Intermediate Microeconomics. Lecture 8

Demand and Substitution Effect

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Demand Curve

- Suppose that we let the price of good 1 change while we hold p_2 and income fixed
- Geometrically this involves pivoting the budget line
- We can think of connecting together the optimal points to construct the price **offer curve**
- This curve represents the bundles that would be demanded at different prices for good 1

- The **demand curve** is a plot of the demand function, $x_1(p_1, p_2, m)$, holding p_2 and m fixed at some values

Deriving a Demand Curve

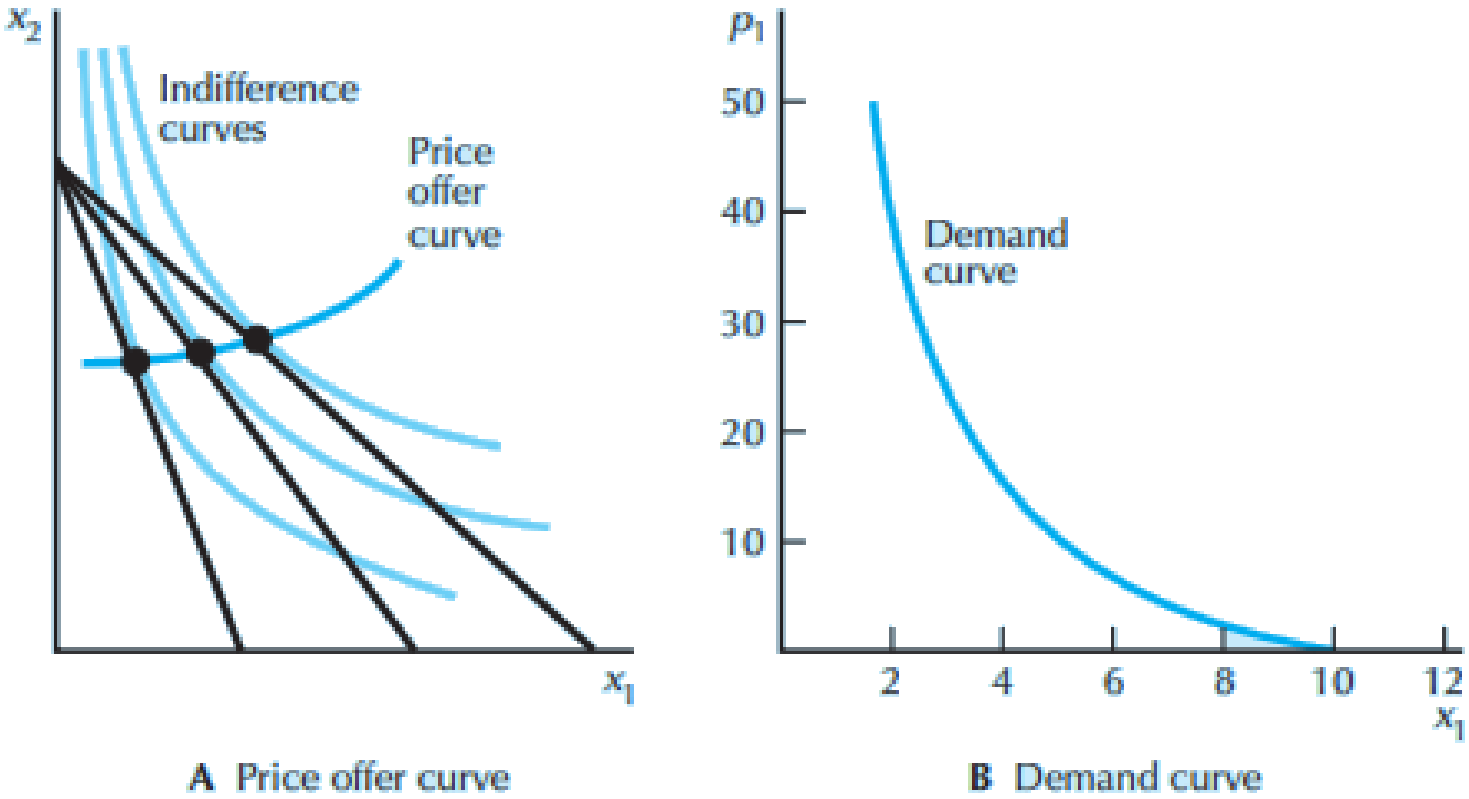

Figure: The price offer curve and demand curve (Source: Varian, Intermediate Microeconomics 8e, 2010)

Example: Perfect Complements

Consider the utility function for perfect substitutes: $u(x_1, x_2) = min\{ax_1, bx_2\}$. Previously we found that the demand function for good 1 will be

$$x_1 = \frac{m}{p_1 + \frac{a}{b}p_2}$$

If we fix m and p_2 and plot the relationship between x_1 and p_1, we get the curve depicted in the following figure

Example: Perfect Complements

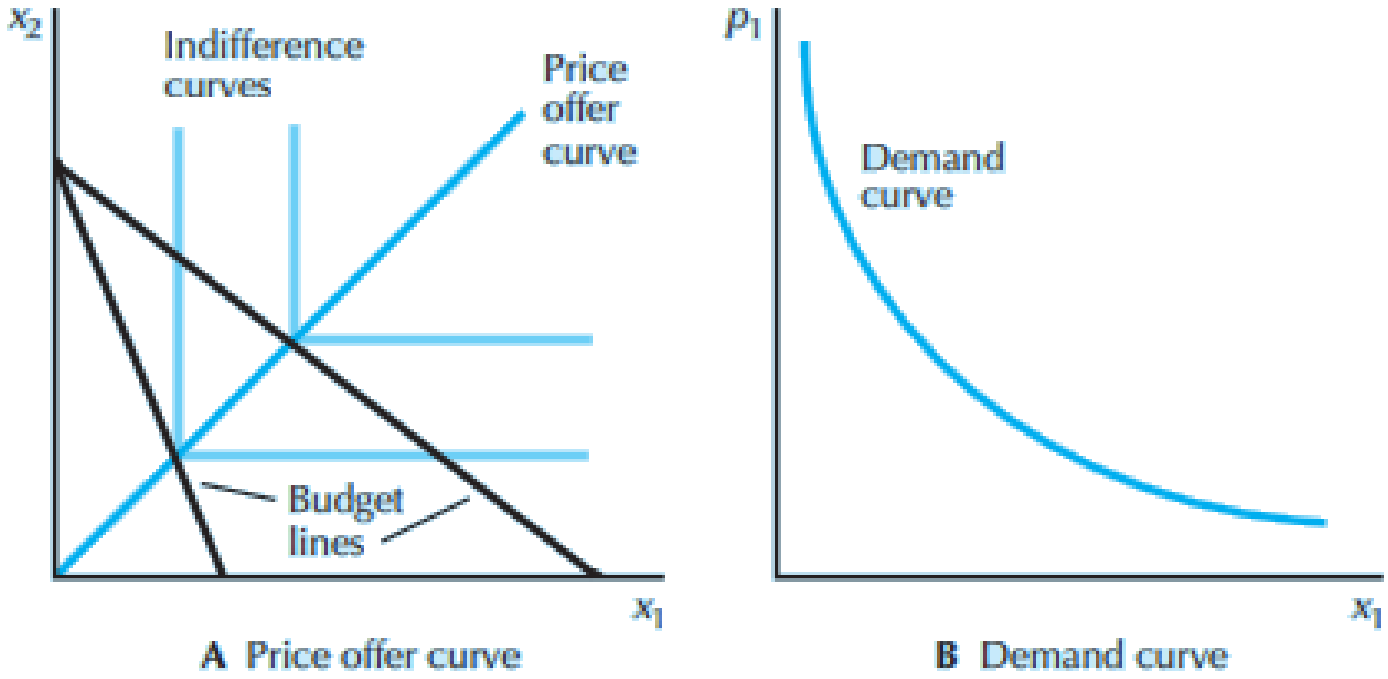

Figure: Perfect complements (Source: Varian, Intermediate Microeconomics 8e, 2010)

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Substitution and Income Effects

When the price of a good changes, the demand curve tells us how much consumption will change. That total change in quantity demanded, however, is a result of two distinct forces that affect consumers' decisions

- The **substitution effect** is the change in a consumer's consumption choices that results from a change in the relative prices of two goods
- The **income effect** is the change in a consumer's consumption choices that results from a change in the purchasing power of the consumer's income

Substitution and Income Effects

Two factors make this topic difficult.

- First, we never observe these two effects separately in the real world
- Second, the income effect occurs even when the consumer's measured income remains constant

Substitution and Income Effects

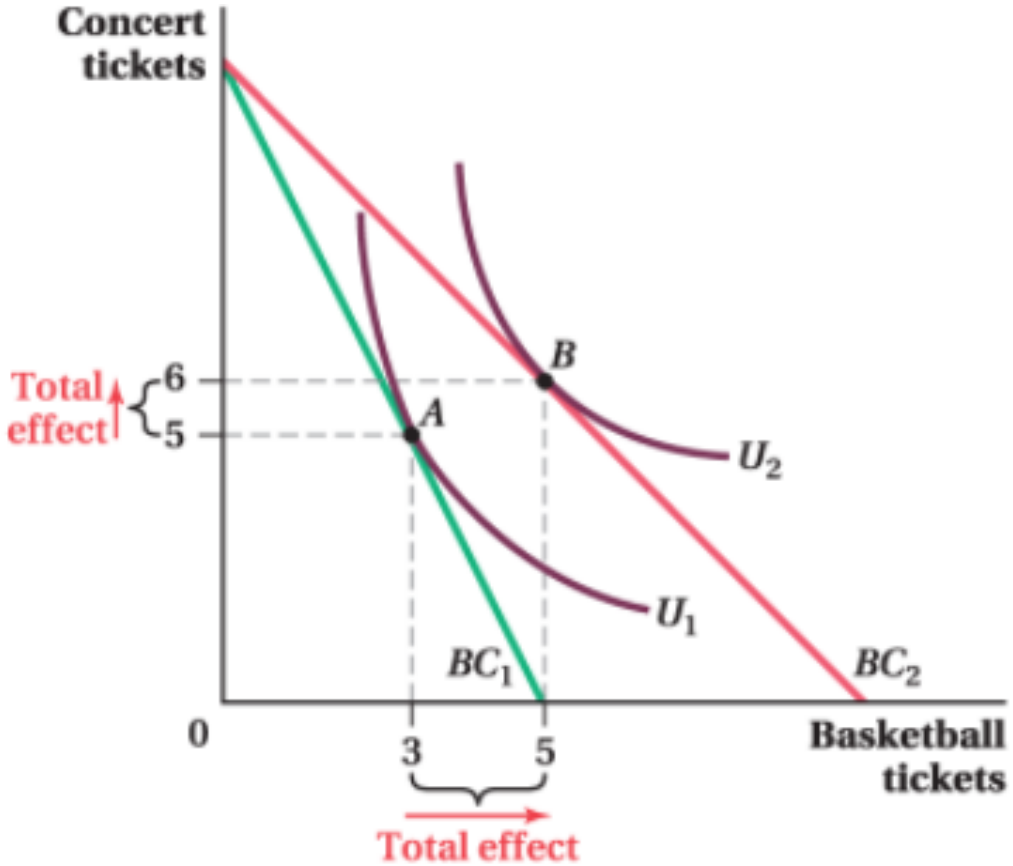

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Figure: Effects of a Fall in the Price of Basketball Tickets

Isolating the Substitution Effect

- To isolate the substitution effect, we need to figure out how many concert and basketball tickets the consumer would want to buy if, after the price change, there was no income effect
- For the individual to feel neither richer nor poorer, the bundle he consumes after the price change must provide him with the same utility he was receiving before the price change
- The new bundle must be on the initial indifference curve U_1

Isolating the Substitution Effect

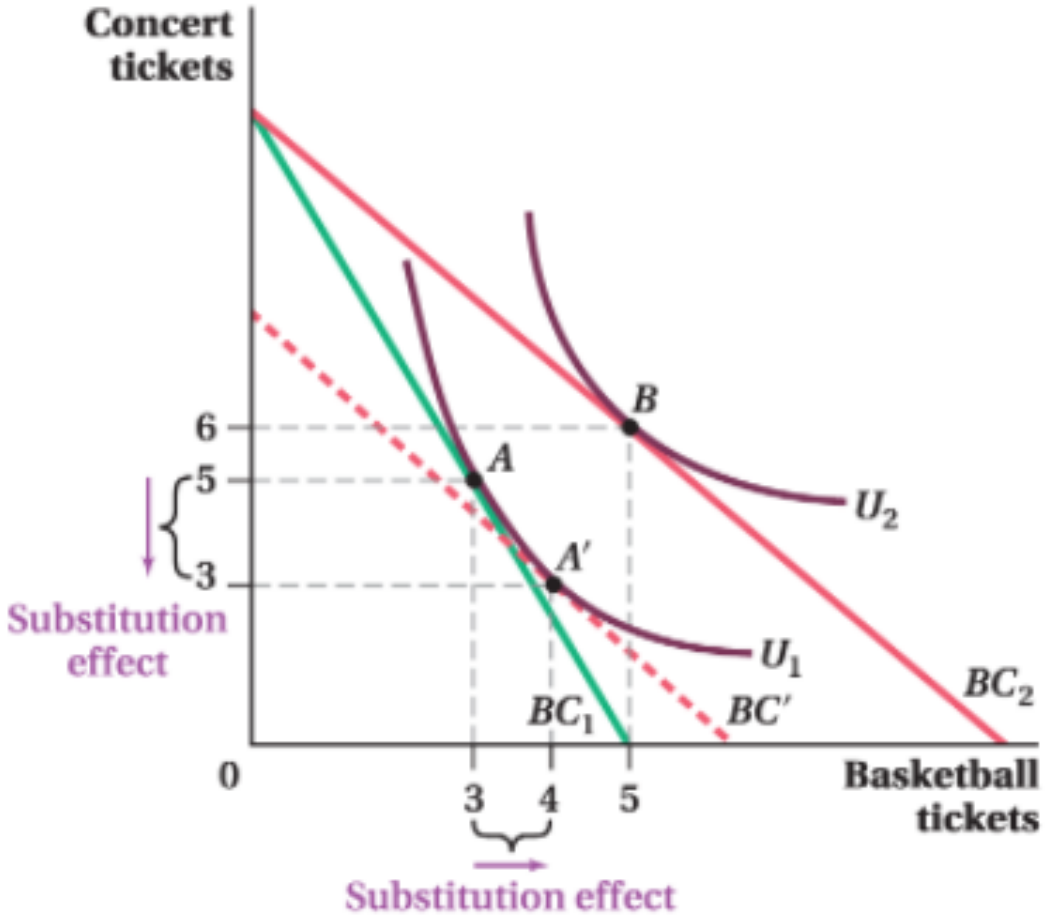

Figure: Substitution Effect

Isolating the Income Effect

- The income effect is the part of the total change in quantities consumed that is due to the change in the consumer's buying power after the price change.
- Notice that when the price of a good falls, the consumer becomes richer overall.
- The reduction in a good's price means there's a whole new set of bundles the individual can now buy that she/he couldn't afford before

Isolating the Income Effect

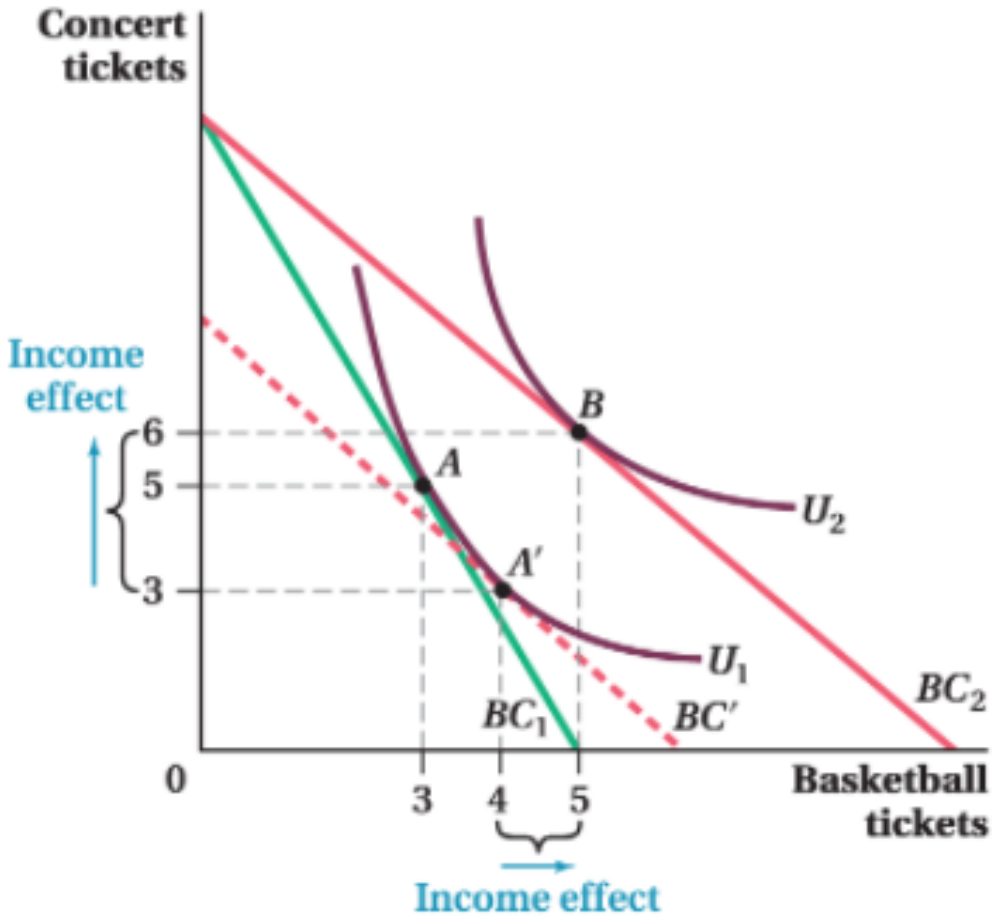

Figure: Income Effect

The Total Effects

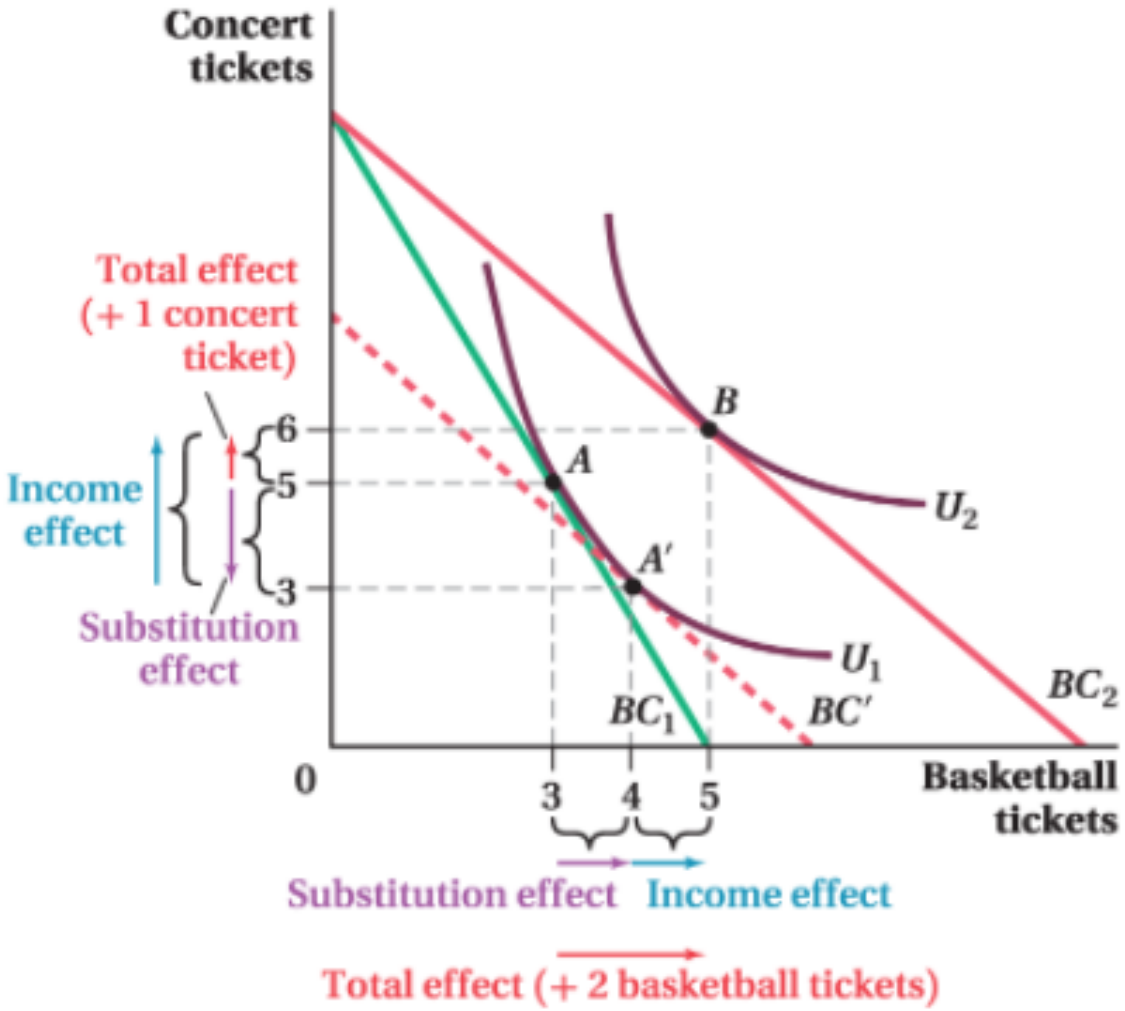

Figure: Total Effect

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Example: Inferior good

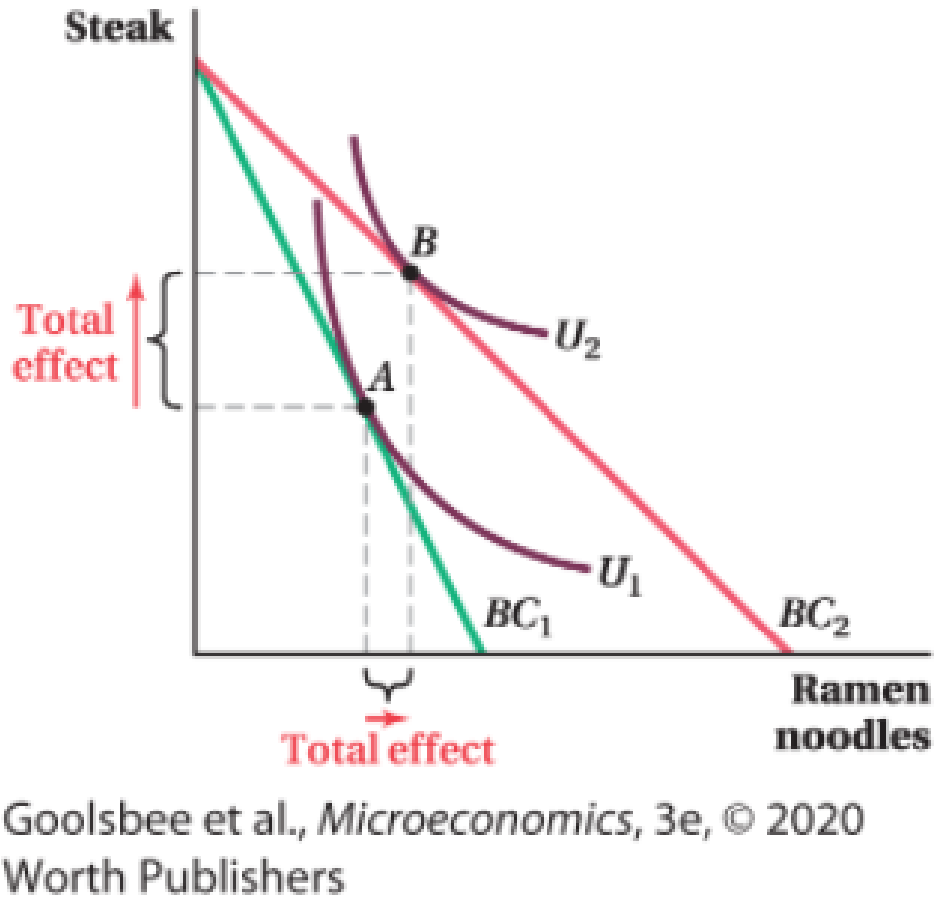

Figure: Fall in the Price of an Inferior Good

Example: Inferior good

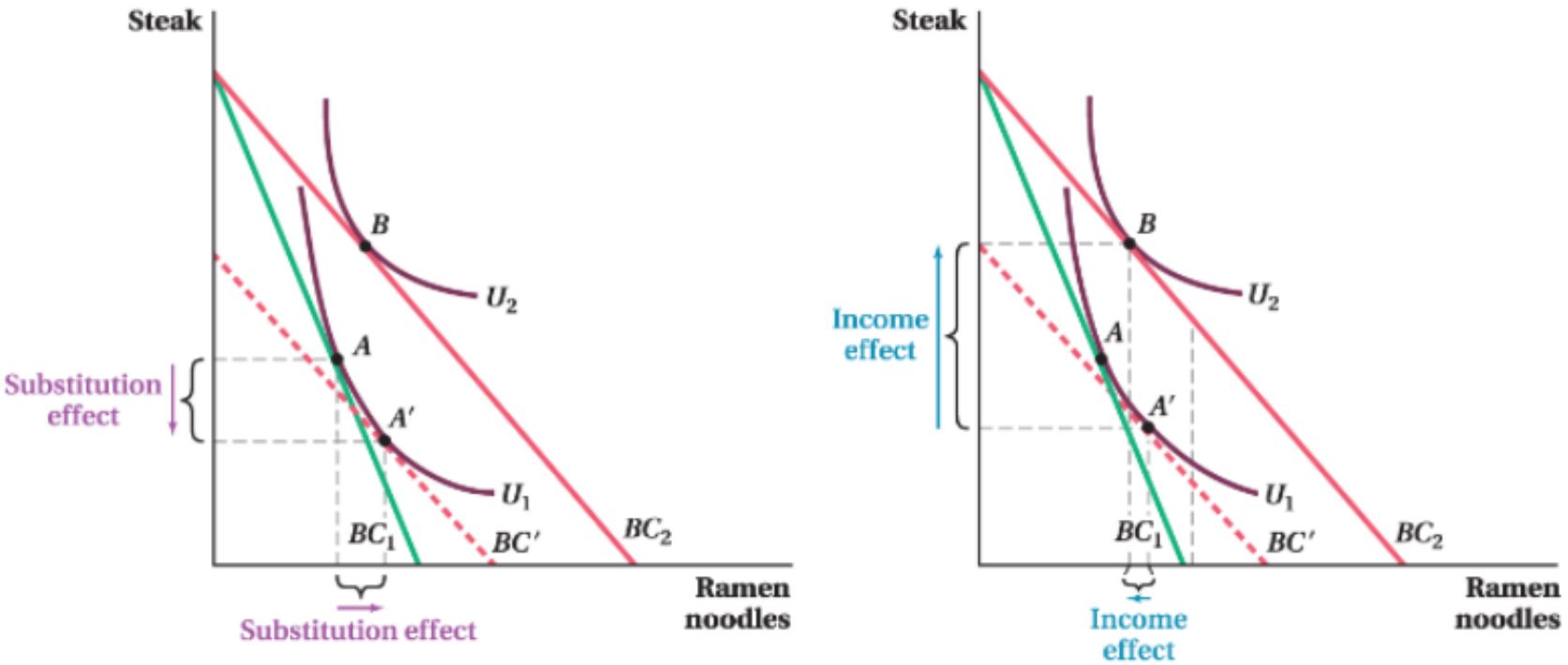

Figure: Substitution and Income Effects for an Inferior Good

Example: Inferior good

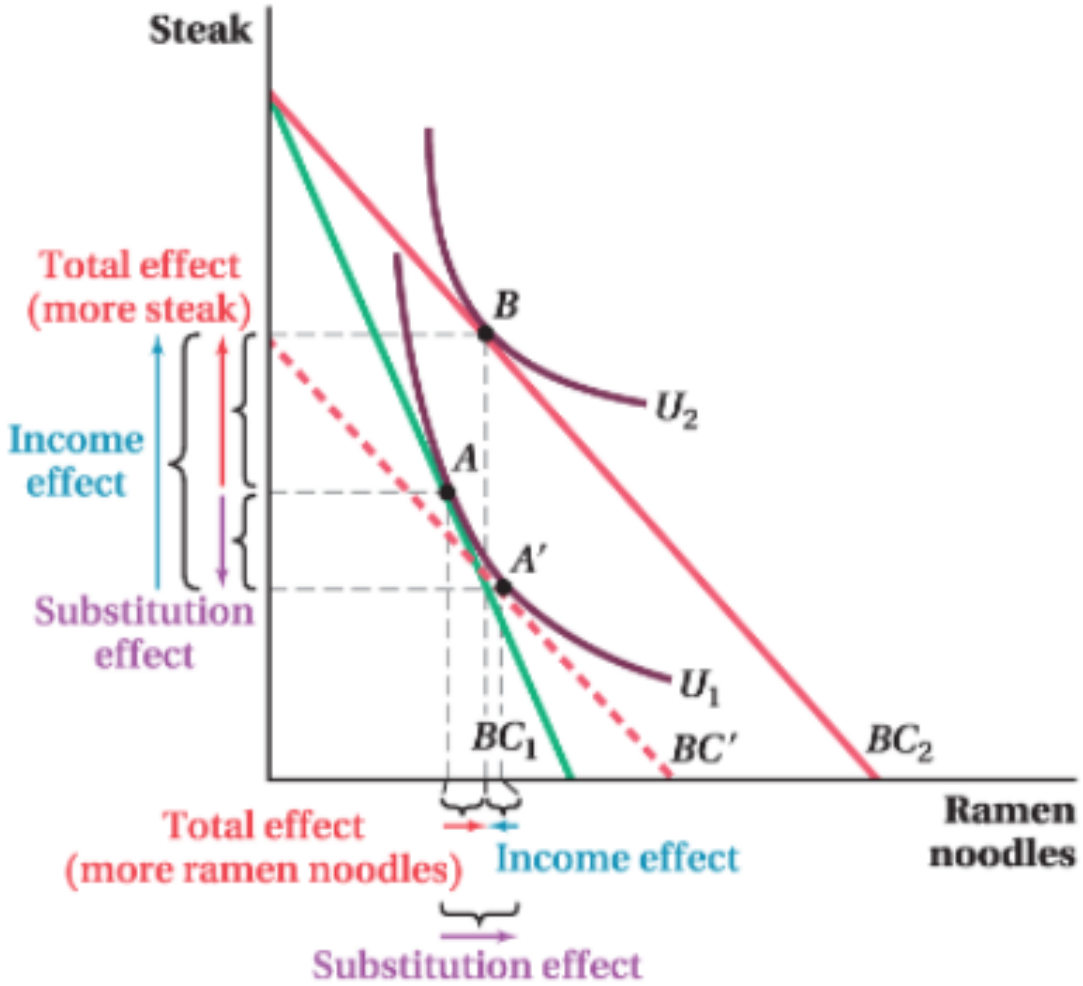

Figure: Total Effect for an Inferior Good

Example: Giffen good

- Giffen goods are goods for which a fall in price leads the consumer to want less of the good
- An inverse relationship does not exist between price and quantity demanded and the demand curves of Giffen goods slope up!
- For Giffen goods, the substitution effect of a price drop, which acts to increase the quantity a consumer demands of the good, is smaller than the reduction in the desired quantity caused by the income effect

Example: Giffen good

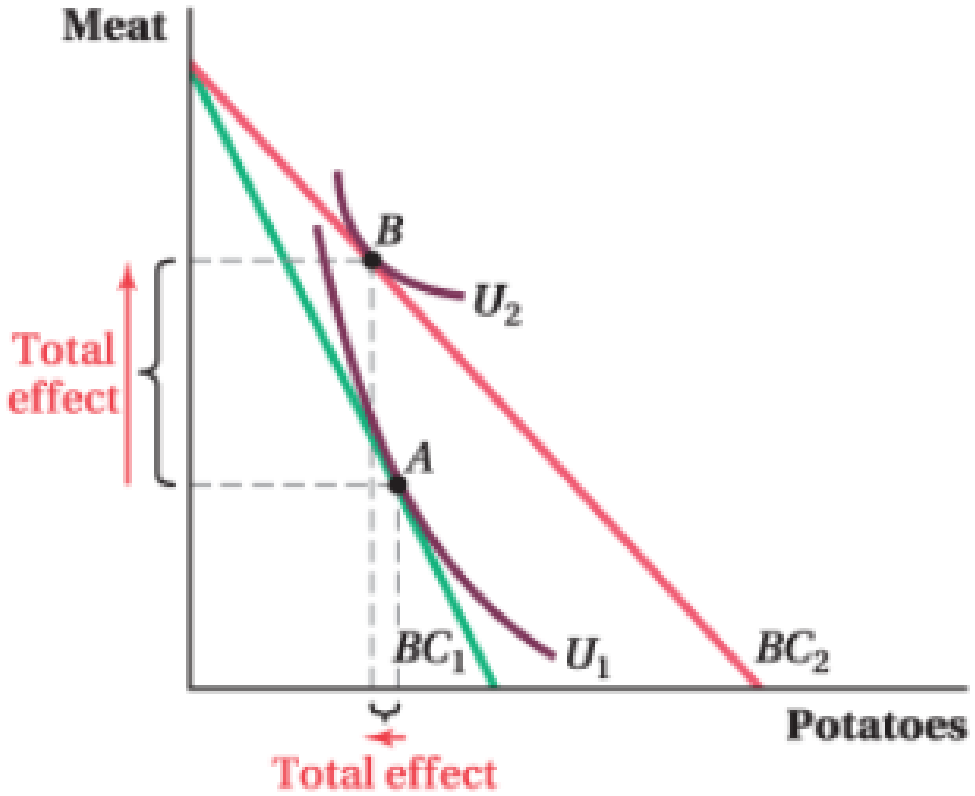

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Figure: Change in the Price of a Giffen Good