Additional Notes on Opportunity Cost and Comparative Advantage

Opportunity Cost

The **opportunity cost** of a choice is what you give up when you make that choice. **Opportunity cost** comprises both **explicit cost** and **implicit cost**. **Explicit cost** is money coming out of your pocket. **Implicit cost** is everything else that you are giving up (besides money); *e.g.*, the time you spend, and what you could have been doing with that time. *E.g.*, if you choose to go to college, your **explicit cost** is $8,000 in school fees a year, and your **implicit cost** is $12,000 in forgone wages a year.

When the alternatives to a choice are mutually exclusive, the **implicit cost** of the choice is not the total value of all other alternatives, but the value of the next best alternative. *E.g.*, suppose your choices, in order of preference, are: playing football, studying, watching TV, hiking, swimming, golfing, baking, cooking, dancing, singing. The opportunity cost of playing football is the benefit derived from studying. The opportunity cost of playing football cannot be the benefit derived from studying and watching TV and hiking and swimming and golfing and baking and cooking and dancing and singing. You cannot do all these things simultaneously.

Opportunity cost can either be in terms of the money required or the time required, or in terms of what the money or time could have been used for.

Here is an example. You could say that the opportunity cost of a burger is $5 (in terms of money). Alternatively, you could say that the opportunity cost of a burger is a pizza (you could have used the $5 to buy a pizza). You cannot say that the opportunity cost of a burger is $5 AND a pizza. You cannot double count.

You could ask yourself: "If I choose a burger, what am I giving up?". Or, you could ask yourself, "If I give up a burger, what am I gaining?". If you change your mind and tell the burger seller that you do not want the burger anymore, he will give you back your $5. He will not give you back $5 AND a pizza.

Here is another example. You could say that the opportunity cost of baking a cake is 2 hours (in terms of time). Alternatively, you could say that the opportunity cost baking a cake is making a tray of lasagna (you could have used the 2 hours to make a tray of lasagna). You cannot say that the opportunity cost of baking a cake is 2 hours AND making a tray of lasagna.

When you are deciding whether to choose X, you are comparing the (opportunity) **cost** and **benefit** of X. The opportunity cost is just one side of the equation; you also have to consider the benefit.

The opportunity cost of X could include the benefit of a different thing, Y. The opportunity cost of X does not include the benefit of X. *E.g.*, the opportunity cost of attending the Ariana Grande concert includes the benefit of attending the Billie Eilish concert. The opportunity cost of attending the Ariana Grande concert does not include the benefit of attending the Ariana Grande concert.

To decide whether you should attend the Ariana Grande concert, you will weigh the opportunity cost of attending the Ariana Grande concert against the benefit of attending the Ariana Grande concert. If the benefit is at least as great as the cost, then you should attend the Ariana Grande concert.

Suppose you take 2 hours to bake a cake and 2 hours to make a tray of lasagna. Your roommate takes 4 hours to bake a cake and 8 hours to make a tray of lasagna. Organizing the information in a table is always helpful.

	You	**Roommate**
1 cake	2 hours	4 hours
1 lasagna	2 hours	8 hours

Absolute Advantage

Absolute advantage is the ability to produce a good by giving up fewer inputs (*e.g.*, time) than another producer.

To bake a cake, you need 2 hours, and your roommate needs 4 hours. You have absolute advantage in baking a cake.

To make lasagna, you need 2 hours, and your roommate needs 8 hours. You have absolute advantage in baking a cake.

Comparative Advantage

Comparative advantage is the ability to produce a good by giving up less of something else (*e.g.*, cake or lasagna) than another producer.

To determine who has comparative advantage in baking a cake, we need to calculate your opportunity cost (how much lasagna do you give up) and your roommate's opportunity cost (how much lasagna does she give up).

To bake a cake, you need 2 hours. In those 2 hours, you could have made 1 lasagna. So, for you: $1\ cake = 2\ hours = 1\ lasagna$. Your opportunity cost of baking a cake is:

$$\frac{\left(\frac{2\ hours}{1\ cake}\right)}{\left(\frac{2\ hours}{1\ lasagna}\right)} = \frac{1\ lasagna}{1\ cake}$$

To bake a cake, your roommate needs 4 hours. In those 4 hours, she could have made 0.5 lasagna. So, for your roommate: $1\ cake = 4\ hours = 0.5\ lasagna$. Your roommate's opportunity cost of baking a cake is:

$$\frac{\left(\frac{4\ hours}{1\ cake}\right)}{\left(\frac{8\ hours}{1\ lasagna}\right)} = \frac{\frac{1}{2}lasagna}{1\ cake}$$

Therefore, your roommate has comparative advantage in baking a cake. To bake a cake, she has to give up only 0.5 lasagna; you have to give up 1 lasagna.

Now repeat the exercise to determine who has comparative advantage in making lasagna.