Cost Concepts—Key Questions Chapter 9, pp. 129-134

- How do operating and ownership costs differ?
- How are ownership costs calculated?
- How do cash and noncash costs differ?
- How do fixed and variable costs differ?
- How do sunk costs affect decisions?

Operating Costs (variable)

- Cost of goods or services that are used up in one production cycle
- Seed, fertilizer, fuel, wages, rent, repairs, feed, veterinary, etc.

Ownership Costs

Costs of goods that last more than one production cycle

- Machinery
- Equipment
- Breeding livestock
- Land
- Buildings

} Capital Assets

Ownership Costs (fixed costs)

- Depreciation: loss in value due to wearout or obsolescence
- Interest on investment: cost of a loan or opportunity cost on your own capital
- Insurance: casualty, theft, etc.
- Taxes: property (on some items)
- Repairs and maintenance: just buildings

They are an operating cost for machinery.

Machinery Example (pages 403-405)
Current Year Costs

- Current value of tractor = $50,000
- Depreciation: take 10% of current value

  $50,000 x 10% = $5,000
- Interest: current value x interest rate

  $50,000 x 7% = $3,500 / year
- Insurance and taxes: est. 1% of current value

  $50,000 x 1% = $500 per year

- **Total ownership cost = $9,000**

What Interest Rate to Use?

- Use <u>weighted average cost of capital</u>
- Example:
  - $30,000 is owed on the tractor, at 9 % interest (60% debt capital)
  - $20,000 of equity capital that could earn 4% in a savings account (40% equity)
- Cost of capital = (.60 x 9%) + (.40 x 4%)
  = 5.4% + 1.6% = 7.0%
- 7% x $50,000 = $3,500

Interest Cost on Capital Assets

- Or:
- Loan: $30,000 x 9% = $2,700
- Equity: $20,000 x 4% = 800
- Total interest = $3,500

Building Ownership Costs

Estimated value of building is $60,000

- Interest (on current value)

  7% x $60,000 = $4,200 / year
- Depreciation

  5% x $60,000 = $3,000
- Taxes and insurance (current)

  1% x $60,000 = $600
- Repairs.& maintenance: 2 - 4% of value

  3% x $60,000 = $3,000
- Total ownership costs = $10,800 per year

Average Ownership Costs over the Entire Ownership Period

- Depreciation =

$$\frac{\text{(purchase cost – salvage value)}}{\text{years owned}}$$

See page 399 for estimated salvage values for machinery.

Tractor: salvage value after 10 years is 32% of original list price

Tractor Example—Average Costs

- New value = $75,000
- Salvage value = 32% x 75,000 = $24,000
- Depreciation is:

  (75,000 – 24,000) / 10 years = $5,100 / year

Interest Expense

- Interest is based on <u>average</u> of new value and salvage value

Average value =(75,000 + 24,000) / 2= $49,500

Interest = 7 % x $49,500 = $3,465 per year

Insurance & taxes = 1% x $49,500 = $495

Total = $5,100 + 3,465 + 495 = $9,060

Ownership Costs Over Ownership Life for Tractor

Sunk Costs

- As the production cycle progresses,more and more costs become sunk.
- Sunk costs no longer affect decision making in the short run (within the production cycle)

Sunk Costs

- Should you harvest a poor crop even if you expect to not cover total costs?

Economic Principle

- If gross revenue exceeds variable costs, profit will be increased (or losses decreased) by producing.
- That is, when gross margin > 0 go ahead and produce

Example: Finishing Feeder Pigs

Variable costs:

feeder pig	$40.00
feed	50.00
operating	10.00
labor	3.00
=total variable costs	$ 103.00
Fixed costs (bldg, equip)	$ 13.00
Total costs	$ 116.00

Profit (250 lb. pig)

Price	Revenue	Produce	Do not
$.50	$135	$19	-$13
$.40	$ 108	-$ 8	-$13
$.30	$ 81	-$35	-$13

Variable cost breakeven = $103 / 270 lb.
= $.38 per lb.

Higher Cost Facilities, Perm.Labor

Variable costs:

feeder pig	$40.00	
feed	45.00	↓
operating + labor	8.00	↓
total v.c.	$ 103.00	
Fixed costs (bldg, equip)	$ 23.00	↑
Total costs	$116.00	

V.C. breakeven = $93 / 270 lb. =$.34

Economic Principle

- If a higher proportion of a farm’s costs are fixed, it will continue to produce even at a lower price.

In the long run all costs are variable.

- Before an investment is made
- Fixed resources could be sold

Cash and Noncash Costs

Cash Costs

- Seed, fertilizer, pesticides
- Fuel and repairs
- Hired labor
- Cash rent
- Interest on loans
- Etc.

Noncash Costs

- Depreciation
- Opportunity Costs
  - unpaid labor
  - net worth capital
  - feed produced on the farm