

Managerial Economics

Chapter 4

Consumer Choice

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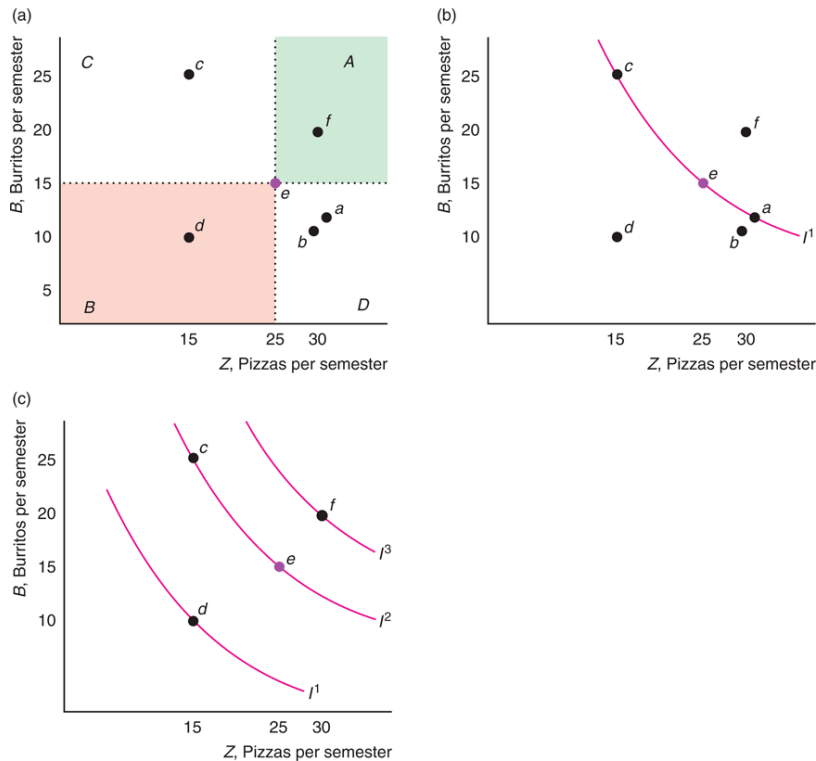
Introduction

- Managerial Problem
 - Paying employees to relocate
 - When Google wants to transfer an employee from its Seattle office to its London branch, it has to decide how much compensation to offer the worker to move.
- Solution Approach
 - Managers can assess the goods & services employees consume in the original location and entice them to relocate by offering a compensation enough to allow them to consume essentially the same items in the new location. However, economists point out these packages usually overcompensate employees. To avoid costly overcompensation, managers may use the theory of consumer choice.
- Empirical Methods
 - Individual tastes or preferences determine the pleasure or satisfaction people derive from the goods and services they consume
 - Consumers face constraints or limits on their choices, particularly because their budgets limit how much they can buy.
 - Consumers seek to maximize the level of satisfaction they obtain from consumption subject to the constraints they face. People seek to “do the best with what they have.”

4.1 Consumer Preferences

- Choices and Allocation

- A consumer faces choices involving many goods and must allocate his or her available budget to buy a bundle of goods.
- Would ice cream or cake make a better dessert? Is it better to rent a large apartment or rent a single room and use the savings to pay for concerts?
- How do consumers choose the bundles of goods they buy?
 - One possibility is that consumers behave randomly and blindly choose one good or another without any thought.
 - Another is that they make systematic choices.
- Tastes and Preferences
 - To explain consumer behavior, economists assume that consumers have a set of tastes or preferences that they use to guide them in choosing between goods.
 - These tastes differ substantially among individuals. For example, three out of four European men prefer colored underwear, while three out of four American men prefer white underwear.
- Three Properties of Consumer Preferences
 - Completeness: when a consumer faces a choice between any two bundles of goods, only one of the following is true. The consumer might prefer the first bundle to the second, or the second bundle to the first, or be indifferent between the two bundles. Indifference is allowed, but indecision is not.
 - Transitivity: if a is strictly preferred to b and b is strictly preferred to c , it follows that a must be strictly preferred to c . Transitivity applies also to weak preference and indifference relationships.
 - More is better: all else being the same, more of a good is better than less. This is a nonsatiation property.
- Preference Maps
 - A preference map is a complete set of indifference curves that summarize a consumer's tastes.
 - Panel c of Figure 4.1 shows three of Lisa's indifference curves: I^1 , I^2 , and I^3 . In this figure, the indifference curves are parallel, but they need not be.
- Four Properties of Indifference Curve Maps
 - Bundles on indifference curves farther from the origin are preferred to those on indifference curves closer to the origin.
 - There is an indifference curve through every possible bundle.
 - Indifference curves cannot cross.
 - Indifference curves slope downward.
- **Figure 4.1 Bundles of Pizzas and Burritos That Lisa Might Consume**



- Willingness to Substitute Between Goods
 - Marginal Rate of Substitution (MRS): shows the rate at which a consumer can substitute one good for another while remaining on the same indifference curve.
 - If pizza is on the horizontal axis in Figure 4.3 (a), Lisa’s marginal rate of substitution of burritos for pizza is $MRS = \Delta B / \Delta Z$, where ΔB is the number of burritos Lisa will give up to get ΔZ more pizzas while staying on the same indifference curve.
 - The indifference curves in Figure 4.3 (a) are convex or “bowed in” toward the origin. This willingness to trade fewer burritos for one more pizza reflects a diminishing marginal rate of substitution.
 - Convex indifference curves show that a consumer views two goods as imperfect substitutes (panel a in Figure 4.3 and panel c in Figure 4.4).
 - Straight-line indifference curves reflect perfect substitutes, which are goods that are essentially equivalent from the consumer’s point of view (Panel a, Figure 4.4).
 - Right-angle indifference curves reflect perfect complements: goods that an individual wants to consume only in fixed proportions (Panel b, Figure 4.4).

- **Figure 4.3 Marginal Rate of Substitution**

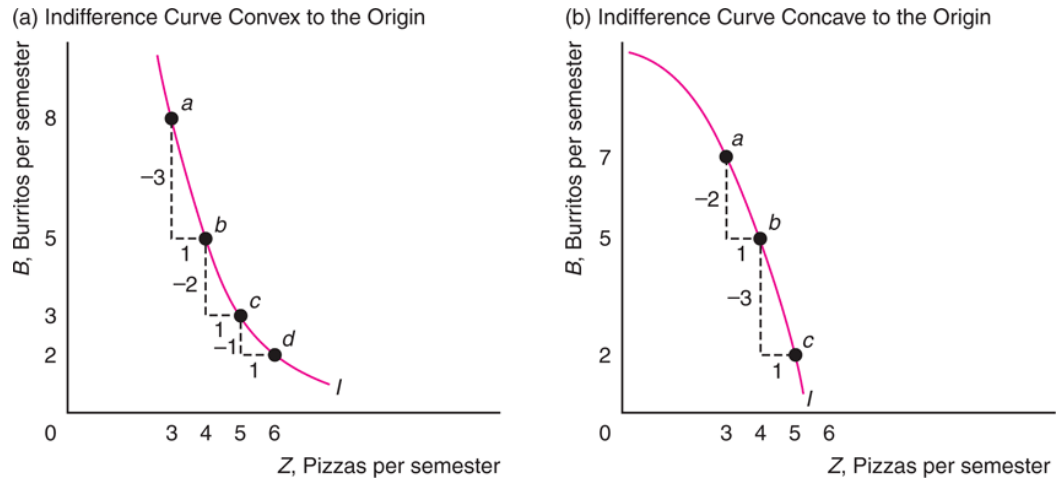
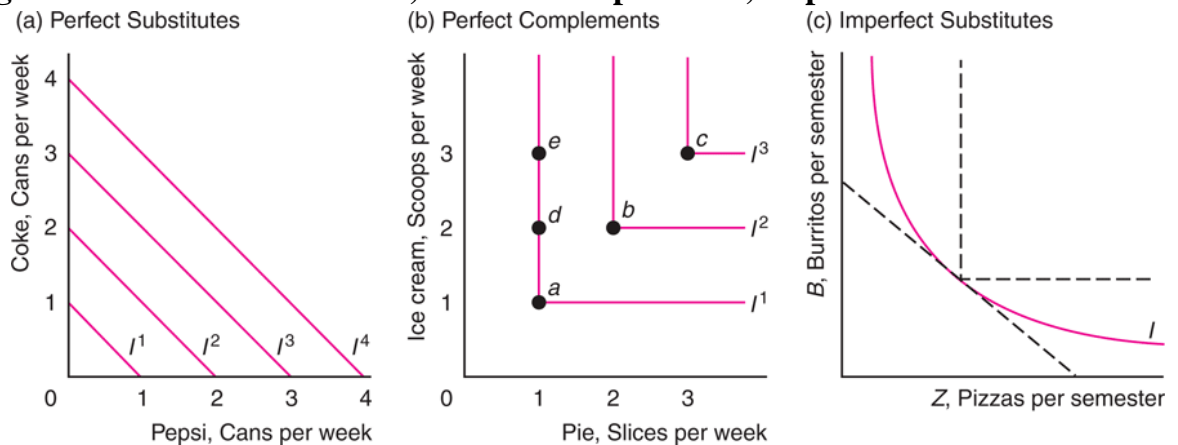


Figure 4.4 Perfect Substitutes, Perfect Complements, Imperfect Substitutes

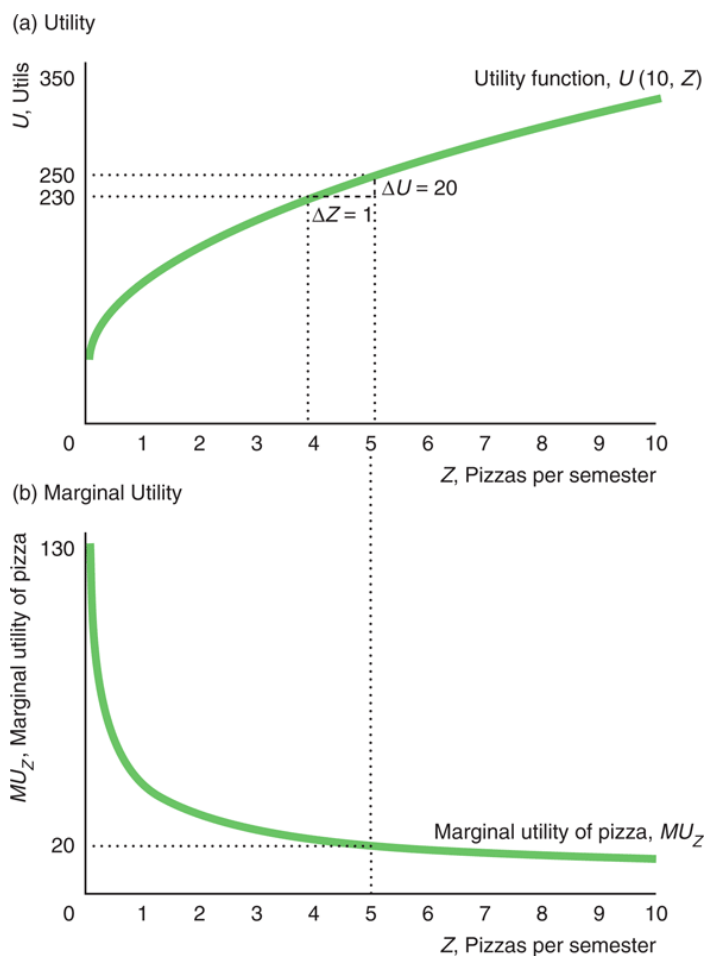


4.2 Utility

- Utility Functions
 - If we knew the utility function—the relationship between utility measures and every possible bundle of goods—we could summarize the information in indifference maps succinctly.
 - Utility functions do not exist in any fundamental sense. If you asked your mother what her utility function is, she would be puzzled. But, she can easily answer: “Do you want one scoop of ice cream with two pieces of cake or two scoops of ice cream with one piece of cake?” Also, she may not know how much more she prefers one bundle to the other.
- Ordinal and Cardinal Utility
 - If we know only a consumer’s relative rankings of bundles, our measure of utility is ordinal.
 - If we know absolute numerical comparisons, as with length or weight, our measure of utility is cardinal.
 - Most of our discussion of consumer choice in this chapter holds if utility has only ordinal properties. We care only about the relative utility or ranking of the two bundles.

- Marginal Utility (MU)
 - Marginal utility is the slope of the utility function as we hold the quantity of the other good constant, $MU_Z = \Delta U / \Delta Z$.
 - Lisa's marginal utility from increasing her consumption of pizza from 4 to 5 in Figure 4.5 is $MU_Z = \Delta U / \Delta Z = 20 / 1 = 20$
- Marginal Rates of Substitution (MRS)
 - The MRS depends on the negative of the ratio of the marginal utility of one good to the marginal utility of another good.
 - Lisa's MRS depends on the negative of the ratio of the MU of pizza to the MU of burritos, $MRS = - MU_Z / MU_B$

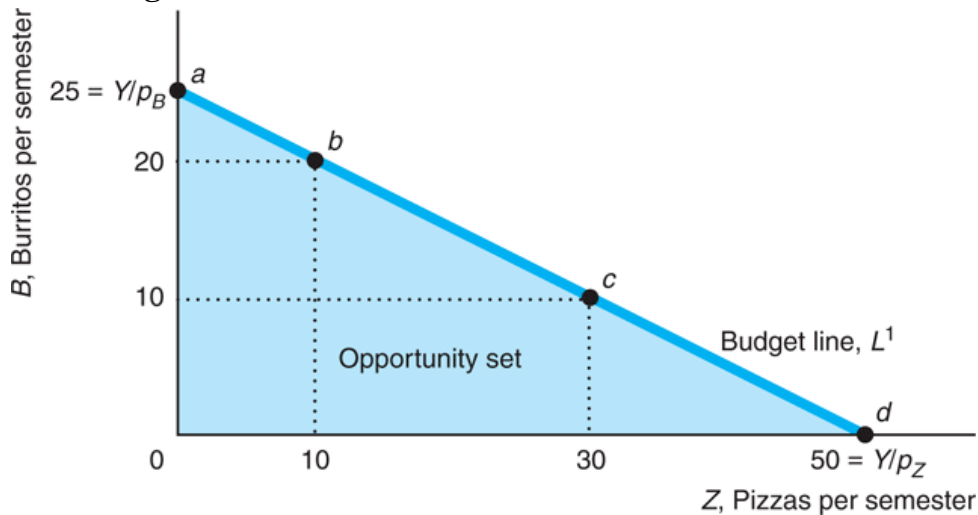
Figure 4.5 Utility and Marginal Utility



4.3 The Budget Constraint

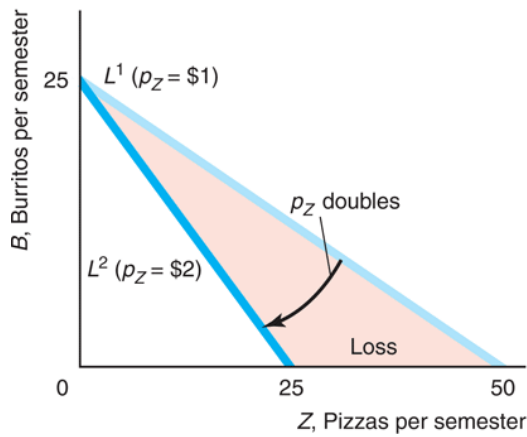
- Budget Constraint or Budget Line
 - Consumers maximize their well-being subject to constraints, and the most important is the budget constraint: the bundles of goods that can be bought if the entire budget is spent on those goods at given prices.
 - Lisa's budget constraint in Figure 4.6 is $p_B B + p_Z Z = Y$, where $p_B B$ is the amount she spends on burritos and $p_Z Z$ is the amount she spends on pizzas.

- The opportunity set is all the bundles a consumer can buy, including all the bundles inside the budget constraint and on the budget constraint (all those bundles of positive Z and B such that $p_B B + p_Z Z \leq Y$).
- Slope of the Budget Line
 - It is determined by the relative prices of the two goods and is called the marginal rate of transformation ($MRT = -p_Z/p_B$)
 - Lisa's $MRT = -1/2$, she can “trade” an extra pizza for half a burrito; or equivalently, she has to give up two pizzas to obtain an extra burrito.
- **Figure 4.6 Budget Line**

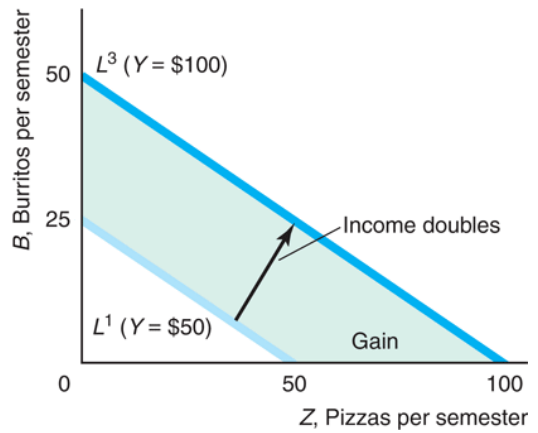


- Effects of a Change in Price on the Opportunity Set
 - If the price of pizza doubles but the price of burritos is unchanged, the budget line swings in toward the origin (Figure 4.7a).
 - The new budget line is steeper and lies inside the original one. Unless Lisa only wants to eat burritos, she is unambiguously worse off, she can no longer afford the combinations of pizza and burritos in the shaded “Loss” area.
- Effects of a Change in Income on the Opportunity Set
 - If the consumer’s income increases, the consumer can buy more of all goods.
 - A change in income affects only the position and not the slope of the budget line.
 - If Lisa’s income increases and relative prices do not change, her budget line shifts outward (away from the origin) and is parallel to the original constraint (Figure 4.7b)
- **Figure 4.7 Changes in the Budget Line**

(a) Price of Pizza Doubles



(b) Income Doubles



4.4 Constrained Consumer Choice

- Consumer's Optimal Bundle

- The optimal bundle must lie on an indifference curve that touches the budget line but does not cross it.
- There are two ways to reach this outcome.
- An interior solution occurs when the optimal bundle has positive quantities of both goods and lies between the ends of the budget line. In Figure 4.8, Bundle *e* on indifference curve I^2 is the optimum interior solution.
- A corner solution occurs when the optimal bundle is at one end of the budget line, where the budget line forms a corner with one of the axes. Bundle *e* on indifference curve I^2 in Figure 4.9 is a corner solution.

Figure 4.8 Consumer Maximization, Interior Solution

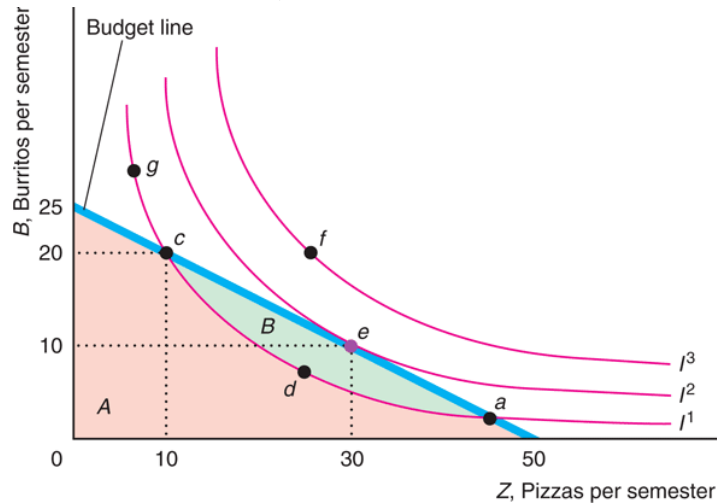
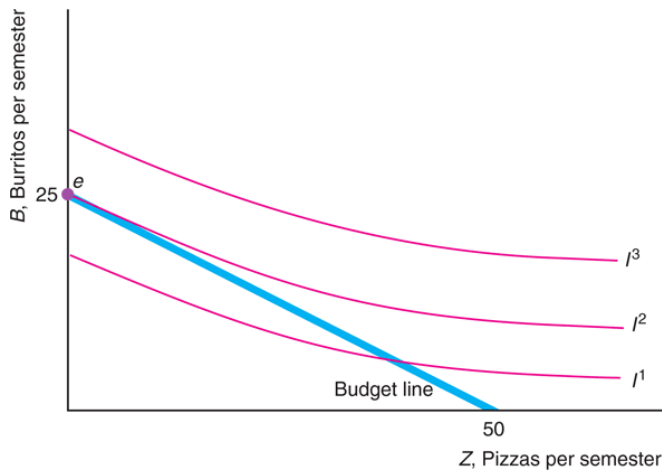
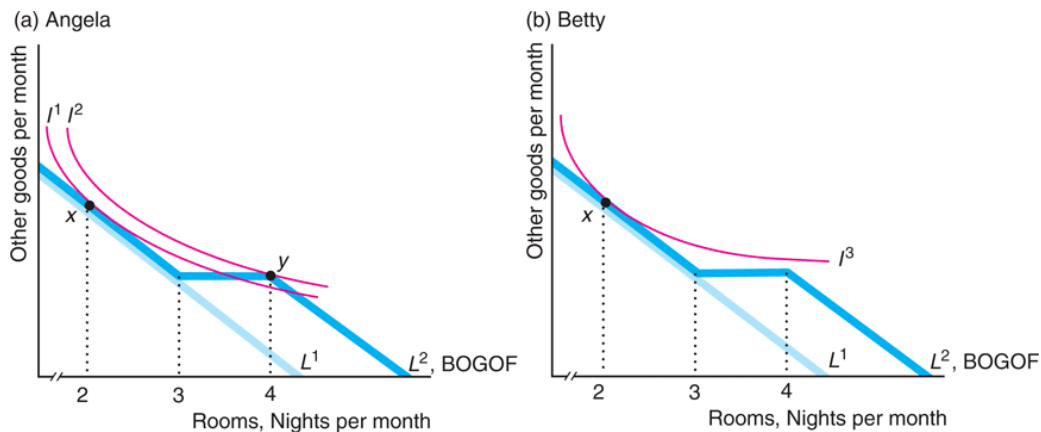


Figure 4.9 Consumer Maximization, Corner Solution



- Buy One, Get One Free (BOGOF)
 - The BOGOF promotion creates a kink in the budget line and its acceptance depends on the shape of the indifference curves.
 - In Figure 4.10a, with the BOGOF promotion “buy 3 nights, get the 4th free” the new budget line is L^2 .
 - Without the promotion, Angela’s indifference curve I^1 is tangent to L^1 at point x , so she chooses to spend two nights at the resort. With the BOGOF promotion, her indifference curve I^1 cuts the new budget line L^2 . There’s a higher indifference curve, I^2 , that touches L^2 at point y , where she chooses to stay four nights.
 - In panel b, without the promotion Betty chooses to stay two nights at x where her indifference curve I^3 is tangent to L^1 . Because I^3 does not cut the new budget line L^2 , no higher indifference curve can touch L^2 , so Betty stays only two nights, at x , and does not take advantage of the BOGOF promotion.

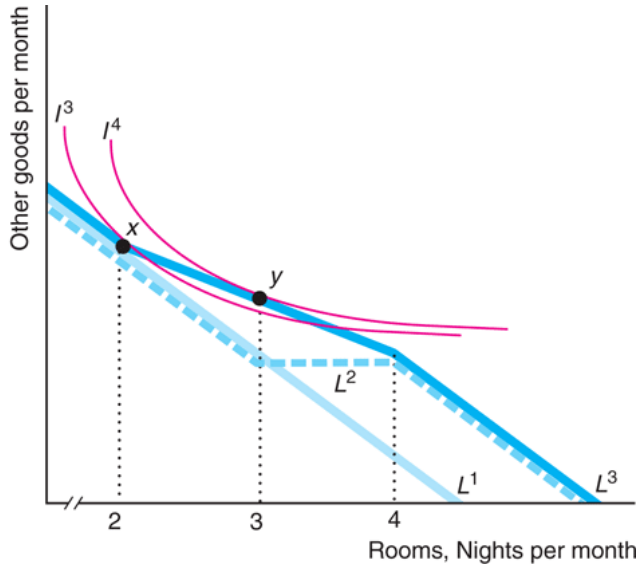
• **Figure 4.10 BOGOF Promotion**



- BOGOF versus a Half-Price Promotion
 - Consumers accept BOGOF promotions only if the pre-promotion indifference curve crosses the new budget line. However, BOGOF does not work with all consumers.
 - A half-price promotion may be more effective than BOGOF if a manager can design a promotion such that consumers’ indifference curves *must* cross the new budget line so that consumers will definitely participate.
 - In Figure 4.11, the BOGOF budget line is L^2 but Betty’s original indifference curve, I^3 does not cross L^2 , so she will not take advantage of the BOGOF promotion. However,

because I^3 crosses the half-price promotion budget line L^3 , Betty takes advantage of it. Betty's optimal bundle is y to stay three nights, which is located where her indifference curve I^4 is tangent to the half-price promotion line L^3 .

• **Figure 4.11 Half-Price Versus BOGOF Promotions**



4.5 Deriving Demand Curves

- An individual chooses an optimal bundle of goods by picking the point on the highest indifference curve that touches the budget line.
- A change in price causes the budget line to rotate, so that the consumer chooses a new optimal bundle.
- By varying one price and holding other prices and income constant, we determine how the quantity demanded changes as the price changes, which is the information we need to draw the demand curve.

4.6 Behavioral Economics

- Tests of Transitivity
 - It is appropriate to assume that adults exhibit transitivity for most economic decisions, but not for children or when novel goods are introduced.
- Endowment Effects
 - People place a higher value on a good if they own it than they do if they are considering buying it.
- Salience
 - People are more likely to consider information if it is presented in a way that grabs their attention or if it takes relatively little thought or calculation to understand.

Managerial Solution

- Managerial Problem
 - When Google wants to transfer an employee from its Seattle office to its London branch, it has to decide how much compensation to offer the worker to move.
- Solution

- Managers collect information about the cost of living in various cities around the world from multiple sources. They know that it is more expensive to buy the same bundle of goods in one city than another and that relative prices differ across cities.
- Typical relocation: Alex's firm wants to transfer him from its Seattle office to its London office, where he will face different prices and cost of living. Alex spends his money on housing and entertainment, and gets a bundle s that maximizes his satisfaction in Seattle. The firm offers him enough British pounds to buy bundle s in London.
- Alex may be better off: entertainment is relatively cheaper in London than Seattle, but because Alex is paid enough to buy bundle s , he can substitute housing with entertainment, and reach a higher indifference curve.
- There is a lower budget constraint that can put Alex in London at the same indifference curve as in Seattle. The firm can offer less.

Figure 4.2 Impossible Indifference Curves

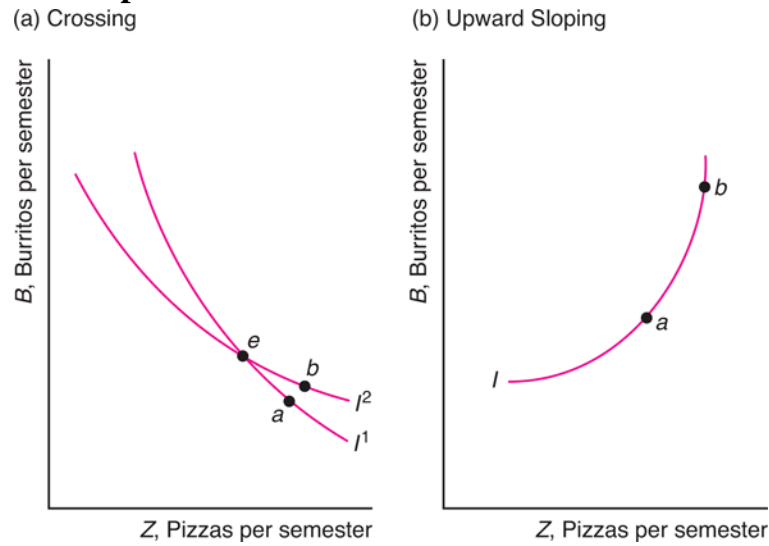


Figure 4.12 Deriving an Individual's Demand Curve

