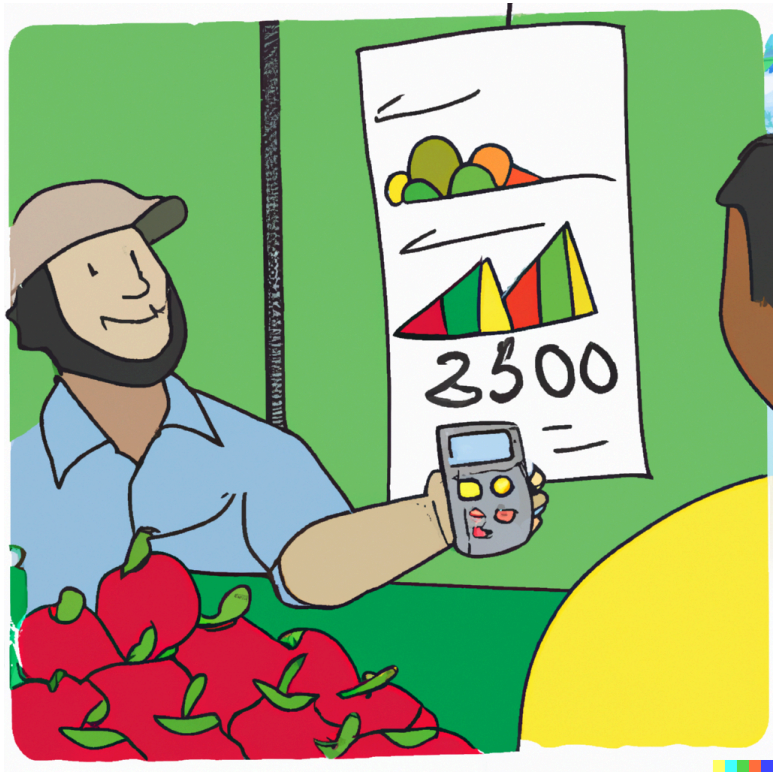
Agricultural Markets

Lecture 4: Market Structure and Price Determination

David Ubilava
University of Sydney

Market Structure



- Markets are commonly classified in relation to the number of sellers, assuming many buyers.
- Under such classification, four general types of markets are considered:
  - Perfectly competitive (many sellers);
  - Monopolistic (one seller);
  - Oligopolistic (a few sellers);
  - Monopolistically competitive (many sellers of differentiated products).
- The "flip side" of such markets may also be relevant (e.g., Monopsony and Oligopsony).

agmarkets

Perfect competition

- For perfectly competitive markets we assume that:
  - there are many sellers and buyers in a market, and that each individual seller or buyer cannot influence the market;
  - all firms produce homogeneous product;
  - there are no costs for entering and leaving the market; and
  - the information on economic forces that are determining prices is complete and freely available for market participants.

Perfect competition

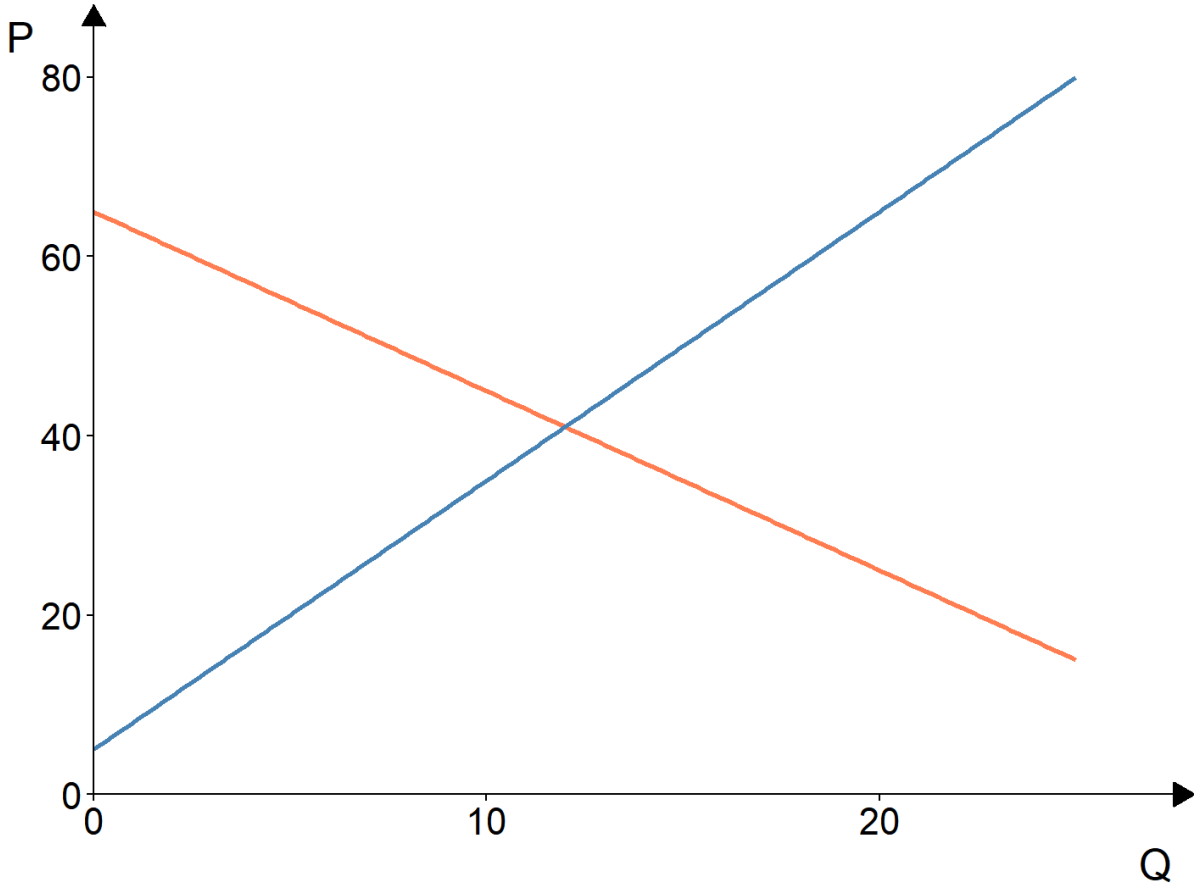
- A perfectly competitive firm's objective is to maximize profit:

$$\max_q \pi = pq - c(q),$$

  where p is price, q is output quantity, and $c(q)$ is the total cost of producing q units of output.
- The profit-maximization results in $p = c'(q)$, where $c'(q) \equiv MC$.
- A perfectly competitive market is efficient, in the sense that the market equilibrium leads to the socially optimal outcome.

agmarkets

Perfect competition



agmarkets

Monopolistic competition

- Monopolistic competition relaxes the assumption of product homogeneity.
- There still are many sellers on the market, but each seller has an option to differentiate their product in some way or another
- At the extreme, such differentiation can lead to an almost unique product, in which case the seller, in effect, becomes a monopolist.

Monopoly

- Market structure with a single seller is called monopoly.
  - The assumption of product homogeneity is irrelevant.
  - There are insurmountable costs of entry.
- A monopolist, unlike a competitive firm, is no longer a price-taker; instead, they can 'manipulate' quantity demanded by changing prices or, equivalently, they can manipulate market prices by changing output.

Monopoly

- Thus, a monopolist's objective, like that of a competitive firm, is to maximize profit:

$$\max_q \pi = p(q)q - c(q),$$

  where q is quantity, $p(q)$ is price (as a function of quantity), and $c(q)$ is the total cost of producing q units of output.
- The profit-maximization results in:

$$p'(q)q + p = c'(q)$$

agmarkets

Monopoly

- An algebraic manipulation of the profit-maximization outcome results in:

$$p\left(\frac{1}{\epsilon}+1\right)=c'(q),$$

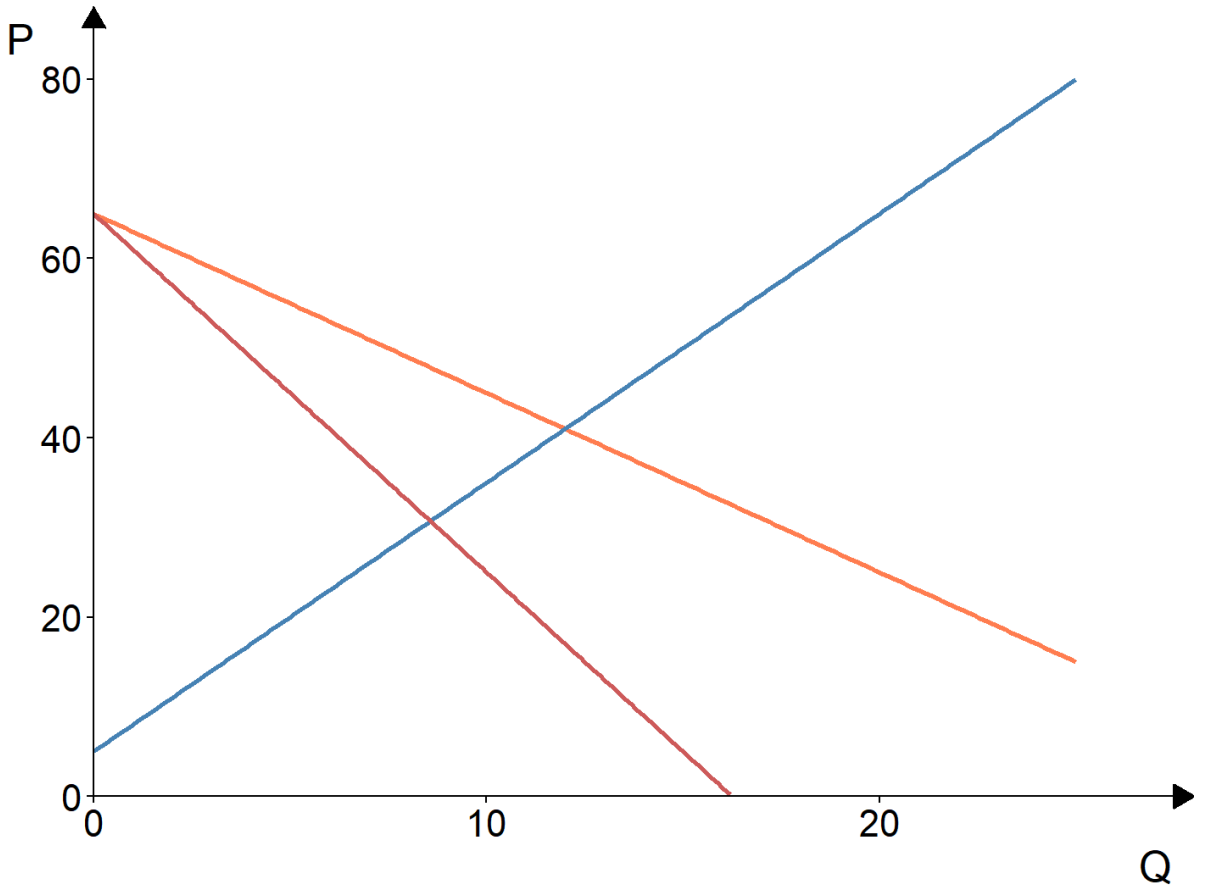
  where ϵ is the price elasticity of demand (and is negative).
- This relationship suggests that when the demand is perfectly elastic, the monopoly operates as a perfectly competitive firm.
- This equation also suggests that a monopoly will only operate in the elastic range of demand.

agmarkets

Monopoly

- Market equilibrium under monopoly leads to an inefficient outcome, as some of the surplus—which would have been attained under a perfectly competitive market—is lost; such loss is referred to as the *dead-weight loss*.

Monopoly



agmarkets

Monopoly

- A monopolist may extract profits above and beyond the 'monopoly profits', if they can exercise the *price discrimination* strategy; i.e., if they can segment the market and charge different prices.
- The following conditions must be met for this:
  - It must be possible to identify different markets with distinct demand elasticities;
  - The markets must be separated—there should be no arbitrage opportunity between the markets
- Under these conditions, a monopolist can further increase profits by charging higher prices in markets with less elastic demand.

Pricing Mechanisms

- Within a market structure, prices are established or 'discovered' by means of institutional mechanisms and arrangements that facilitate the interaction between buyers and sellers.
- In a perfect market, all participants have access to the same information at no cost, and hence prices reflect the existing economic conditions. As new information arrives, prices change instantly to a new equilibrium (efficient market hypothesis).

Pricing Mechanisms

- Pricing mechanisms can influence the costs of price discovery, and therefore prices, at least indirectly though outcomes they generate.
- Three broad categories of pricing mechanisms include:
  - negotiation - a bargaining that may be formal or informal;
  - auctions - a type of bidding done in a structured setting;
  - administering - price-setting of some sort.

Negotiated Prices

- An informal negotiation between the involved parties is not uncommon, as it is potentially the least-cost method of price discovery for locally marketed commodities of varying quality.
- A formal negotiation typically involves a union, a cooperative of farmers, who negotiate the terms of sales on behalf of individuals they represent. Such negotiation takes a structured bargaining form, and if successful, results in a contract for a specific time period that details benefits and responsibilities.

Auctions

- Auctions is a structured framework for bidding, using clearly defined rules.
- An ascending bid auction, better known as the 'English auction' is one of the most common types of auctions. The auction starts at some reservation price, and is complete once no-one is willing to bid higher than the most recent bid. Such auction, typically, leads to over-bidding —a phenomenon referred to as the 'winner's curse.'

Auctions

- Another popular type of auction is descending bid auction, better known as the 'Dutch auction.' The auction starts at some reasonably high price, presumably such that no-one is willing to bid. The auctioneer then lowers the ask price by some increments until someone bids, at which point the auction completes.
- One other popular type of auction is the sealed-bid auction, and its variant the second-price sealed bid auction, also referred to as the 'Vickery auction.' The seller accepts sealed bids; the highest bid wins but pays the price of the second highest bid.

Auctions

- Auctions help discover prices efficiently in instances when there is no asymmetry of information among sellers and buyers, the traded good is homogeneous, and transaction costs are negligibly small.
- Centralized auctions have declined for agricultural commodities where the costs of transportation, storage, and handling are considerable; local auctions remain relevant, however, as they are a convenient (least costly) site for selling livestock, for example.

Administered Prices

- Administered prices are set—administered—by government via a regulation or policy, or by a firm's management.
- In setting prices, decision makers are influenced by economic factors. But prices are decided by the decision makers' interpretation of market conditions rather than by negotiation or auctions.
- Such mechanism, in certain circumstances (e.g., prices in retail stores), is the least costly mechanism.
- In any case, for prices do be administered, the price setting entity (firm or government) should possess some power over a market.

Evolution of Pricing Mechanisms

- The same commodity may be priced via different arrangements.
- As the economies change, so do the pricing mechanisms.
- Indeed, pricing mechanisms evolve to achieve reduction in transactions costs (broadly defined).
- As a result, while negotiations, auctions, and administered pricing mechanisms remain three main institutional tools for price discovery, the outcomes of these processes alter.

Readings

Tomek & Kaiser, Chapters 5 & 11 (until "Government Intervention in Pricing Agricultural Products")

Masters & Finaret, Chapter 3 (Section 3.1)

Masters & Finaret, Chapter 5 (Section 5.1)

agmarkets