

THEORY OF CONSUMER BEHAVIOUR

The Budget Constraint (Budget Line): What the Consumer Can Afford

Most people would like to increase the quantity or quality of the goods they consume—to take longer vacations, drive fancier cars, or eat at better restaurants. People consume less than they desire because their spending is constrained, or limited, by their income. We begin our study of consumer choice by examining this link between income and spending. We examine the decision facing a consumer who buys only two goods: pizza and Pepsi. Suppose the consumer has an income of \$1,000 per month and spends her entire income on pizza and Pepsi. The price of a pizza is \$10, and the price of a liter of Pepsi is \$2. The table in Figure 1 shows some of the many combinations of pizza and Pepsi that the consumer can buy. The first row in the table shows that if the consumer spends all her income on pizza, she can eat 100 pizzas during the month, but she would not be able to buy any Pepsi at all. The second row shows another possible consumption bundle: 90 pizzas and 50 liters of Pepsi and so on. Each consumption bundle in the table costs exactly \$1,000. The graph in Figure 1 illustrates the consumption bundles that the consumer can choose. The vertical axis measures the number of liters of Pepsi, and the horizontal axis measures the number of pizzas. Three points are marked on this figure. At point A, the consumer buys no Pepsi and consumes 100 pizzas. At point B, the consumer buys no pizza and consumes 500 liters of Pepsi. At point C, the consumer buys 50 pizzas and 250 liters of Pepsi. Point C, which is exactly at the middle of the line from A to B, is the point at which the consumer spends an equal amount (\$500) on pizza and Pepsi. All the points on the line from A to B are possible. This line, called **the budget constraint**. It means the limit on the consumption bundles that a consumer can afford. In this case, it shows the trade-off between pizza and Pepsi that the consumer faces. **The budget line shows all possible combinations of 2 goods that a consumer can buy from given income and prices of commodities.** ($M = P_1X_1 + P_2X_2$) P=price, X=quantity

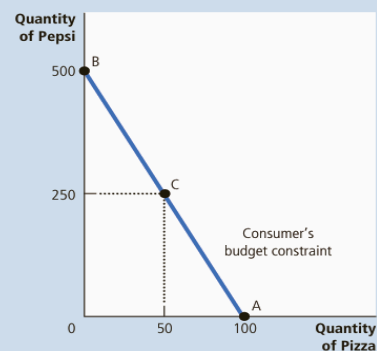
Slope of budget constraint: The slope of the budget constraint measures the rate at which the consumer can trade one good for the other. The slope between two points is calculated as the change in the vertical distance divided by the change in the horizontal distance (“rise over run”). From point A to point B, the vertical distance is 500 liters, and the horizontal distance is 100 pizzas. Thus, the slope is 5 liters per pizza sign. **Notice that the slope of the budget constraint equals the relative price of the two goods—the price of one good compared to the price of the other.** A pizza costs five times as much as a liter of Pepsi, so the opportunity cost of a pizza is 5 liters of Pepsi. **Slope of budget line: rise /run**

The budget constraint shows the various bundles of goods that the consumer can buy for a given income. Here the consumer buys bundles of pizza and Pepsi. The table and graph show what the consumer can afford if her income is \$1,000, the price of pizza is \$10, and the price of Pepsi is \$2.

Number of Pizzas	Liters of Pepsi	Spending on Pizza	Spending on Pepsi	Total Spending
100	0	\$1,000	\$ 0	\$1,000
90	50	900	100	1,000
80	100	800	200	1,000
70	150	700	300	1,000
60	200	600	400	1,000
50	250	500	500	1,000
40	300	400	600	1,000
30	350	300	700	1,000
20	400	200	800	1,000
10	450	100	900	1,000
0	500	0	1,000	1,000

FIGURE 1

The Consumer's Budget Constraint



Preferences: What the Consumer Wants:

The budget constraint is one piece of the analysis: It shows the combinations of goods the consumer can afford given her income and the prices of the goods. The consumer's choices, however, depend not only on her budget constraint but also on her preferences regarding the two goods. Therefore, the consumer's preferences are the next piece of our analysis.

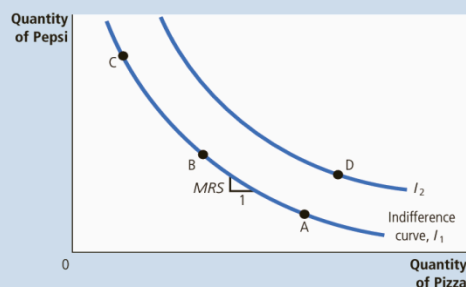
Representing Preferences with Indifference Curves

Indifference curve is a curve that shows consumption bundles that give the consumer the same level of **satisfaction**. An indifference curve shows the various bundles of consumption that make the consumer equally happy. In this case, the indifference curves show the combinations of pizza and Pepsi with which the consumer is equally satisfied. Figure 2 shows two of the consumer's many indifference curves. The consumer is indifferent among combinations A, B, and C because they are all on the same curve. Not surprisingly, if the consumer's consumption of pizza is reduced, say, from point A to point B, consumption of Pepsi must increase to keep her equally happy. If consumption of pizza is reduced again, from point B to point C, the amount of Pepsi consumed must increase yet again. The slope at any point on an indifference curve equals the rate at which the consumer is willing to substitute one good for the other. This rate is called the marginal rate of substitution (MRS). **MRS is the rate at which a consumer is willing to trade one good for other good. MRS shows sacrificing amount of one good in order to achieve one unit of other good.** In this case, the marginal rate of substitution measures how much Pepsi the consumer requires to be compensated for a one unit reduction in pizza consumption. Notice that because the indifference curves are not straight lines, the marginal rate of substitution is not the same at all points on a given indifference curve. The rate at which a consumer is willing to trade one good for the other depends on the amounts of the goods she is already consuming. The consumer is equally happy at all points on any given indifference curve, but she prefers some indifference curves to others. Because she prefers more consumption to less, higher indifference curves are preferred to lower ones. In Figure 2, any point on curve I.C 2 is preferred to any point on curve I.C 1. For example, the indifference curves tell us that point D is preferred to point A because point D is on a higher **indifference curve than point A**.

FIGURE 2

The Consumer's Preferences

The consumer's preferences are represented with indifference curves, which show the combinations of pizza and Pepsi that make the consumer equally satisfied. Because the consumer prefers more of a good, points on a higher indifference curve (I_2) are preferred to points on a lower indifference curve (I_1). The marginal rate of substitution (MRS) shows the rate at which the consumer is willing to trade Pepsi for pizza. It measures the quantity of Pepsi the consumer must be given in exchange for 1 pizza.



The slope of indifference curve depends upon MRS. If the MRS is diminishing Indifference curve will be convex. When MRS increasing it will be concave.

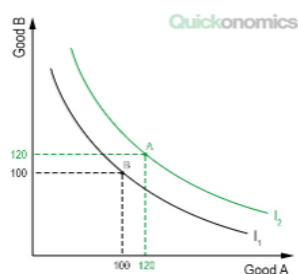
Slope of I.C = MRS

MRS = sacrifice / gain

Four Properties of Indifference Curves:

Property 1: Higher indifference curves are preferred to lower ones.

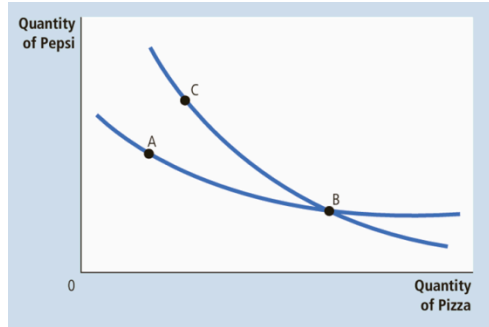
People usually prefer to consume more rather than less. This preference for greater quantities is reflected in the indifference curves. As Figure shows, higher indifference curves represent larger quantities of goods than lower indifference curves. Thus, the consumer prefers being on higher indifference curves.



- **Property 2: Indifference curves are downward-sloping.** The slope of an indifference curve reflects the rate at which the consumer is willing to substitute one good for the other. In most cases, the consumer likes both goods. Therefore, if the quantity of one good is reduced, the quantity of the other good must increase for the consumer to be equally happy. For this reason, most indifference curves slopes downward.



- **Property 3: Indifference curves do not cross.** To see why this is true, suppose that two indifference curves did cross, as in Figure 3. Then, because point A is on the same indifference curve as point B, the two points would make the consumer equally happy. In addition, because point B is on the same indifference curve as point C, these two points would make the consumer equally happy. But these conclusions imply that points A and C would also make the consumer equally happy, even though point C has more of both goods. This contradicts our assumption that the consumer always prefers more of both goods to less. Thus, indifference curves cannot cross.



- Property 4: **Indifference curves are bowed inward(convex to origin).**

It is due to **diminishing MRS**. In most cases, indifference curves are bowed inward. This is due to the marginal rate of substitution (MRS). We know that the marginal utility of consuming a good decreases as its supply increases (diminishing marginal utility). Therefore consumers are willing to give up more of this good to get another good of which they have little.

