improvement* = a change that makes at least one person better off & no-one worse off (a measure of increasing economic efficiency, or reducing waste)

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a project is OK under PPIC (or the Kaldor-Hicks criterion) if *in principle* it is possible to secure an actual Pareto improvement by linking the project to a set of money transfers between the "gainers" and the "losers", in such a way that in principle no-one is worse off, even if these transfers don't actually take place, i.e., a *potential* improvement.

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e.g. the noise cost of airport expansion.

Example: The noise cost of airport expansion.

Questions:

- **losers:**

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Then: If Σ gainers \$ > Σ losers \$

then the PPIC is satisfied.

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4. truthfulness (although perhaps there are techniques to reward truthfulness) — this is an operational problem, not a conceptual barrier.

How appropriate is the PPIC as a "social objective"?

Two alternatives suggested by S&W:

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1. DMA:

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1. DMA: The decision maker's objectives are the social objectives, by definition

CBA:

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1. DMA: The decision maker's objectives are the social objectives, by definition

CBA: process of appraising projects, given the DM's chosen objectives may be private

The Paretian Approach

2. PA:

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2. **PA:** objectives of the decision maker *should* be distilled from a consensus of the value judgements of the individuals in society

_

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   - independent of political process
   -

The Paretian Approach

2. **PA:** objectives of the decision maker *should* be distilled from a consensus of the value judgements of the individuals in society
   - independent of political process
   - a "consensus value-judgement", which can be identified using welfare economics
     i.e. using *Consumers' Surplus* (revision)

Comparing the DMA with the PA

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   Welfare Economics

   $\rightarrow$ economic efficiency: size of the cake

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   $\rightarrow$ economic efficiency: size of the cake

   v.

   distributional justice: relative size of the slices

   PPIC: a change is "good" if $\rightarrow$ greater economic efficiency (i.e. a larger cake)

   winners v. losers

   [C&B Ch. 5, DoF Ch.2]

   PA: "economic rationalism"

Efficiency v. Equity

more equal

Less efficiency, greater equality.

Smaller cake, more even slices.

• *A*

Greater efficiency, greater equality.

Larger cake, more even slices.

• *B*

Status Quo Ante

efficiency

Less efficiency, less equality.

Smaller cake, less even slices.

Greater efficiency, less equality.

Larger cake, less even slices.

• *C*

less equal

Efficiency* v. *Equity* or *Fairness

(lexicographic ordering)

Two questions:

1.

Two questions:

1. Can an unbiased decision maker exist?
2.

Two questions:

1. Can an unbiased decision maker exist?
2. How should the decision maker choose between:

$$\left\{\begin{array}{l}\text{economic growth}\\ \\ \text{environmental protection}\end{array}\right.\quad ?$$

assuming there is a conflict?

4. Comparison of FA & CBA

[C&B Ch. 4, FP Ch. 1, 6]

Often, Cost-Benefit Analysis (CBA) ~ Financial Appraisal (FA)

e.g.

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e.g. A large project requires the purchase and use of 1000 t of bricks

FA: know market prices (bricks cheapest)
CBA: welfare of owners of brickworks
employees of brickworks
other users of bricks
etc.

So far, so good ...

Competitive markets $\rightarrow$ no problems

but if (IF) there is a competitive market economy,
(with no externalities)

brick price	$=$	**MC of brick production**	$=$	**MV to users**
wage	$=$	**MV of leisure to workers**	$=$	**MV of labour to brickworks**

& so long as no prices change, *then*

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brick price $=$ MC of brick production $=$ MV to users
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& so long as no prices change, *then*
there are no welfare effects
& prices $=$ marginal social benefits
$=$ marginal social costs

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and FA = CBA

(so long as there is no price change)

Lack of a competitive market → problems.

But

-

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Source: *Techniques to Value Environmental Resources: An Introductory Handbook*, Canberra: AGPS, 1995.

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(Write down your answer.)

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A private bus company:

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$$\underset{\text{per year}}{C} = 250.0 + \underset{\text{buses}}{1.5b} + \underset{\text{hours}}{0.0038h} + \underset{\text{kilometres}}{0.00006k}$$

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   $\rightarrow C$ = \$4,984,000/y excluding costs of buying \$4,984,000/year

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Service A	–	83.2 per year	712.2
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Opportunity costs (using equation)			
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So: Using the accounting cost of \$0.40/bus-kilometre understates the opportunity cost of Service A and overstates the cost of Service B.

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