

# Estimating Enterprise Cost Of Production

## The Process and Using Your Results

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## Estimating or Measuring

- Estimating
  - Preproduction
  - Estimate what income and expenses might be
  - Useful for decision making and management
- Measuring
  - Track and use actual historic costs
    - Actual Operating Cost
    - Actual Fixed Costs
  - Requires very detailed records
    - Imagine allocating repair costs for each piece of equipment between enterprises



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## Time Frame for Decision Making

- Costs considered depend on the planning horizon
- Short run (one production period)
  - Some costs are fixed
    - Taxes, depreciation, insurance, interest
  - Some costs can vary
- Long run (more than one year)
  - All costs can vary

## Two Types of Costs

- Operating costs = Variable Costs
  - Fuel, Repairs, Seed, Fertilizer, Chemicals,...
- Ownership costs = Fixed Costs
  - Depreciation, Interest, Taxes, Insurance, (DITI)

## Relevant Short Run Costs

- Operating or Variable costs are **the only relevant** short run costs
  - Vet and Med, Feed, Fuel, Oil, Repairs, Interest on operating, etc.
- Operating costs vary with the level of production
  - Per unit (per horse, per acre, per cow) costs are typically the same
  - Each additional unit costs money, so greater total costs
- When you start production, costs are incurred

## Long Run Costs

- Ownership costs are those associated with owning a capital asset
  - (DITI) Depreciation, Interest on investment, Taxes, Insurance
  - In the short run, ownership costs are of a **fixed** nature and should be ignored for short run decisions
- Can avoid Operating Costs but will still pay DITI
- Fixed costs should not be included in short run decision making
- In the Long Run, All costs are variable

## We Have Been Using the Word **Costs**

- Tend to be very careless with terminology
- Can result in very misleading information
  - Business:
    - Income and Expenses
    - Loan principal payments for business assets
      - Is an outflow, not an expense
    - Depreciation = noncash expense
  - Nonbusiness
    - Family living, retirement planning, etc.



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## How We Use The Word “**Costs**”

- Cost = Cash Outflow = Expense
  - Vet & Med, Repairs, Fuel, etc.
- Cost = Cash Outflow  $\neq$  Expense
  - Principal portion of loan payments
  - Cash to purchase a capital asset
    - Machinery & Equipment, Breeding stock
- Cost = Expense  $\neq$  Cash Outflow
  - Depreciation, Accounts Payable



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## The Revenue Side of Terminology

- Revenue = Cash Inflows = Income
  - Cash sales of animals, feed, grains
- Revenue = Income  $\neq$  Inflows
  - Accounts Receivable

## Three Ways to Estimate/Measure Costs

- Economic Approach
- Financial Approach
- Cash Flow Approach

## What is Included/Excluded From Estimates

### Debt Free Versus 60% Debt Load

		Cost/Lb
Financial	1-Accounting (Tax) Based: Cash <b>Income</b> and <b>Expenses</b> 2-Allowable <b>Non-Cash</b> Income and Expenses; uses Tax/Book Depreciation	<b>\$1.10</b>
Economic	1-Focus on Income and Expense 2-Includes both cash and non-cash items 3-Uses substitutes for actual expenses; <b>opportunity costs &amp; economic depreciation</b>	<b>\$1.00</b>
Cash Flow	1-Uses Cash <b>Inflows</b> and <b>Outflows</b> 2-Ignores <b>non-cash</b> income and expenses 3-Includes cash flows that are not an income or an expense ( <b>Family Living,</b> <b>Principal Payments</b> )	<b>\$1.40</b>

## Economic Cost of Production

- Calculated using estimates for cash and non-cash *income* and *expense*
  - Not the same as cash inflows and outflows nor “financial” analysis
    - Does not include principal payments
  - Enterprise budgeting approach
- Estimates used for some expenses:
  - Interest on operating
  - Interest on real estate

## Financial Cost of Production

- Uses actual *income* and *expenses* incurred as determined by accounting/tax practices
  - Cash and non-cash income and
- Examples:
  - Actual cash interest, fuel expense, repairs, etc.
  - Actual tax depreciation claimed
  - Etc., etc.
- Calculated after production takes place
- Provides historic measure of business performance

## Cash Flow Cost of Production

- Only cash *inflows* and *outflows* are used
- Excludes depreciation and other non-cash costs such as Opportunity costs
- Cash flow *includes items that are not income or expenses*
  - Principle payments (Debt Load)
  - Family living/contributions (Family Units/Size)
- Can be estimates or actual *inflows* and *outflows*
- Different than *income* and *expense*

## Which Method To Use?

- What are objectives in making a cost of production calculation?
  - Family decisions, (what can operation support)
  - Optimize enterprise mix, .....
  - Satisfy your lender(s)
- What is the time frame (short or long run)?
- What information is available to make the calculations?

## Decision Making: Simple Versus Complex

- Short Run
  - Retained ownership for calves
  - Cover debt load obligations
- Long Run
  - Cost of production practices (tillage systems)
  - Change enterprise mix
  - Bring kids back to operation (or get rid of some)
  - Retirement and/or estate planning



## Procedures/Tools for Cost Estimation

- Whole Farm/Ranch budgeting
  - What is your entity or reporting unit
    - Acre, Enterprise, Whole Farm
- Enterprise budgeting
- Analysis of specific activities
  - Machinery costs and custom rates
  - Own versus lease
    - Land, Machinery, Other Capital Assets
  - Risk protection strategies/effectiveness
    - Marketing Alternatives for Commodities



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## Software Available to Help With Estimates

<http://www.montana.edu/softwaredownloads/>

- Financial and Risk Management
- Machinery Management
- Crop Production, Finance & Marketing
- Livestock & Forage Production
- Marketing
- Energy



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# QUESTIONS