An Introduction to Economics

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Sections

There will be 3 total discussion sections that you sign up for:

1. Section 04: Wednesday 3:00-3:50pm, Converse 302
2. Section 05: Wednesday 1:00-1:50pm, Seeley Mudd 204
3. Section 06: Wednesday 3:00-3:50pm, Converse 308

Office Hours

- Tyler Porter: Monday/Tuesday 3:00-4:00pm, Converse 316
- Daniel Barbezat: Monday/Friday (Zoom) by signup

A Simple Model of Production

You (a rational person) have been marooned on a tropical island somewhere in the middle of the Pacific. You need to spend each day gathering resources in order to survive. Each day you have the capacity to:

- Find 6 gallons of fresh water
- Catch 15 fish
- Produce any combination of 6 gallons of fresh water and 15 fish.[1]

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[1]For instance, you can spend one day acquiring 4 gallons of fresh water and catching 5 fish.

Feasibility

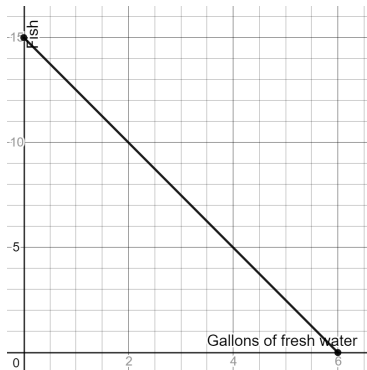What combinations of fish and water are you *able* to produce in a single day?

Figure 1: Your production possibilities set.

A New Arrival

Let us suppose now that your survivalist best friend, in an attempt to rescue you, also winds up stranded on that same island. Your friend is able to do the following in a single day:

- Acquire 9 gallons of fresh water
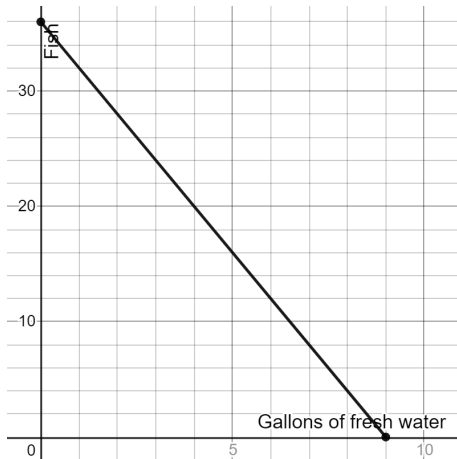- Catch 36 fish

Survivalist's PPF

Figure 2: Feasible combinations for your best friend.

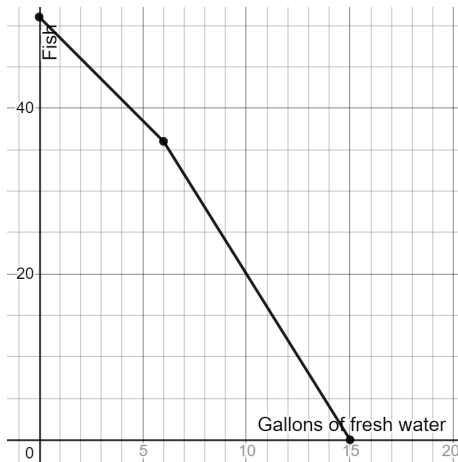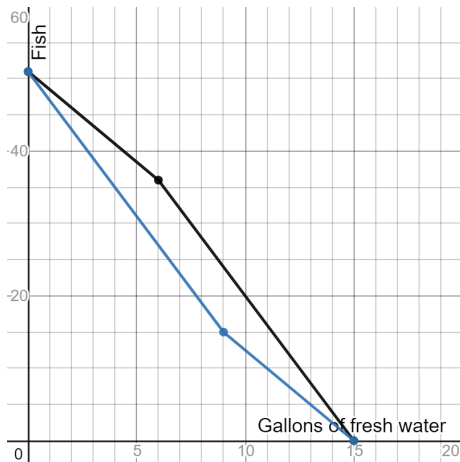Figure 3: Your joint Production Possibilities Set

Figure 4: Inefficient Production vs. the true PPF

- How many fish would you be willing to trade a gallon of fresh water for?
- How many fish would your friend be willing to trade for a gallon of fresh water?

Potential Prices

- Given that your opportunity cost for a gallon of fresh water is $\frac{5}{2}$ fish, you would be willing to accept between $\left[\frac{5}{2}, \infty\right)$ fish for a gallon of fresh water.
- Given that your friend's opportunity cost for a gallon of water is 4 fish, they would be willing to trade between $[0, 4]$ fish for a gallon of fresh water.

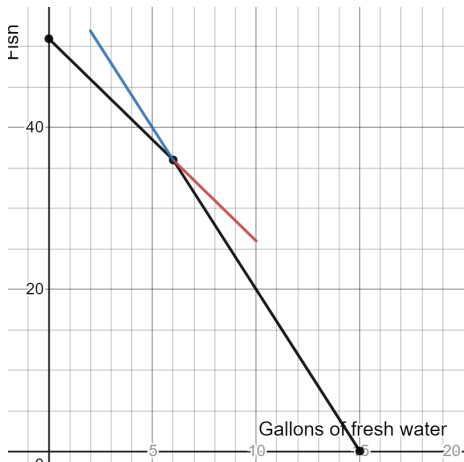The collection of prices that you can both agree to are $[\frac{5}{2}, 4]$ fish for a gallon of fresh water.

Figure 5: The available exchange rates graphically

Let us suppose now that you and your friend agree to an exchange rate of 1 gallon of fresh water for 3 fish. Suppose that each of you and your friend specialize in their respective comparative advantage.

- What are the possible combinations of fish and fresh water that your friend is able to achieve by trading at this price?
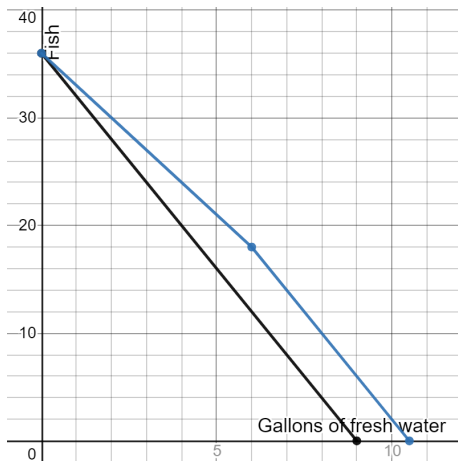- What about the combinations that you're able to achieve?

Figure 6: Original PPF (black) vs. attainable combinations with trade (blue).
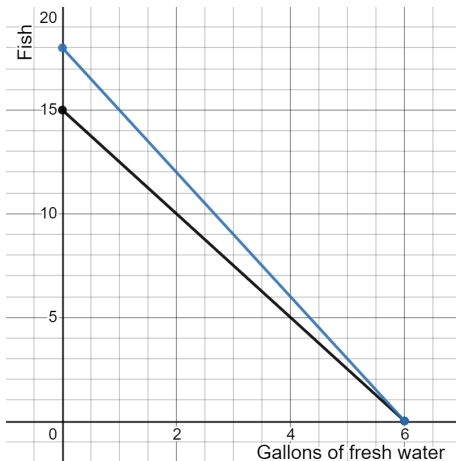
Gains from Trade: You

Figure 7: Original PPF (black) vs. attainable combinations with trade (black).

Exercise

Suppose now that there are three kingdoms: Dorne, The Vale, and The Reach. Each of these kingdoms can produce two goods given their available endowments of capital and labor: steel and wheat. In a single day, each nation is able to produce the following amounts:

- Dorne: 5 tons of steel, or 30 bushels of wheat, or any combination between these two amounts.
- The Reach: 6 tons of steel or 120 bushels of wheat, or any combination between these two.
- The Vale: 3 tons of steel, or 42 bushels of wheat, or any combination between these two.

Exercise (2)

- Draw the individual PPF's of these kingdoms for a single day.
- Draw the joint PPF of these three nations for a single day.
- What is the opportunity cost of producing a ton of steel for each kingdom?
- For each pair of two nations, what are the prices at which they would be willing to trade with one another? Which has the comparative advantage? What about the absolute advantage?

Joint PPF

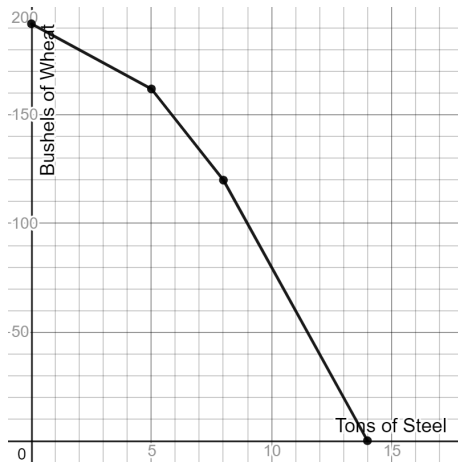Figure 8: Joint PPF for Dorne, The Vale, and The Reach.

- It's not clear which price should arise.
- What would you propose as a price to your best friend?
- Does this depend on how you value fish and fresh water?

Questions?

Questions? Comments?

Willingness to pay

The cutoff price above which you would no longer wish to purchase this good or asset is your willingness to pay. This may account for:

- Your preferences
- The prices of other goods that are used alongside or in place of the good in question
- The information that you have about the future value of the good or asset
- Your wealth and income
- Your beliefs about how well a good will fit your needs, or the needs of somebody else.

Motivating Example

- Suppose that I own a concert venue and am selling a limited number of tickets to a musical performance.
- I set a price for each ticket in U.S. dollars and offer them on a first-come first-serve basis.
- On the day of the show, I find that I have a large amount of unsold tickets.
- What can I infer about the willingness to pay of consumers in the market for tickets to see this performance?
- If I wanted to have a sold out show, how should I change the price of each ticket?

The Law of Demand

Definition

The Law of Demand refers to the principle that consumers respond to prices in a rational way. In particular, a reduction in the price of a good or service will lead to a greater quantity demanded for that good or service.

But what do I mean by demand?

Demand (2)

Definition

An individual consumer's *quantity demanded* describes the amount of a good or service that they would purchase at a given level of prices and income.

Definition

The *market quantity demanded* for a good or service describes the total amount of that good or service purchased by all consumers for given levels of prices and income.

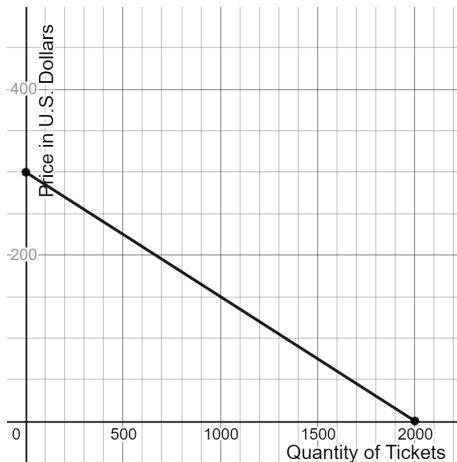# The Demand Curve

Figure 9: Demand for tickets to the show.

- What would it mean for the Law of Demand to be violated?
- Do such goods exist in practice?
- Yes, they are referred to as Giffen goods.
- What can we say qualitatively about such goods?

Ceteris Paribus

The forces to be dealt with (in economics) are, however so numerous, that it is best to take a few at a time; and to work out a number of partial solutions as auxiliaries to our main study. Thus we begin by isolating the primary relations of supply, demand and price in regard to a particular commodity. We reduce to inaction all other forces by the phrase 'other things being equal': We do not suppose that they are inert, but for the time we ignore their activity. This scientific device is a great deal older than science: it is the method by which, consciously or unconsciously, sensible men have dealt immemorial with every difficult problem of ordinary life. (Marshall 1890, xiii)[2]

Ceteris Paribus: All other things equal, or unchanged.

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[2]Marshall, A., 1890, *Principles of Economics*, Macmillan: London, Eighth Edition.

Types of Goods

How does a change in income or wealth affect the demand for a particular good?

Definition

A *normal good* is one in which an increase in consumer income leads to an increase in demand for the good.

Definition

An *inferior good* is one in which an increase in consumer income leads to a decrease in demand for the good.

Can you think of examples of each of these goods? Can this differ from place to place?

Example 1

- Suppose that a university decides to increase the award for stipends and fellowships for graduate students.
- How would you expect the demand for a cup of instant noodles among graduate students to change as a result of this?
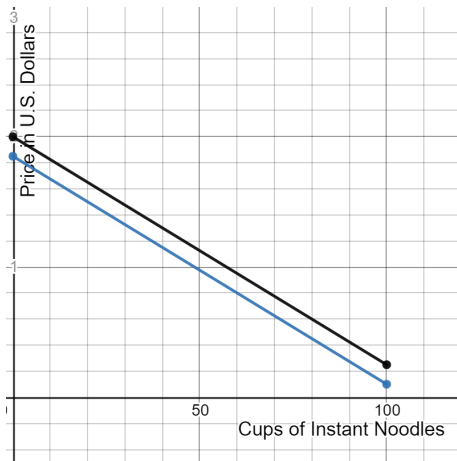
Example 1: Demand

Figure 10: Demand curve for instant noodles before the income change (black) and after (blue)

Example 2

- Suppose that in response to low economic activity stemming from a pandemic, the government decides to provide stimulus checks to boost spending.
- *Ceteris paribus*, how would you expect this to affect the demand for Atlantic salmon in supermarkets?

Example 2: Demand
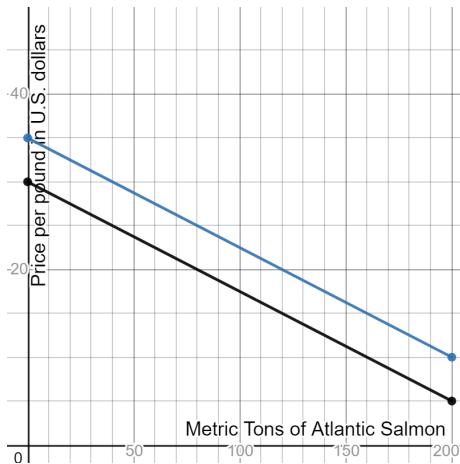

Figure 11: Demand for Atlantic salmon before the stimulus (black) and after (blue).

Preferences: Example

- Sometimes large, sudden shocks to the economy can change consumer spending in drastic ways.
- Consider the onset of the COVID-19 pandemic and its affect on the sales of hand sanitizer.
- More frequently, these changes in preferences occur over a much longer period of time.

Relations between goods

How consumers tend to value different goods as a *bundle* can influence how consumers respond to prices in the change of one good by raising or lowering their consumption of another.

Definition

Two goods are said to be *complements* if an increase in the price of one, say good A, decreases the demand for the other, good B.

Definition

Two goods are said to be *substitutes* if an increase in the price of one, say good A, increases the demand for the other, good B.

- Changes in *price* result in *movements along the demand curve*. These correspond to changes in *quantity demanded*.
- Other factors, such as changes in income, preferences, and prices of related goods result in changes in *demand*. These correspond to a shift in the demand curve.

Supply: Motivating Example

- Consider a farmer with 1000 acres of fertile land. The land and local market dictates that they produce either soybeans or corn.
- Suppose that they are currently splitting the allocation evenly among the two crops.
- An increase in the demand for ethanol, a biofuel requiring corn as an input, leads to an increase in the price, per metric ton, of corn.
- How should the farmer respond to this change?

The Law of Supply

Definition

The Law of Supply refers to the principle that firms respond to prices in a rational way. In particular, an increase in the price of a good or service will lead to a greater quantity supplied for that good or service.
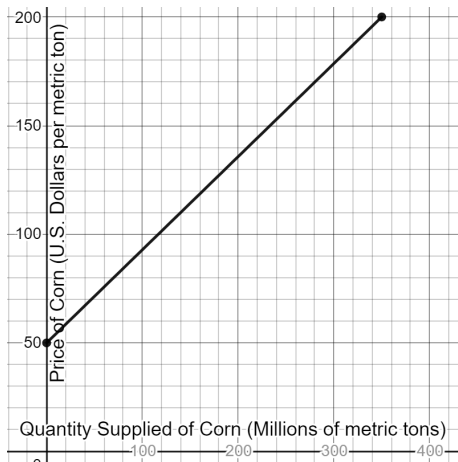
The Supply Curve

Figure 12: Market Supply of Corn

What influences supply?

- The costs of inputs used in the production process
- Innovations and technological change
- Expectations about future demand and prices
- The entry (and merging) of rival firms in the market
- Natural disasters and events
- Policy intervention

Shifts vs. Movements

- Changes in *price* result in *movements along the supply curve*. These correspond to changes in *quantity supplied*.
- Other factors such as input costs, technological breakthroughs, entry and natural disasters result in changes in *supply*. These correspond to a shift in the supply curve.

Perfect Competition

- Each individual has no power to dramatically affect prices, and thus acts as a price taker.
- Freedom of Trade: Individuals are free to trade with one another, and there are no additional costs associated with the exchange of goods or services.
- Individuals in the market act independently, rather than collusively.
- All individuals have access to the same information, and act rationally in response to any advantage or opportunity.
- No barriers to entry into the market.

Quote: Walras

"I take the almost universal regime of free competition in regard to exchange, that which was described by John Stuart Mill, and which consists in raising the price in the case of the quantity demanded exceeding the quantity supplied and lowering it in the case of the quantity supplied exceeding the quantity demanded, and I demonstrate that the process leads to equilibrium by establishing the equality of the quantities supplied and demanded. Whereupon there is thrown at my head the market for English public debt, the system of English auctions, the system of Dutch auctions etc., etc." (Walras, Letter 999 to Von Bortkiewicz, 1965)

Perfect Competition and Equilibrium

"Now, how many of the devices adopted in ordinary life to that end would still be open to a seller in a market in which so-called "perfect competition" prevails? I believe that the answer is exactly none. Advertising, undercutting, and improving ("differentiation") the goods or services produced are all excluded by definition – "perfect" competition means indeed the absence of all competitive activities."[3]

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[3]Hayek (1946), Stafford Little Lecture at Princeton University

Market Equilibrium: Motivating Example

- Suppose that at some prevailing price, the market demand for a five pound bag of flour exceeds the market supply.
- What can you infer about the price in this market?
- Can you reason about a process that might resolve this excess demand?

Definition

A price-quantity pair (p^*, q^*) is a market equilibrium if, at this point, there is no excess supply or excess demand. That is, quantity demanded is equal to quantity supplied at the price p^*.

Equilibrium: Remarks

- May require a long time for agents to "settle" on an equilibrium.
- A great deal of things can perturb a market and force it out of equilibrium.
- Evidence, both empirical and theoretical, that market activity may not converge to an equilibrium.
- Assumption of perfect competition is also fragile.