ACCOUNTING PROFIT, ECONOMIC PROFIT, NORMAL PROFIT

ACCOUNTING COST EXAMPLE:

Current operations: March 1 owns 500 acres of very good cropland averaging 100 bushels per acre.

E(price)= $3.00/bu.
E(output)= 50,000 bushels

Total sunk cost = $ 15,000/year

E(total variable cost)= $ 80,000
E(total cost)= $ 95,000

E(total revenue)= $150,000
E(total cost)= $ 95,000

E(total net revenue)= $ 55,000 (accounting profit)
E(average total cost)= $ 1.90/bu.
2. Opportunity arises: You have been wanting to double your production for some time now when a neighbor tells you he has 715 acres of cropland he will rent you for $45.00 per acre payable at harvest. (therefore no interest).

\[ E(\text{price}) = \$3.00/\text{bu.} \]
\[ E(\text{output}) = 100,000 \text{ bushels} \]

Total sunk cost = $15,000/year

\[ E(\text{variable cost}) = \$30,000/\text{year for additional mach. & equip.} \]
\[ \quad \$32,175 \text{ rent for land} \]
\[ \quad \$80,000 \text{ other variable inputs, owned land} \]
\[ \quad \$113,935 \text{ other variable inputs, rented land} \]

\[ E(\text{total variable cost}) = \$256,110 \]

\[ E(\text{total cost}) = \$271,110 \]

? Should we produce and sell the additional 50,000 bushels?
a) \( E(\text{average total cost}) = 2.72 \text{/bu.} \)

b) \( E(\text{total revenue}) = 300,000 \)
\( E(\text{total cost}) = 271,110 \)
\( E(\text{total net rev.}) = 28,890 \) (accounting profit)

Had we based our decision on the ATC we would assume, since our price
($3.00/bu.) was more than ATC ($2.71), that we would make a greater profit
with an increase in production and sales.

Such is not the case. We must calculate through to the TNR and determine
whether the TNR of the "possible situation" will be greater or less than the TNR
of the "current operation".
Therefore average costs have limited usefulness for economic decisions.

Let's analyze this same problem in somewhat of a different light:

\[ TR = TR_1 - TR_0 = $300,000 - $150,000 = $150,000 \]

**SUNK COSTS ARE IRRELEVANT**

\[ TVC = TVC_1 - TVC_0 = $271,110 - $95,000 = $176,110 \]

\[ TNR = TR - TVC = $150,000 - $176,110 = $-26,110 \]

From this line of reasoning we develop a fundamental rule for making economic decisions:
Marginal revenue: Change in TR associated with a one unit change in output. (MR)

\[ MR = \frac{TR}{Q} \]

\[ = \frac{TR_1 - TR_0}{Q_1 - Q_0} \]

\[ = \frac{$300,000 - $150,000}{100,000 - 50,000} \]

\[ = $150,000 / 50,000 \]

\[ = $3.00 \text{ per bushel} \]

Therefore the MR = Price of the commodity per unit for a price taker.
Marginal cost: change in total variable cost associated with a one unit change in output. (MC)

\[
MC = \frac{TVC}{Q} = \frac{(TVC_1 - TVC_0)}{(Q_1 - Q_0)} = \frac{($271,110 - $95,000)}{(100,000 - 50,000)} = \frac{($176,110)}{50,000} = \frac{($3.52)}{BUSHEL}
\]

Marginal cost and marginal revenue are the two most important concepts of economic decision analysis! The process is called marginal analysis.

We will rationally decide to increase production or venture on a business deal only if:

\[MR \geq MC\]
ECONOMIC COST EXAMPLE:

What cost do we need to add to our analysis to make the example conform to economic cost principles?

!!!!!! THE OPPORTUNITY COST OF OWNED RESOURCES !!!!!!
1. Current operations:

   Total sunk costs = $15,000

   E(variable costs) = $80,000 for variable inputs
   $25,000 oppty. cost of owned land
   $20,000 oppty. cost of labor & mgmt.
   $ 5,000 oppty. cost of owned capital

   E(total var. costs) = $130,000

   E(total costs) = $145,000

   E(total revenue) = $150,000

   E(total costs) = $145,000

   E(total net revenue) = $ 5,000 (ECONOMIC PROFIT)
2. Opportunity:

Total sunk cost = $15,000/year

E(variable cost) = $130,000 for current operations
$176,110 for additional mach. & equip.
$1,000 oppty. cost of additional owned capital

E(total var. cost) = $307,110

E(total cost) = $322,110

E(total revenue) = $300,000
E(total cost) = $322,110

E(total net revenue) = ($22,110) (ECONOMIC LOSS)
Is this his TOTAL economic loss? Let's see.

\[ TR = TR_1 - TR_0 = \$300,000 - \$150,000 = \$150,000 \]

\[ TVC = TVC_1 - TVC_0 = \$307,110 - \$130,000 = \$177,110 \]

\[ TNR = TR - TVC = \$150,000 - \$177,110 = (\$27,110) \]

Let's take another look at MR and MC

\[ MR = \frac{(TR_1 - TR_0)}{(Q_1 - Q_0)} \]

\[ = \frac{(\$300,000 - \$150,000)}{(100,000 - 50,000)} \]

\[ = \frac{\$150,000}{50,000} \]

\[ = \$3.00 \text{ / bushel} \]
MC = (TVC$_1$ - TVC$_0$) / (Q$_1$ - Q$_0$)

= ($307,110 - $130,000) / (100,000 - 50,000)

= $177,110 / 50,000

= $3.54 / bushel