

Unit D: Applying Basic Economic Principles in Agribusiness

**Lesson 4: Utilizing Economic
Principles to Determine What to
Produce**

Terms

- Broker
- Competitive Enterprises
- Complementary Enterprises
- Marginal Returns
- Principle of Equimarginal Returns
- Opportunity Cost
- Supplementary Enterprises

Principle of Equimarginal Returns

- I. The ***Principle of Equimarginal Returns*** states that investments or resources should be allocated among several alternative uses in such a way that the ***marginal returns*** are equal or greater in all uses. Marginal returns are the profit that is earned from the enterprise. Marginal returns are calculated by taking revenue minus expenses.

Principle of Equimarginal Returns

- A. Never invest capital in an alternative that does not provide returns equal to or greater than the amount invested.

- B. Always invest capital in the option that provides the greatest marginal returns, so long as the returns are greater than the amount invested.

Principle of Equimarginal Returns

1. For example, if a business planner wants to begin a poultry enterprise, he knows that he can purchase 5 chickens for \$2 each for a total of \$10. He should speculate his input costs and revenue accurately.

To meet the principle of equimarginal returns, the profit from this enterprise should be at least \$10 (the amount of money he paid for the chickens.)

If it is less than \$10 the business planner has two options: modify the enterprise to earn more profit (if possible) or choose a different enterprise.

Rule of Opportunity Cost

II. ***Opportunity cost*** is the cost of an alternative that must be given up in order to take a certain action. The Opportunity Cost Principle states that one action will have a greater benefit than that of an alternative action.

Rule of Opportunity Cost

- A. Opportunity cost is calculated by taking the profit from the action taken (or plan to be taken) minus the profit from the alternative option.
 - 1. In order to calculate opportunity cost before actions are taken, some speculation must be made. Then, a decision must be made about which action to take. The action with the greatest potential benefit, or profit, should be chosen.
 - 2. Because speculation is involved, there is a risk that the action taken may not actually be the most profitable.

Rule of Opportunity Cost

- B. In business planning, decisions must be made regarding what to produce or grow.
 1. For example, Bob, an agribusinessman wants to make a profit from a new enterprise. He has very little money to purchase capital and he would like to receive profit as soon as possible. Bob decides that purchasing land and growing crops is too difficult. Bob thinks his options are buying chickens to produce eggs, buying a goat to produce milk, or buying a cow to produce milk. Finally, Bob decides to buy chickens to produce eggs because they don't cost as much as a goat or cow. Bob decides to sell his eggs at \$1.00 for 12 eggs.

Rule of Opportunity Cost

- a. To calculate Bob's opportunity cost, some predictions must be made about how much profit he will make.
Bob's chickens produce 12 eggs in one day. If Bob had purchased a goat, his goat would produce 2 liters of milk in one day.
 - i. Let's predict the profit from 12 eggs is \$.50 and the profit from 2 liters of goat's milk is \$1.00.
 - ii. We can calculate Bob's opportunity cost by taking $.50 - 1.00 = -.50$ Therefore, Bob's opportunity cost is $-.50$ because he earned $-.50$ less per day by producing eggs instead of goat's milk.
 - iii. Although Bob could have earned more profit by producing goat's milk, he chose to produce eggs because buying chickens required less capital than buying a goat.

Rule of Opportunity Cost

- b. If Bob had purchased a cow, his cow would produce 3 liters of milk in one day.
 - i. Let's predict the profit from 12 eggs is \$.50 and the profit from 3 liters of cow's milk is \$1.50.
 - ii. We can calculate Bob's opportunity cost by taking $.50 - 1.50 = -\$1.00$ Therefore, Bob's opportunity cost is -\$1.00 because he earned \$1.00 less per day by producing eggs instead of goat's milk.
 - iii. Although Bob could have earned more profit by producing cow's milk, he chose to produce eggs because buying chickens required less capital than buying a cow.

Rule of Opportunity Cost

2. Like Bob, in some situations, business planners choose to accept an enterprise that earns a lower profit due to other reasons.
 - a. The enterprise requires less capital.
 - b. The enterprise requires less labor and time.
 - c. The enterprise will earn profit more quickly than others.

Rule of Opportunity Cost

- C. Opportunity cost also needs to be considered while operating a business. When to harvest or sell a commodity is a business decision that needs to be made carefully.
 - 1. An agribusiness can benefit by selling at the time when prices are the highest.
 - a. For example, Jim, a wheat grower sells his commodity to a **broker**, someone who takes the product to another location to be sold. Let's pretend that on May 10, just before wheat harvest, supply is low and the broker is offering \$1 per kilogram, an unusually high price for wheat.

Rule of Opportunity Cost

- i. Jim's wheat is mature and can be harvested on May 10, but Jim has the opportunity to work for a neighbor for 10 days in May. His neighbor will pay \$3 per day of work. If Jim waits to harvest his wheat, he knows the price will decrease, but he doesn't know exactly how much it will decrease. Jim does know that in June last year, the broker was paying \$.40 per kilogram of wheat.

Rule of Opportunity Cost

- ii. Jim can calculate about how much he will earn if he harvests in May or in June. Jim predicts that he will have 40 kilograms of wheat when he harvests.
 1. If Jim harvests in May, he will receive about \$40 for his wheat.
 $(40 \text{ kg} \times \$1 \text{ per kg} = \$40)$
 2. Using last year's price, Jim can predict that he will receive about \$16 if he harvests in June. $(40 \text{ kg} \times \$.40 = \$16)$

Rule of Opportunity Cost

- iii. Jim must decide if he will harvest his wheat now (May) or work for his neighbor then harvest his wheat in June.
 - 1. If Jim harvests now, he will receive about \$40.
 - 2. If Jim works then harvests in June, Jim will receive \$16 for his wheat and will receive \$30 for working for his neighbor
 $(10 \text{ days of work} \times \$3 \text{ each day} = \$30)$ In total, he will receive \$46.

Rule of Opportunity Cost

iv. Jim decides that he will work for his neighbor then harvest his wheat in June. Because his opportunity cost will be a positive number. Jim calculated this by taking $\$46 - \$40 = \$6$.

Rule of Opportunity Cost

- b. It is important to realize that other factors may have an effect on the total amount of money that Jim will earn.
 - i. The price for wheat may decrease to an amount lower than predicted.
 - ii. A pest infestation or other uncontrollable factor may cause the total amount of kilograms of wheat to decrease.
- c. Let's pretend that Jim works for his neighbor and harvests his wheat in June. The broker is only offering \$.20 per kilogram of wheat. How much money will Jim receive?

Rule of Opportunity Cost

- i. Jim earned \$30 by working for his neighbor and earns \$8 for his wheat. ($40 \text{ kg} \times \$0.20 \text{ per kg} = \8) In total, Jim earned \$38.
 - ii. We can calculate Jim's opportunity cost by taking \$38 that he earned by working then harvesting in June minus \$40 which he would have earned if he harvested in May. $\$38 - \$40 = -\$2$
Jim's opportunity cost is -\$2.
 - iii. Because the price decreased lower than Jim predicted, he earned less money than if he had harvested in May.
- D. The better an individual is at speculating the profit that will be earned, the more likely the Opportunity Cost Calculation will be true.

Relationship Between Enterprises

III. Many businesses combine several enterprises to maximize profits.

A. ***Supplementary enterprises*** are those where one enterprise supplements the income of another.

1. A field that is used to grow wheat can also grow pulses.
 - a. Wheat can be harvested in the middle of May and pulses can be planted as late as the end of May. Pulses will be harvested in September and the next crop of wheat will be planted in October or later.
2. A bucket used to milk cows can also be used to pick almonds.

Relationship Between Enterprises

- B. ***Complementary enterprises*** are those where one enterprise produces the inputs for another.
 - 1. Manure from livestock can be used to fertilize plants such as wheat.
 - 2. A seed agribusiness may also sell fertilizer to farmers.

Relationship Between Enterprises

- C. ***Competitive enterprises*** are those where one enterprise interferes with another.
 - 1. Enterprises competing for labor resources.
 - a. One example of competitive enterprises would be an apple grower that also offers to harvest apples for other apple growers. His own apples need harvested at the same time that he needs to be harvesting apples for his customers.
 - 2. Students who work so much that they do not have enough time to study.

Review

- What is the Principle of Equimarginal Returns?
- What is the Opportunity Cost Principle?
- How do existing enterprises relate?