Optimal Choice

by Sophia Tutorial

WHAT'S COVERED

This tutorial will cover the topic of optimal choice, focusing on how to interpret the relationship between indifference curves and budget constraints to determine our maximum utility.

Our discussion breaks down as follows:

1. Consumer Choices
2. Budget Constraint
   a. Budget Constraint Graph
3. Utility Maximization and Optimal Choice

1. Consumer Choices

We as consumers have to make choices every day. We are also very aware of our constraints, which are primarily time and income.

Therefore, how do we make the best choice to maximize our utility?

HINT

Remember, utility is satisfaction; it is what we get out of something.

2. Budget Constraint

Our first key term, **budget constraint**, is defined as the graphical depiction of consumer income relative to the price of goods available.

Where the budget constraint touches the highest indifference curve available, the consumer is defined to be optimizing consumption, or getting the most utility.

IN CONTEXT

Suppose Kim has a budget of $100 to spend each month on "fun." She must choose between going

to the movies or ordering Chinese takeout, her two designated "fun for the month" activities.

The movies will cost her $20 each time she goes, between the ticket and snacks at the concessions stand, whereas the Chinese takeout will cost her $10.

Kim's budget constraint will list all of the possible combinations she can afford if she spends all $100 on these two activities every month.

Let's look at the equation first. Again, her budget is $100, and we will call Chinese takeout "Good X," and the movies "Good Y":

Budget = $100
Good X (Chinese Takeout) = $10
Good Y (Movies) = $20

The budget constraint equation is fairly simple. We simply take the price of the first activity, Chinese takeout, times however many times she orders it, plus the price of the second activity, movies, times however many times she goes to the movies. The sum of these must equal $100.

$10X + $20Y = $100

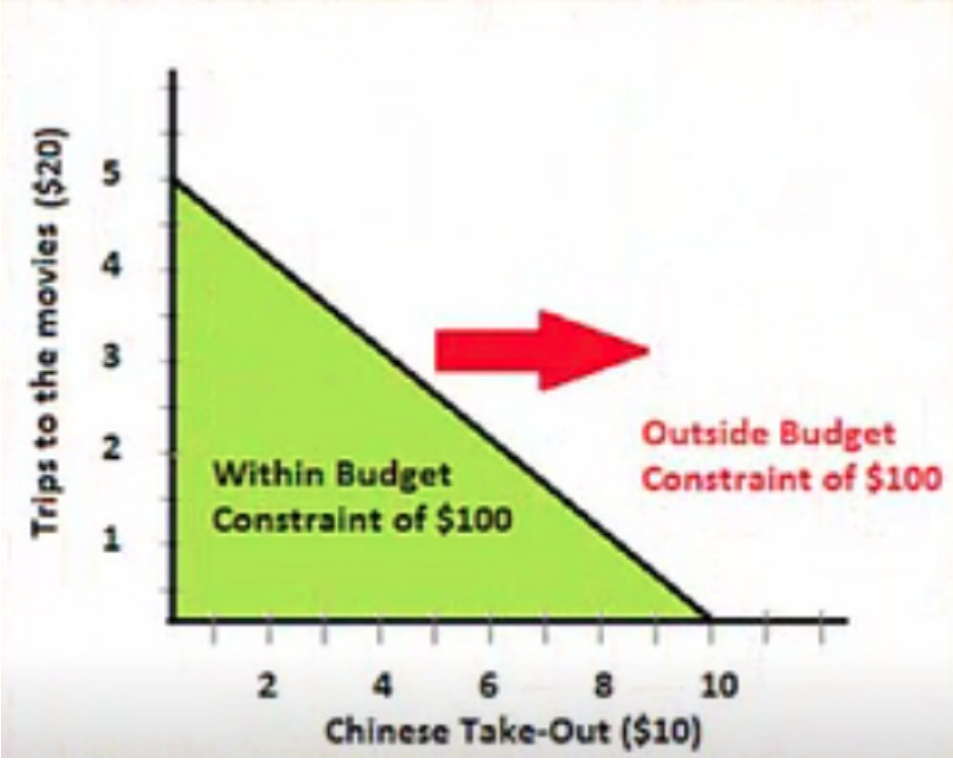
For instance, if she orders Chinese takeout two times, then $10X would equal $20. Then, she could solve for Y to figure out how many times she can go to the movies and still stay within her budget of $100.

TERM TO KNOW

Budget Constraint
The graphical depiction of consumer income relative to the price of goods available. Where the budget constraint touches the highest indifference curve available, the consumer is defined to be optimizing consumption.

2a. Budget Constraint Graph

Now, let's graph this equation, visually representing Kim's budget constraint for the month, where her budget is $100.
We will put trips to the movies on the y-axis and Chinese takeout on the x-axis.



Notice the extremes for each option, which indicate that she can afford *either*:

- 5 trips to the movies, because 5 x $20 = $100
- 10 Chinese takeout meals, because 10 x $10 = $100

However, most people would probably prefer some combination.

Therefore, anywhere along this budget constraint would be her budget exactly, while anything in green is under her budget, or within her budget constraint.

If she purchases in this green area, she is saving money, by not spending all $100.

She does not have the money to do anything outside of her budget constraint.

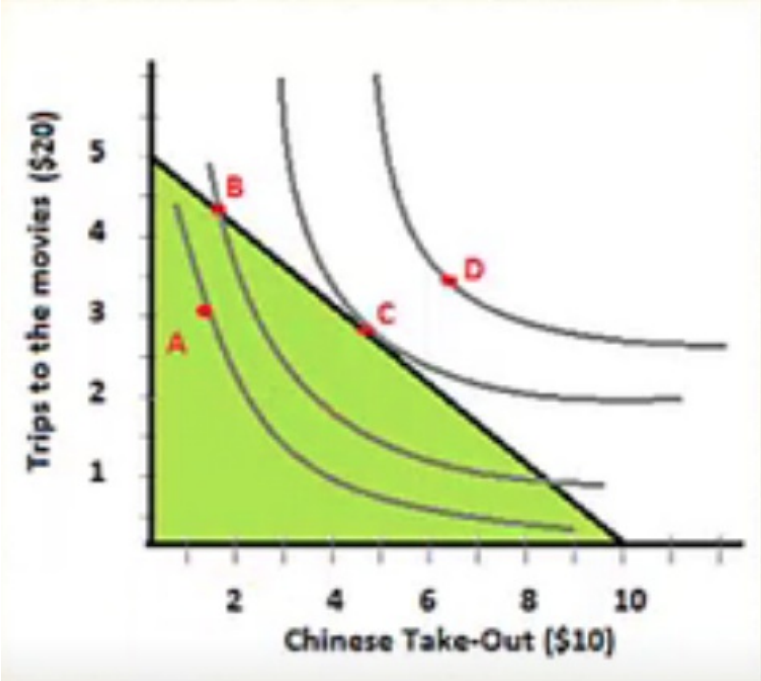
However, this by itself doesn't really tell us what combination she should choose, because we don't know what she prefers. Does she prefer Chinese takeout? Does she prefer the movies? Let's explore this idea a bit further.

3. Utility Maximization and Optimal Choice

Now, if Kim is in fact going to strive for **utility maximization**, this means she is achieving the highest amount of satisfaction given her budget constraint.

It follows, then, that if she is getting the highest level of utility possible, she would be making the **optimal choice**. She would be purchasing the goods and services that are providing her with the highest level of utility or satisfaction.

Let's put it all together. Here we have the same budget constraint, but now we have added a series of indifference curves.



HINT

Remember, an indifference curve tells us Kim would be indifferent to any point along that curve; she doesn't prefer any one point along that curve to the next.

Notice, though, when you look at indifference curve two (with point B), indifference curve three (point C), and indifference curve four (point D), she gets more and more utility the further out her indifference curves go.

Indifference curve two would yield more utility than indifference curve one, and so on, which is going to help us figure out the ultimate point.

Indifference Curve	Budget Constraint
Curve 1 - Point A	Inside budget constraint (can still increase utility)
Curve 2 - Point B	On budget constraint
Curve 3 - Point C	On budget constraint
Curve 4 - Point D	Outside budget constraint (cannot afford)

Well, we can rule out her purchasing at point A because that is inside her budget constraint, so she can definitely still increase her utility by spending more money and potentially gaining more trips to the movies and more Chinese takeout.

We can also rule out point D because she can't spend that money--it's outside of her budget constraint.

Therefore, should she stay at point B or point C, because they are both on her budget constraint? In either case, she is spending exactly $100.

Well, the indifference curves help provide that answer, and it turns out that point C would yield the highest level of utility because that indifference curve is further out than the one containing point B.

So, by definition of indifference curves, Kim's utility is higher at any point along the third curve than along the

second one.

C is within her budget and is also on the highest possible indifference curve that is within her budget, so is therefore the optimal choice for Kim.

TERMS TO KNOW

Utility Maximization
Achieving the highest amount of satisfaction given a consumer's budget constraint

Optimal Choice
Goods and services purchased by a consumer that provides the highest level of utility possible

SUMMARY

We began today's lesson by briefly discussing **consumer choices** and the fact that consumers strive to make the best choice to maximize their utility. We learned about the concept of a **budget constraint**, including its equation and its expression in a**graph**. We learned how it all comes together by looking at a graph that combines the indifference curves with the budget constraint to show us the combinations of goods and services that will **maximize our utility** and help us make the**optimal choice**.

Source: Adapted from Sophia instructor Kate Eskra.

TERMS TO KNOW

Budget Constraint
The graphical depiction of consumer income relative to the price of goods available. Where the budget constraint touches the highest indifference curve available, the consumer is defined to be optimizing consumption.

Optimal Choice
Goods and services purchased by a consumer that provides the highest level of utility possible.

Utility Maximization
Achieving the highest amount of satisfaction given a consumer's budget constraint.