



International Trade: Theory and Policy
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Chapter 2

A Pure Exchange Model of Trade

Learning Objectives

1. Identify the key features of a simple pure exchange model.
2. Identify the two main assumptions made about an individual's preferences.
3. Learn how to represent an individual's preferences using a set of indifference curves on a two-dimensional diagram.
4. Learn how to construct an Edgeworth box by superimposing the endowment points and the utility maps of two individual traders.
5. Learn how each point in an Edgeworth box diagram represents a potential allocation of oranges and apples between the two individuals.

Learning Objectives

6. Learn that trade from the endowment allocation to some points in the Edgeworth box would raise utility for both and thus motivate the individuals to trade.
7. Learn that a movement from the endowment allocation to some points in the Edgeworth box would not raise utility for both and could only be achieved involuntarily or by coercion.
8. Learn the definition of the terms of trade in the cases where two goods are being traded.
9. Learn that the terms of trade can be represented and derived as the ratio of prices of the two goods being traded.

Learning Objectives

10. Learn how every transaction everywhere creates surplus value, or happiness bursts.
11. Recognize that the distribution of the surplus value created out of voluntary trade can vary substantially across different potential trade outcomes.
12. Learn why the assumption that both traders maximize utility assures that the final trade allocation is unique.
13. Learn the equilibrium conditions that must be satisfied when both individuals are simultaneously maximizing utility.
14. Identify the set of Pareto optimal allocations in an Edgeworth box.

Learning Objectives

15. Identify the utility maximizing allocation in an Edgeworth box diagram.

A Pure Exchange Model: Preliminaries

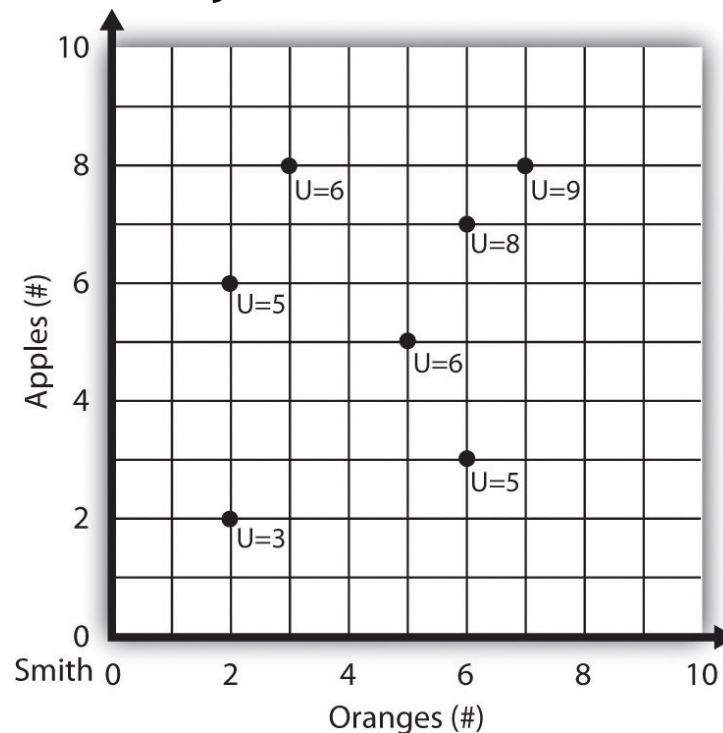
- Pure Exchange Model:
 - Production does not occur within the system
 - Primary focus is the conditions and effects of trade
- Assumptions of the Model:
 - There are two individuals who are legitimate owners of exogenous goods
 - Each type of good is homogenous
 - The individuals have perfect information about their preferences

A Pure Exchange Model: Preliminaries

- Perfect Information
 - Exists when individuals know everything they need to know about their preferences regarding all goods in the marketplace
 - Businesses offer free samples or discounted services to consumers is to help them develop perfect information

Indifference Curves

- Example
 - Figure 2.1 depicts all possible combinations of 10 apples and 10 oranges that an individual may consume.
 - Imagine that every conceivable combination of oranges and apples has a utility value attached to it.



Indifference Curves

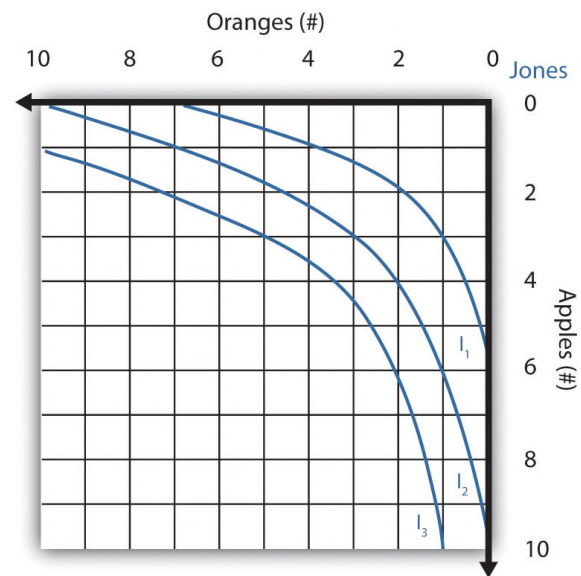
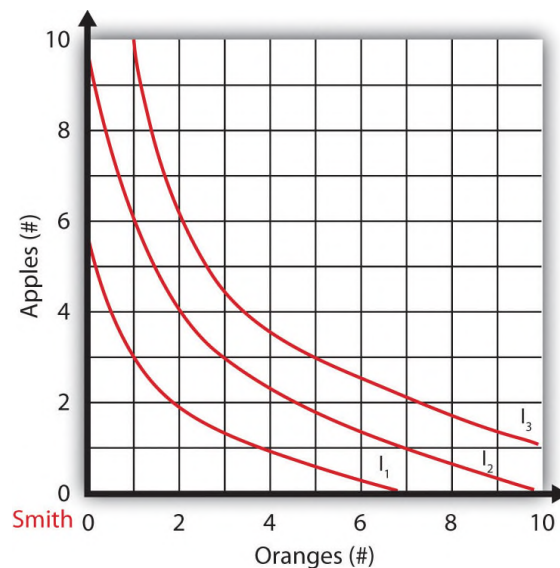
- Example (cont.)
 - A useful way to represent the utility values Smith obtains with different combinations is by drawing indifference curves on the diagram.
 - An indifference curve is a line drawn through all combinations of oranges and apples (points on the graph) that give the same utility value.
 - We can also assign a number to each indifference curve representing the level of utility attained for any orange-apple combination on the curve

Indifference Curves

- Assumptions
 - Assume an individual gets greater utility from having more of either good (i.e. “More is Better”).
 - Assume that consumption of each good exhibits diminishing marginal utility (i.e. successive units of a good provide a smaller and smaller increment of added utility).
- Real-World Application
 - One of the most important concerns of economics is the well-being of individuals as realized through the consumption of goods and services.
 - Cannot easily measure utility
 - Assumes that consumers know the utility value of options

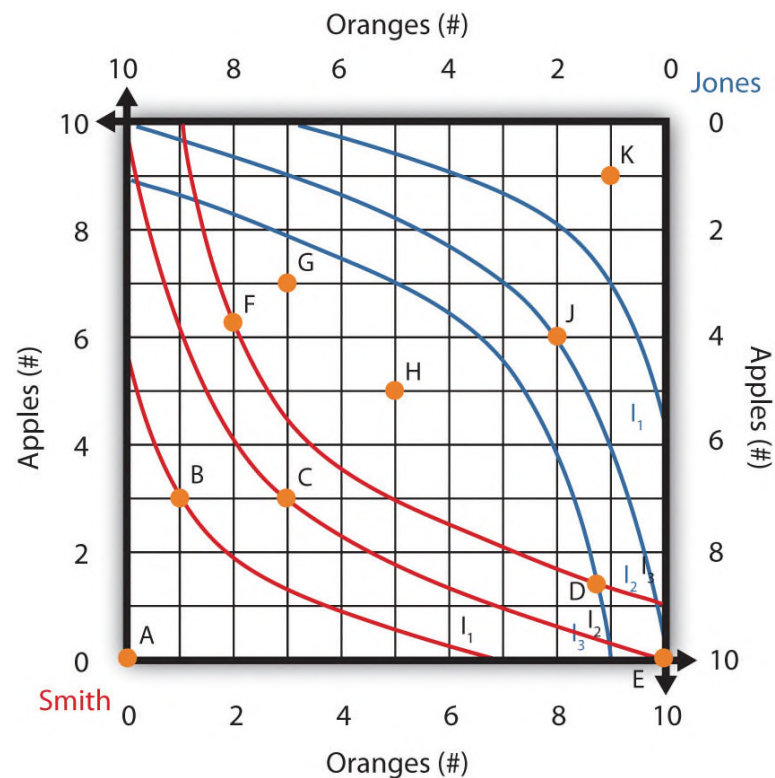
The Edgeworth Box

- Example
 - Imagine that Smith and Jones come together in a market to discuss the possibility of a trade.
 - Imagine that Smith's preferences are represented in Figure 2.4 "Smith's Indifference Map" and Jones' in "Figure 2.5 "Jones' Indifference Map".



The Edgeworth Box

- Example (cont/)
 - The endowment of 10 oranges for Smith and 10 apples for Jones corresponds to point E in the lower right corner of Figure 2.6 "An Edgeworth Box with Smith and Jones".



The Edgeworth Box

- Example (cont.)
 - Intuitively, the reason a one-for-one trade is beneficial for both Smith and Jones is because of diminishing marginal utility.
 - Smith is happy to give away one orange in trade to receive one apple because the orange given away is his tenth (with low added value) but the apple received is his first (with high added value).
 - Jones is happy to give away one apple in trade to receive one orange because the apple given away is his tenth (with low added value) but the orange received is his first (with high added value).

The Terms of Trade

- Terms of trade: the amount of one good that trades for another (typically presented as a ratio between the two goods).
 - In the Edgeworth box example, if Smith and Jones were to trade 5 apples for 5 oranges and move from point E to point H in the diagram, the terms of trade would be 5 apples for 5 oranges, or to simplify, 1 apple/orange.
- This relationship also corresponds to the ratio of dollar prices between oranges and apples.
 - The terms of trade can be written as PO/PA , where PO is the price of oranges measured as \$/orange and PA is the price of apples measured as \$/apple.

Evaluating the Gains from Trade

- Surplus Value
 - The extra utility that Smith and Jones achieve after trade.
 - Because Smith and Jones are both happier after trade than they were before, the surplus can be referred to as extra “bursts of happiness.”
- Real-World Application
 - Gains from trade occur anytime mutually voluntary exchange occurs, no matter what the two traded items are.
 - More common everyday trades involve the trade of money for goods or services.
 - In every case, happiness bursts are created for both parties of the exchange.

Achieving a Unique Solution

- $MUO/PO = MUA/PA$ Formula
 - Left side represents the amount of apples traded per orange and corresponds to the slope of the line drawn from the endowment point to the final allocation after trade.
 - Right-hand side of the expression is the ratio of marginal utilities and is also known as the marginal rate of substitution (MRS).
 - When an individual is maximizing his utility, the terms of trade must equal the slope of his indifference curve.

Achieving a Unique Solution

- Related Assumptions
 - Individuals have well-defined preferences.
 - Utility rises at a diminishing rate with increases in consumption.
 - Both individuals trade so as to maximize their individual utility.
- If the assumptions we make are not valid in the real world, then how valid are the results that we predict?
 - Result of mutual gains from trade must almost certainly be valid in almost all circumstances.
 - Sometimes a consumer is made worse off after trade.
 - The strong likelihood that information is imperfect may mean that people do not always achieve the maximization of utility