The theory of exchange and determination of prices

in perfectly competitive markets

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Block 2
Economics for Everyone

Lectures 4 and 5

Motivation

Breaking out of the poverty trap raises questions

The Malthusian poverty trap assumed a one-good, closed economy

- since there was only one good we could simplify the discussion by abstracting from exchange, and therefore from prices. The way out of this trap was to relax this assumption along both of its dimensions.
  - **Save and Invest**: forego current consumption, save and invest, and accumulate capital, but how should a society's wealth be divided between consumption and saving? We are making a trade between current consumption and Future consumption, and the terms of this trade are reflected in a price.
  - **Trade**: specialize in production and trade for the capital on international markets. Trade can occur across space, not just across time, but again we need a set of relative prices to govern the terms of the exchange.

Price determination

The Theory of Value

What determines the rate at which one good will exchange for another, or in other words, the price of one good in terms of another?

- Prices are determined in an institution called "the market", which brings buyers and sellers of goods and services together to determine how much is traded and at what rate goods exchange.
- a "relative" price
- buyers and sellers have conflicting interests
  - how do markets work?
  - can they be manipulated for the benefit of some, and to the detriment of others?

Objectives for this block of classes

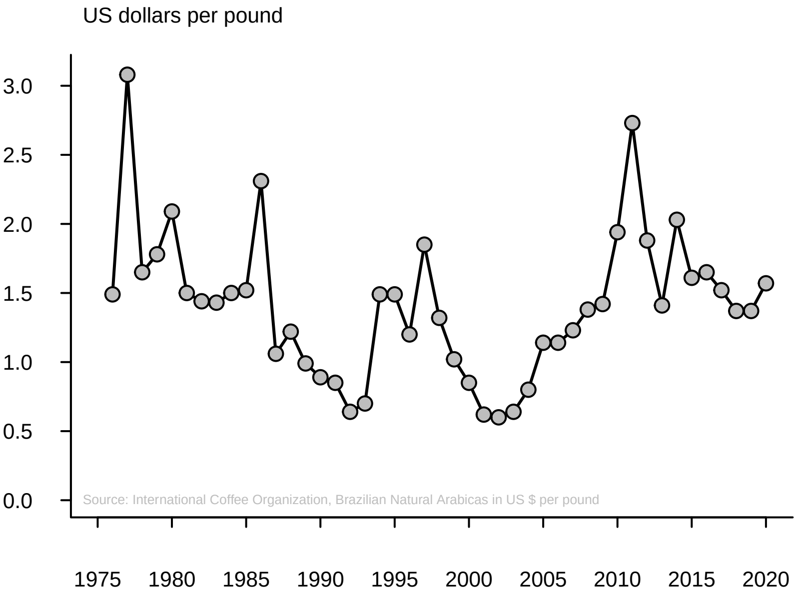
1. Understand the neoclassical theory of value
   - in a perfectly competitive market
   - only hint at other market structures
2. Apply our understanding
   - commodity markets
   - public policy directed to producers in these markets
3. Market failure as a rationale for public policy
   - "efficient" outcomes in perfectly competitive markets
   - public policy directed to externalities and other market failures

Prices and inflation

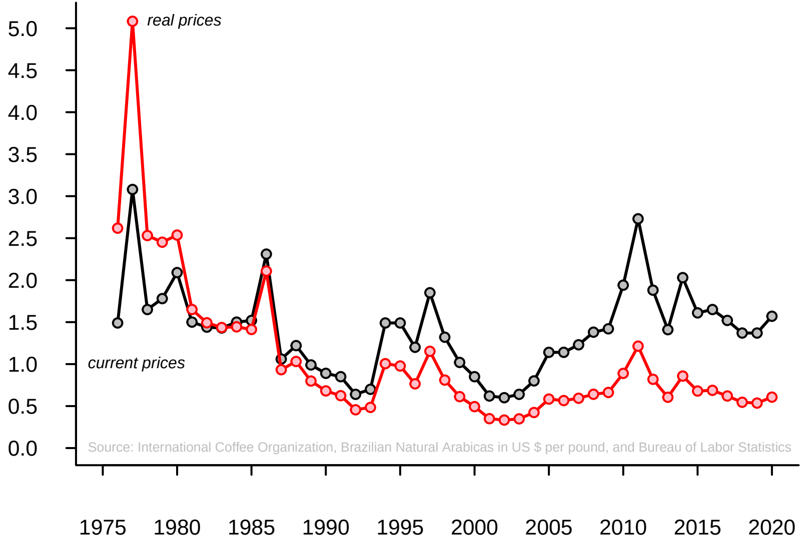
Two goods that go together to make up my favourite drink

1. Is coffee traded at a "fair" price
2. Is milk?

Coffee prices on the international market



Coffee prices on the international market: current and real



Use the Consumer Price Index to calculate inflation rates

Year	Consumer Price Index	Inflation rate (%)
2010	218	
2011	225	
2012	230	
2013	233	
2014	237	
2015	237	
2016	240	
2017	245	
2018	251	
2019	256	
2020	259	
2021	271	

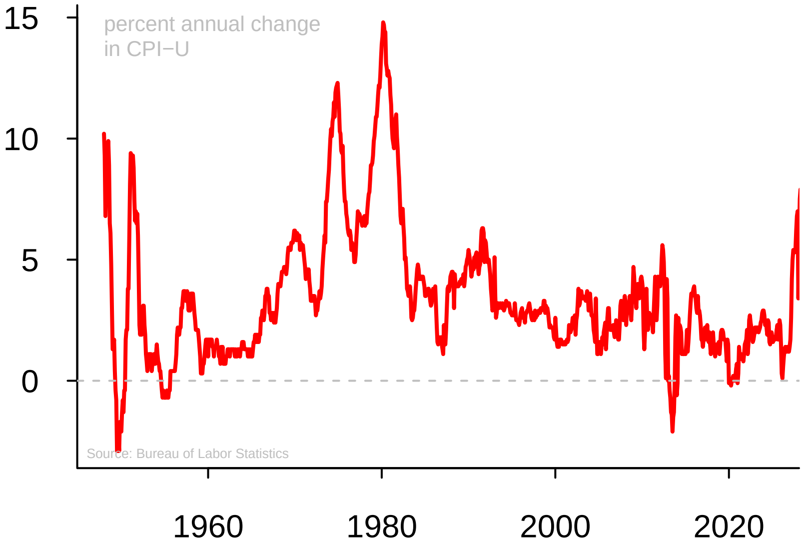
Note: All items, US city average, 1982-1984=100
Source: Bureau of Labor Statistics

Use the Consumer Price Index to calculate inflation rates

Year	Consumer Price Index	Inflation rate (%)
2010	218	
2011	225	3.2
2012	230	2.2
2013	233	1.3
2014	237	1.7
2015	237	0.0
2016	240	1.3
2017	245	2.1
2018	251	2.5
2019	256	2.0
2020	259	1.2
2021	271	4.6

Note: All items, US city average, 1982-1984=100
Source: Bureau of Labor Statistics

Year over year percentage change in consumer prices

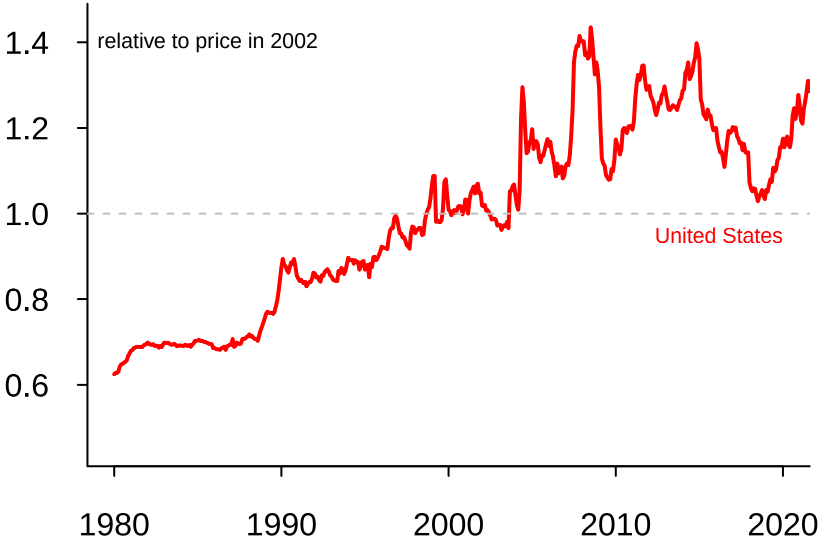


Need to more about the consumer price index and inflation (to prepare for macroeconomics)?

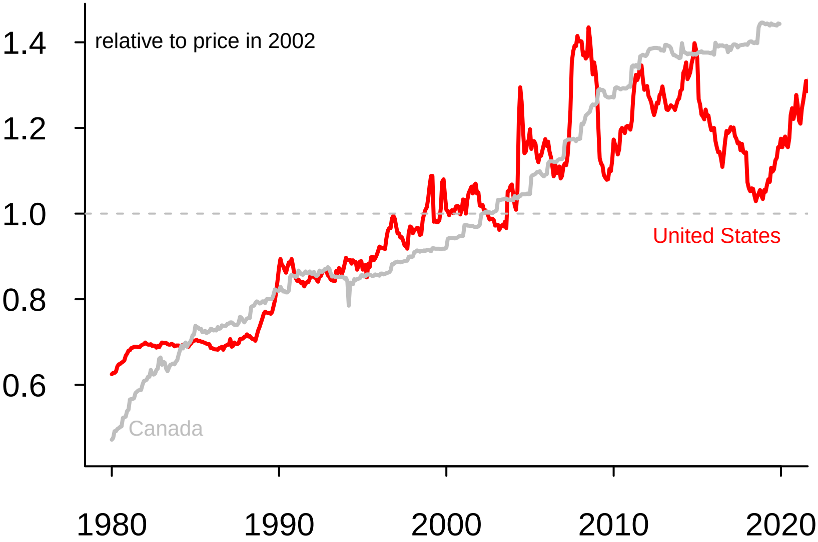
The course reading list has a couple of quickly digestible resources

- Statistics Canada (1996). *Your Guide to the Consumer Price Index.* Ottawa: Statistics Canada, Catalogue Number 62-557.
  - Available at: https://www150.statcan.gc.ca/n1/pub/62-557-x/62-557-x1996001-eng.pdf
- U.S. Bureau of Labor Statistics (2019). "Learn about the Chained CPI (C-CPI-U)."
  - Available at: https://www.bls.gov/cpi/additional-resources/chained-cpi.htm

Milk prices: domestic consumer prices (monthly since 1980)



Milk prices: domestic consumer prices (monthly since 1980)



"I like cappuccini !"

1. Is coffee traded at a "fair" price?
2. Is milk?

- why are coffee producers receiving highly variable prices that are, at best, no higher than 40 years ago?
- how is it that milk producers are getting much more stable and, for the most part, steadily increasing prices? (but more so in Canada than in the United States)

To answer these questions we need to develop a model of how markets work for these type of commodities, and how public policy can influence the market outcomes.

Exchange and Markets

Exchange and the division of labor

Why trade? Why have markets?

There are important advantages to exchange

- in an economy without production individuals can obtain a better distribution of goods they have, and increase their welfare
- in an economy with production exchange makes specialization in production possible, increases productivity, and increases both the quantity and variety of goods

Adam Smith gave a famous example of this benefit of exchange in recounting his observations of production in a pin factory

Why trade? Why have markets?

In *The Wealth of Nations* published in 1776, Smith wrote:

> *The greatest improvement in the productive powers of labour, and the greater part of the skill, dexterity, and judgement with which it is anywhere directed or applied, seem to have been the effects of the division of labour. . . . . . a workman not educated to the trade of pin-maker (which the division of labour has rendered a distinct trade), nor acquainted with the use of the machinery employed in it (to the invention of which the same division of labour had probably given occasion), could scarce, perhaps, with his utmost industry, make one pin in a day, and certainly not make twenty. But in the way in which this business is now carried on, not only the whole work is a peculiar trade, but it is divided into a number of branches, of which the greater part are likewise peculiar trades. One man draws out the wire, another straightens it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations, . . .*

Source: Adam Smith (1776), *The Wealth of Nations*, New York: Random House, Modern Library Edition, Book I, Chapter I.

Exchange and the division of labor

Why trade? Why have markets?

The advantages of exchange

- The point is that the possibility of exchange permits a society to have access to a larger amount and a larger variety of goods
- This possibility cuts both ways ... with new goods comes the technical possibility of producing even more new goods, and extends further the possibility of exchange
- Exchange (trade) takes place in a market

The definition and scope of a market

The "market"

The term market refers not to a particular market-place in which things are bought and sold. Rather a market is a location, or set of locations, in which buyers and sellers of a particular commodity are in regular communication.

- Different locations form a single market according to the potential and actual transfer of transactions from one place to another
  - For example coffee is sold in a number of exchanges across the world, in New York, Berlin ...
- In a market buyers and sellers have the capacity to interact
  - Buyers try to make their purchases at the lowest net cost to themselves
  - Sellers try to obtain the highest prices for their goods

The definition and scope of a market

The scope of the "market"

Communication and transport costs put limits on the extent or scope of the market. Rational buyers and sellers consider not just the price of the commodity but also the costs in obtaining it. These include costs of transport, tariffs, communication.

- Some commodities have local markets, their costs of transport are high relative to their prices
  - this occurs for bulky or perishable items
  - can you think of examples?
- Improvements in communications and transport, or in tariffs, may change the scope of the market
  - examples?

The definition and scope of a market

The scope of the "market"

Goods with wide markets have certain characteristics. They are easily and exactly described so that they can be bought and sold by people at a distance from one another, and from the commodity.

- Examples: commodities like cotton, wheat, iron, oil
- Take coffee: Brazilian, Colombian, Ethiopian ...
- What about: cement, milk, bread?
- What about manufactured goods?

How is it that the scope of the market is also rather wide for dresses? For shoes?

The definition and scope of a market

The size of the market

- There is both a commodity and a geographic dimension to a market
- In reality there may be a certain vagueness to the definition of how large a market is, but we will assume there is no ambiguity

Market Structures

There are four types of markets

1. perfectly competitive
2. monopolistically competitive
3. oligopolistic
4. monopolistic

Prices and quantities are determined differently in each of these market structures. They differ by the extent and nature of "power" the producers and consumers have.

Market Structures

Three conditions for a perfectly competitive market

Perfectly competitive markets are those in which three conditions hold.

1. There are a large number of buyers and sellers
   - The proportion of market transactions carried out by any single participant is very small, so that each buyer and seller separately has a negligible influence on values in the market
   - Entry into the market must be easy for there to be a large number of buyers and sellers

Market Structures

Three conditions for a perfectly competitive market

Perfectly competitive markets are those in which three conditions hold.

1. There are a large number of buyers and sellers
2. The commodity is homogeneous
   - Each unit of this commodity is identical to every other unit
   - Buyers and sellers are indifferent—given the price—about whom they buy from or sell to

Market Structures

Three conditions for a perfectly competitive market

Perfectly competitive markets are those in which three conditions hold.

1. There are a large number of buyers and sellers
2. The commodity is homogeneous
3. All participants have full knowledge of the price at which market demand is equal to market supply in the particular time period
    - implies that all transactions take place at market clearing prices
    - full knowledge refers to the present market conditions
        - buyers and sellers may have different expectations of future market conditions

Market Structures

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Perfect markets and the "World of Truth"

The Demand Side

The higher the price, the lower the quantity demanded

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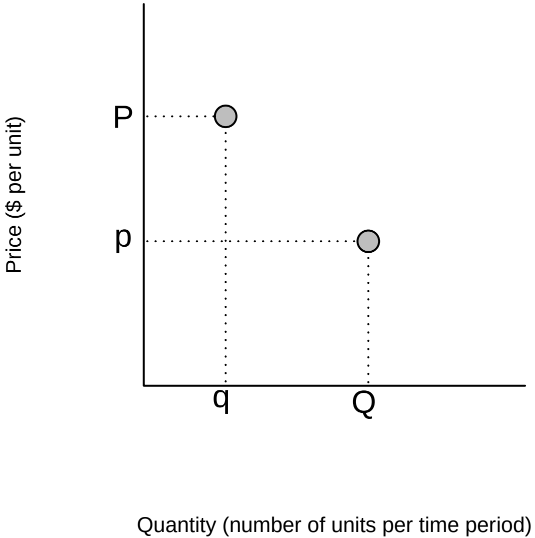
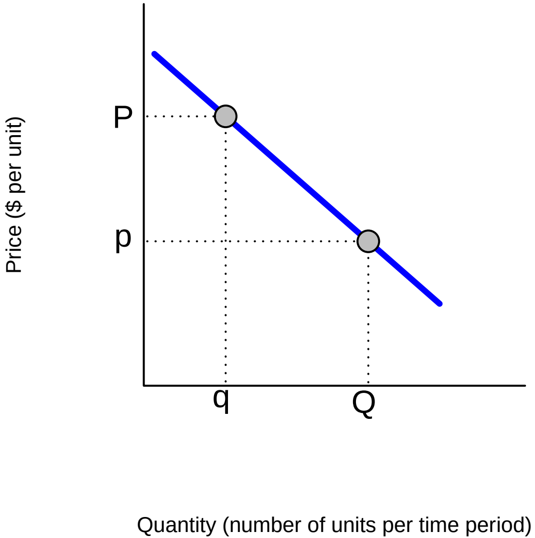
The higher the price, the lower the quantity demanded



The Demand Side

The higher the price, the lower the quantity demanded



The Demand Side

The higher the price, the lower the quantity demanded

"The law of demand" states that the higher the price, the lower the quantity demanded.

- Why?

The Demand Side

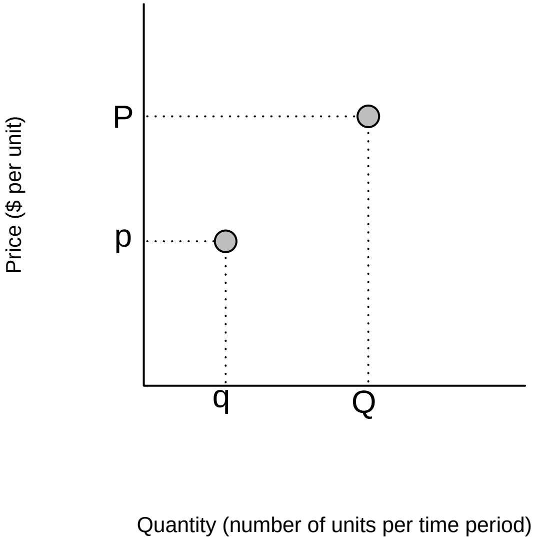
The higher the price, the lower the quantity demanded

"The law of demand" states that the higher the price, the lower the quantity demanded.

- Why?
- because the marginal benefit from each additional unit consumed falls
- to entice the consumer to purchase an additional unit, the price must be lower

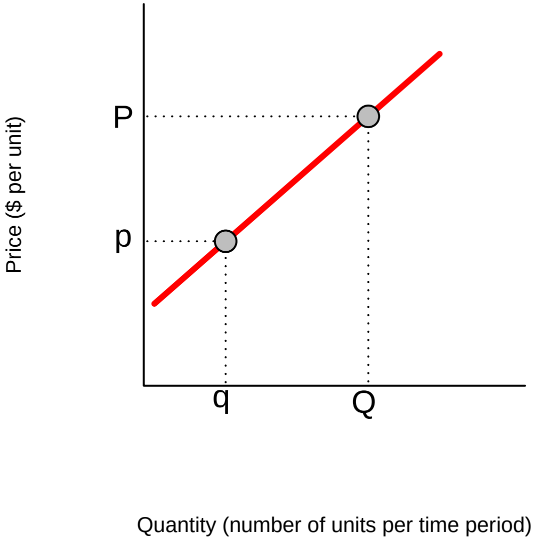
The Supply Side

The higher the price, the higher the quantity supplied



The Supply Side

The higher the price, the higher the quantity supplied



The Supply Side

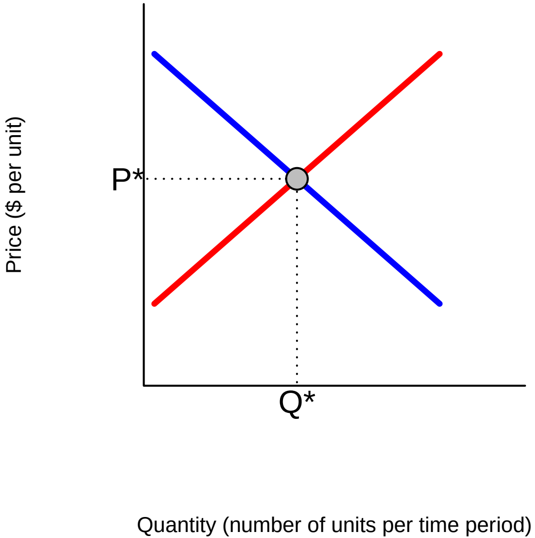
The higher the price, the higher the quantity supplied

"The law of supply" states that the higher the price, the higher the quantity supplied.

- Why?
  - because the marginal cost from each additional unit produced rises
- Except there is no "law of supply"
  - quantity supplied can rise, fall, or stay the same with increased production
  - it will depend upon how productivity and costs change as the scale of production changes

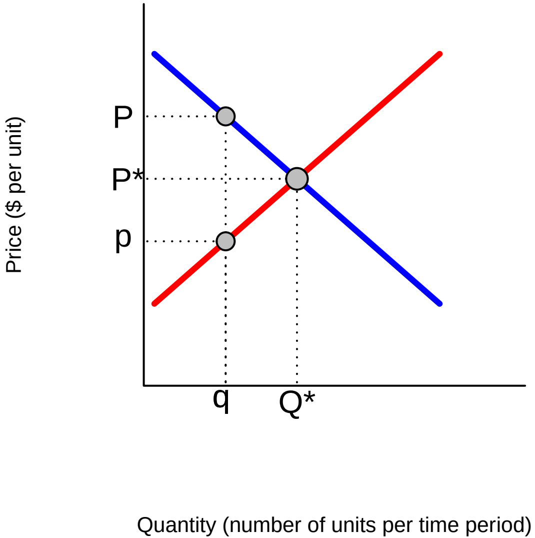
Market Equilibrium

Perfectly competitive markets maximize the social surplus



Market Equilibrium

Perfectly competitive markets maximize the social surplus



Market Equilibrium

Perfectly competitive markets maximize the social surplus

In *The Wealth of Nations* published in 1776, Smith wrote:

> *It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from regard of their own interest. We address ourselves not to their humanity, but to their self-love, and never talk to them of our necessities, but of their advantage . . .*

Source: Adam Smith (1776), *The Wealth of Nations*, New York: Random House, Modern Library Edition, Book I, Chapter II.

Market Equilibrium

Perfectly competitive markets maximize the social surplus

The first fundamental theorem of welfare economics states

- that the equilibrium of a perfectly competitive market maximizes the social surplus
- the policy implication calls for a minimalist state, that enforces property rights but otherwise permits voluntary exchange

The second fundamental theorem of welfare economics states

- that any competitive equilibrium can be achieved with an appropriate redistribution of property rights through "lump sum" taxes and transfers