ECNS 204

Price Theory and Applications

Chapter 4 (Consumers in the Marketplace) – Landsburg

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Changes in Income

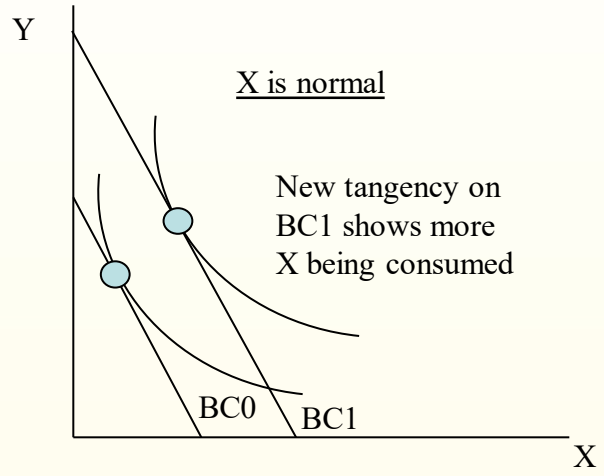
- Consider two goods:
  - X: a single good the consumer cares about
  - Y: a composite good (i.e., all other goods)
- We know that a change in income will induce a parallel shift in our budget line
- Consider our budget line equation:

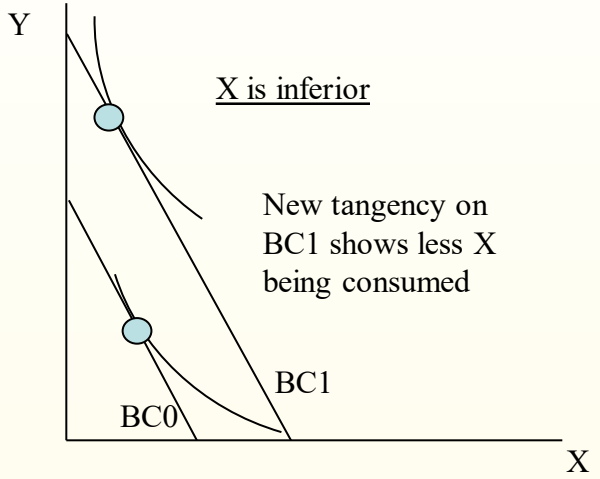
$$y = (-P_x/P_y)x + (I/P_y)$$

- we see that a change in income does not affect the slope of our budget line (i.e., $-P_x/P_y$)…it only affects the y-intercept.

Normal vs. Inferior Goods

- Normal good: an increase in income leads one to consume more of the good
- Inferior good: an increase in income leads one to consume less of the good
- This discretion allows us to know something about the new tangency point AFTER a change in income. Consider an increase in income:





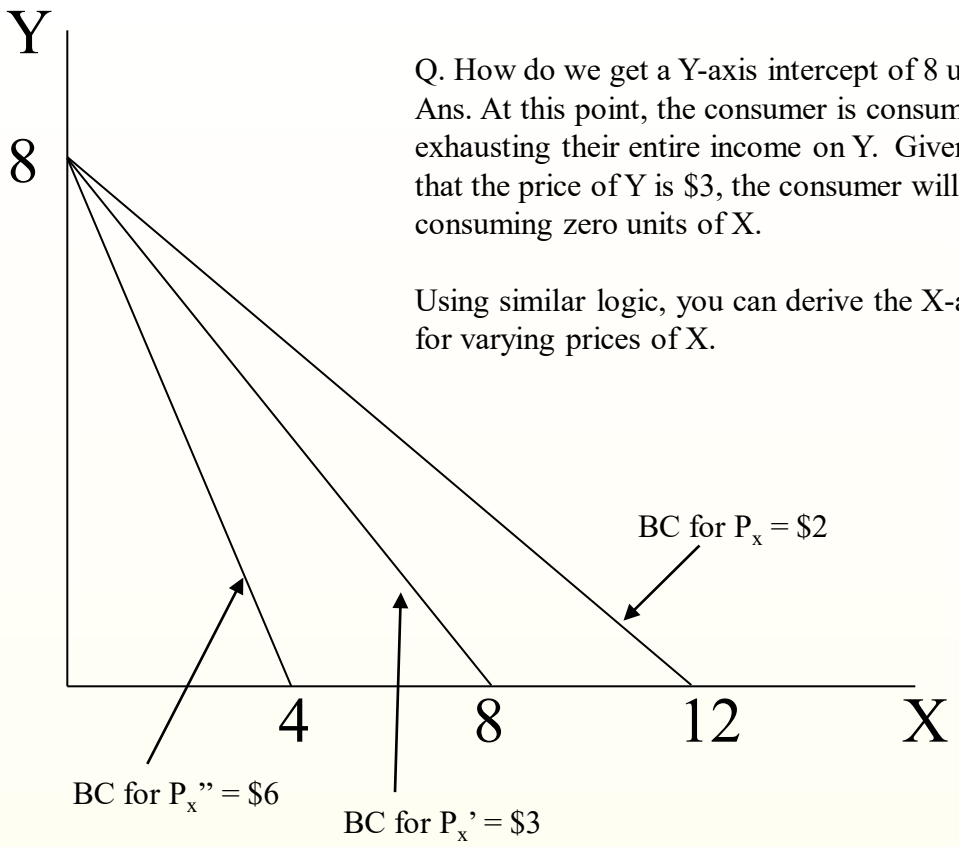
Changes in Price

- Here, instead of a change in income, we consider how a consumer responds to a change in price.
- Again consider the goods X and Y.
- Furthermore, to focus on a change in P_x, assume that P_y remains fixed
- Suppose that

  $P_y = \$3$ and $I = \$24$

  and consider the following prices for X

  $P_x = \$2$, $P_x' = \$3$, and $P_x'' = \$6$
- With this information, we can draw three different budget lines…



Q. How do we get a Y-axis intercept of 8 units?
Ans. At this point, the consumer is consuming zero units of X and exhausting their entire income on Y. Given that their income is $24 and that the price of Y is $3, the consumer will consume 8 units of Y when consuming zero units of X.

Using similar logic, you can derive the X-axis intercepts shown below for varying prices of X.

Let's consider what might happen when there is an increase in the price of X:
https://montana.techsmithrelay.com/k4Vi

Using the above diagram to derive a demand curve for good X: https://montana.techsmithrelay.com/PC7J

Income and Substitution Effects

- There are two effects of a price increase:
  - 1.) Income effect
  - 2.) Substitution effect
- First, we will consider the substitution effect:
  - Suppose you are in the habit of buying 5 hamburgers per day at $2 each
  - If the price increases to $3, you may decide the 5th hamburger is not worth it and only buy 4.
  - This is called the ***substitution effect*** of a price increase.
  - Put differently:
    - When the price of a good rises, you adjust consumption downward so as to avoid buying goods whose price is now above their marginal value.

Income and Substitution Effects

- Now, consider an income effect:
  - Again, suppose the price of hamburgers rises
  - Because you can't spend more than your entire income, you will have to consume less of something
    - It is entirely possible this "something" will include hamburgers.
  - More precisely:
    - The fact that you can no longer afford your original basket of goods is equivalent to a change in income; in a very real sense, a price increase makes you poorer.
    - This is called the ***income effect*** of a price increase.
  - When the price of a good increases, the income effect leads you to consume either less of it (if good is normal) or more of it (if good is inferior).

Isolating the Substitution Effect

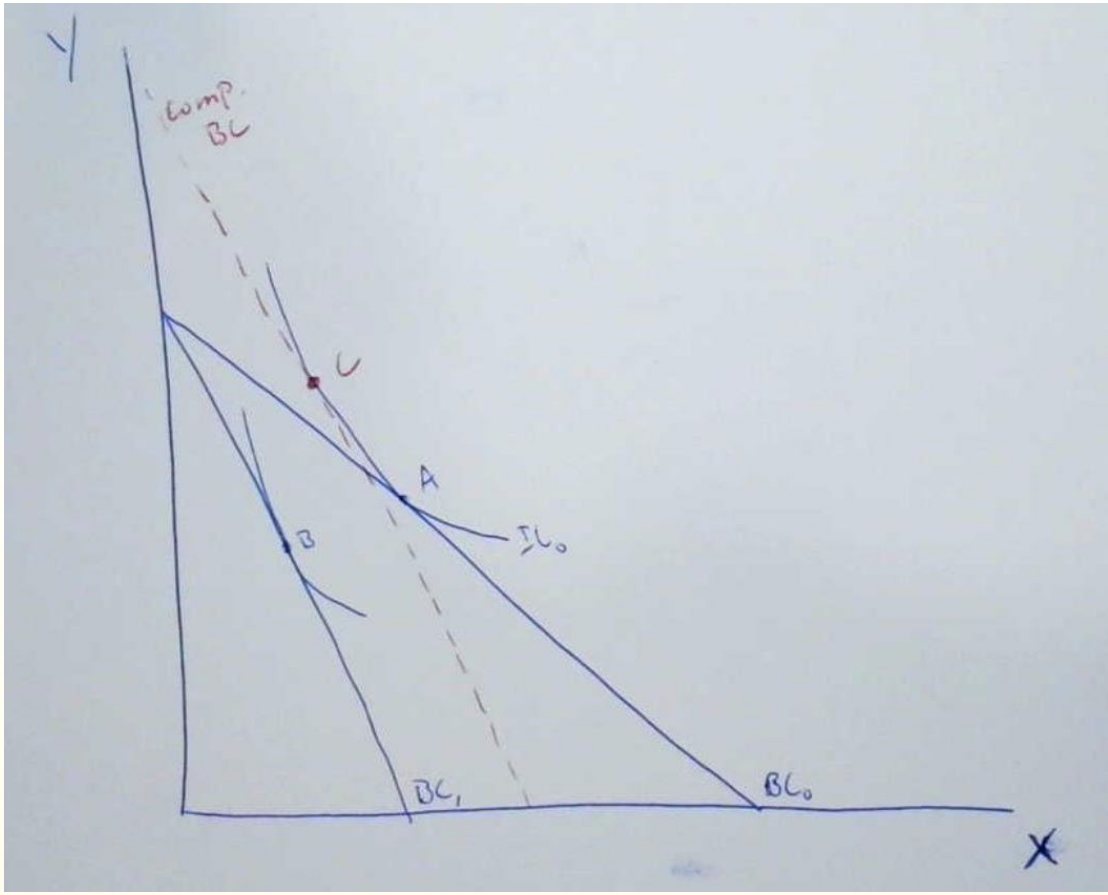
- Consider two goods: candy bars and a composite good (consisting of all other goods).
- What happens to the budget line?
- How much of the decrease in quantity is due to a substitution effect? How much is due to the income effect? How do we show this? Let's work through this in the following link: https://montana.techsmithrelay.com/Ux3r
- Let's think about the diagram we just worked through in the above link a bit more…
- When the price increases and the consumer moves from the tangency at A to the tangency at B, we can imagine this happening in two steps:
  - A pure substitution effect (from A to C)
  - Followed by a pure income effect (from C to B)
- In reality, however, what do we observe?
  - Rarely able to observe these separate substitution and income effects…that is, we only observe movement from A to B.

Isolating the Substitution Effect

- But, if we could perform an experiment, we could disentangle the two effects:
  - Suppose we could lay some money on the ground near a candy machine for a consumer that would result in an income shift to the compensated budget line (this was the budget line we drew in red in the video).
  - Then, we could see the consumer decide to move from A to C.
    - Right before he makes the purchase, we grab money away and then we would see his movement from C to B.

Why Demand Curves Slope Downward

- Consider our diagram with income and substitution effects again (due to an increase in the price of X



3 key observations:
1.) C is always to the left of A. Why?
-They are on same IC, but C is at tangency with a steeper budget line…so, C must be on a steeper portion of the IC

2.) If X is normal, B is to the left of C. Why?
-The move from C to B represents a pure change in income.
-When you move from the compensated budget line to BC_1, income falls. So, you consume less of X.

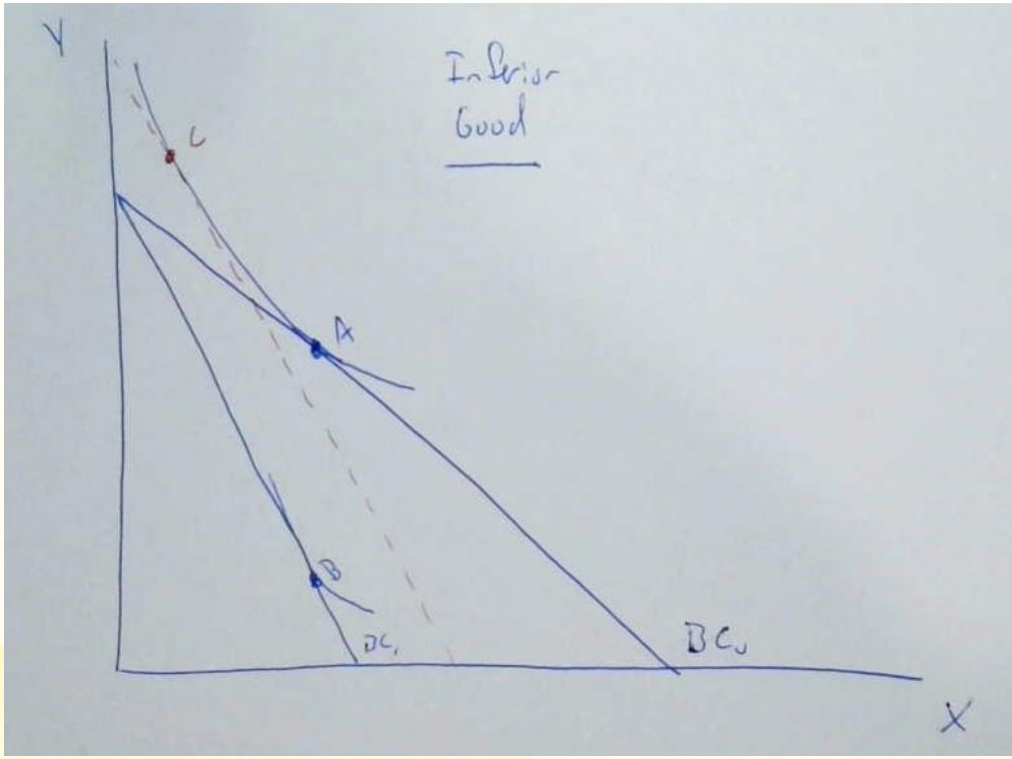
3.) If X were inferior, then we would draw the tangency at point B such that B would lie to the right of C. Here, when income falls, you consume more of the inferior good.

Addressing Giffen Goods (i.e., goods with an upward sloping demand curve)

- Again, consider the diagram from the last slide
  - When the price of X goes up, quantity demanded falls from A to C and then from C to B…therefore, X is NOT a Giffen good.
    - The demand curve for a normal good is going to slope downward…no normal good can ever be a Giffen good.
- Now, suppose X is inferior. The below diagram now applies (where B is the right of C)

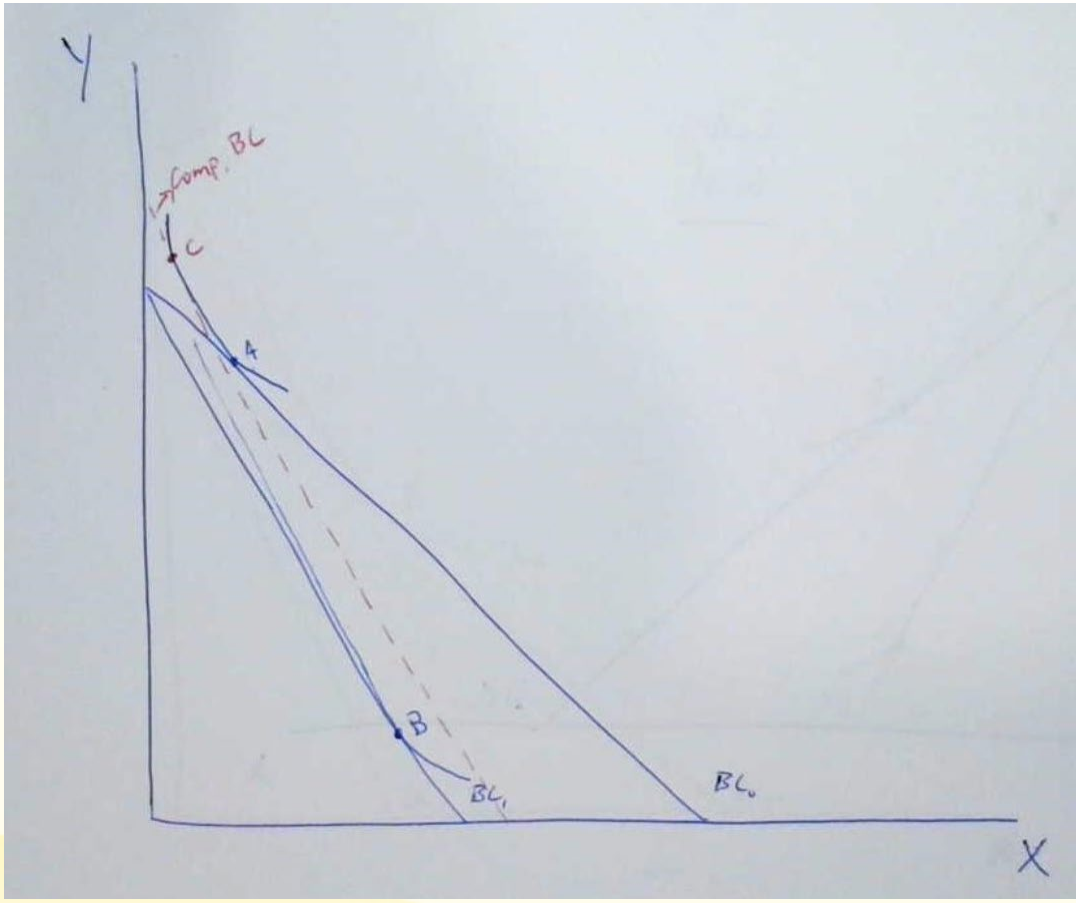
-When price ↑, consumer moves from A to B
-First, move from A to C due to a substitution effect.
-Then, b/c X is inferior, move to the ***right*** from C to B

*But, we easily see that we can draw no conclusions about the relative locations of pts. A and B. In this graph, the substitution effect is larger than the income effect…so, X is not a Giffen!



Addressing Giffen Goods (i.e., goods with an upward sloping demand curve)

- However, we could easily draw the graph such that the income effect dominates…as shown below:



-Here, we have drawn B to the right of both pts. A and C.
-In this case, the increase in price has ultimately caused the quantity of X consumed to go up.

Q. Just how likely is this scenario? We consider this on the following slide…

Addressing Giffen Goods (i.e., goods with an upward sloping demand curve)

- First, let's think about the size of the income effect.
- Suppose the price of chewing gum rises. Q. Will you feel slightly poorer or a lot poorer?
  - Ans. Of course, you will only feel very slightly poorer…the income effect associated with an increase in the price of something like chewing gum is extremely small.
- Suppose the price of tuition rises…do you feel slightly or a lot poorer?
  - Ans. You could feel a lot poorer…the income effect associated with a tuition increase could be large
- *In general, an income effect of a price change is large ONLY for goods that account for a large portion of your expenditures.
  - But, these huge income effects are pretty rare.
- So, a Giffen good must satisfy two conditions:
  - 1.) Must be inferior
  - 2.) Must account for a substantial portion of your expenditures
- Each of these conditions are unusual…most goods are normal and only a few goods account for a substantial portion of expenditures. It is extremely rate that a good satisfies both of these conditions simultaneously.