Perfect competition in transport markets

EE382

- The theory of the firm
- The position of profit maximization for the provider of transport services
- The underlying conditions required in order to ensure that competitive pressures on transport operators are maximized
- That such a level of maximum competition ensures that economic efficiency is attained in the provision of transport services

Perfect competition is one of the major requirements in order to achieve **allocative efficiency**

Perfect competition is a highly competitive market where competition itself ‘regulates’ the market and ensures economic efficiency is achieved

Assumption

- Freedom or entry and exit
- Homogenous product
- High number of buyers and sellers
- Perfect information

Freedom or entry and exit

- Buyers and sellers are free to enter and leave the market
- Within transport markets, any operator would be at liberty to enter the market and compete on equal terms with existing firms
- Freedom to exit means that they can exit the market without financial penalty

Homogenous product

- All firms produce identical products
  - E.g. Bus service
- As all operators produce identical services, or at the very least services that are perceived to be identical, the consumer can switch from one operator's service to another's at a zero (transaction) cost
- All services are said to be perfectly substitutable – demand curve for the individual firm is therefore perfectly elastic

High number of buyers and sellers

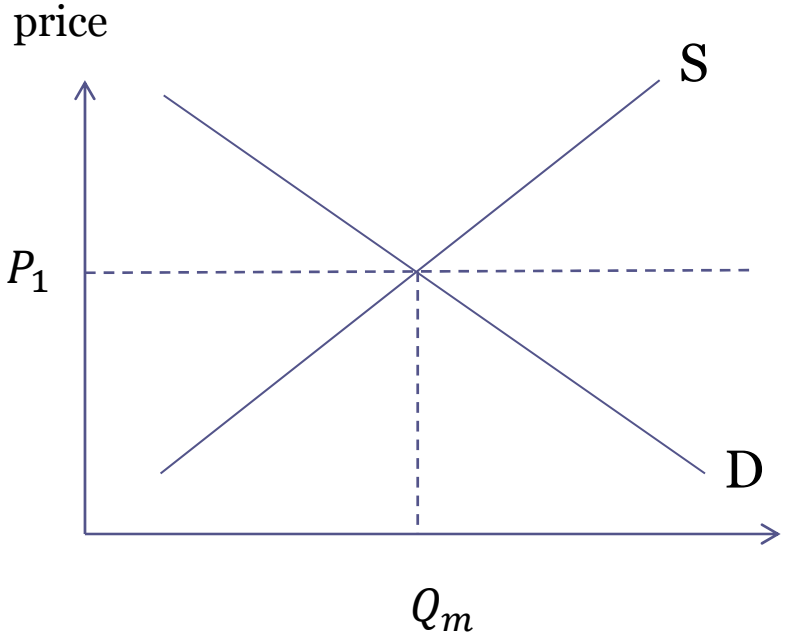
- No single operator or buyer of transport services has any degree of market power
- If any operator was to leave the market then their market share would be so small that in simple terms it would have no impact on the prevailing fare charged
- As a consequence, it is the market that sets the fare, not individual firms or buyers, all buyers and sellers are ‘price takers’

Perfect information

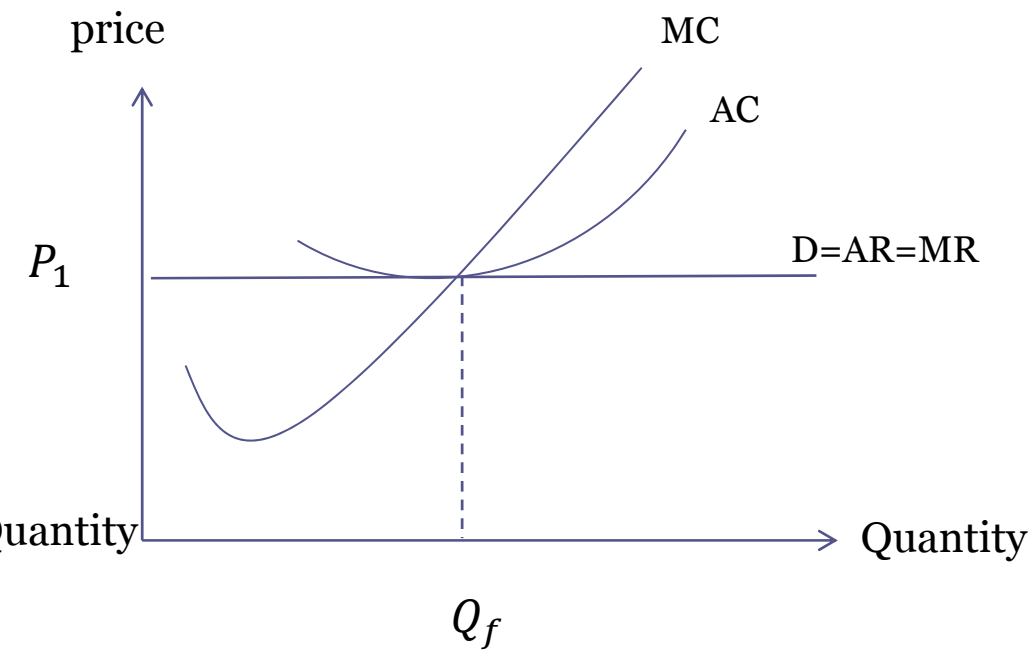
- Buyers, sellers, potential buyers and potential sellers know everything there is to know about the market
- There are no trade secrets and all profit and market information is common knowledge
- Consumers know the prices of all competing services and potential entrants know the level of profits being made in the industry
- Perfect knowledge is thus pre-requisite to ensure that buyers and sellers come to the right economic decisions regarding the goods they purchase and the market served

Perfect competition

The Market

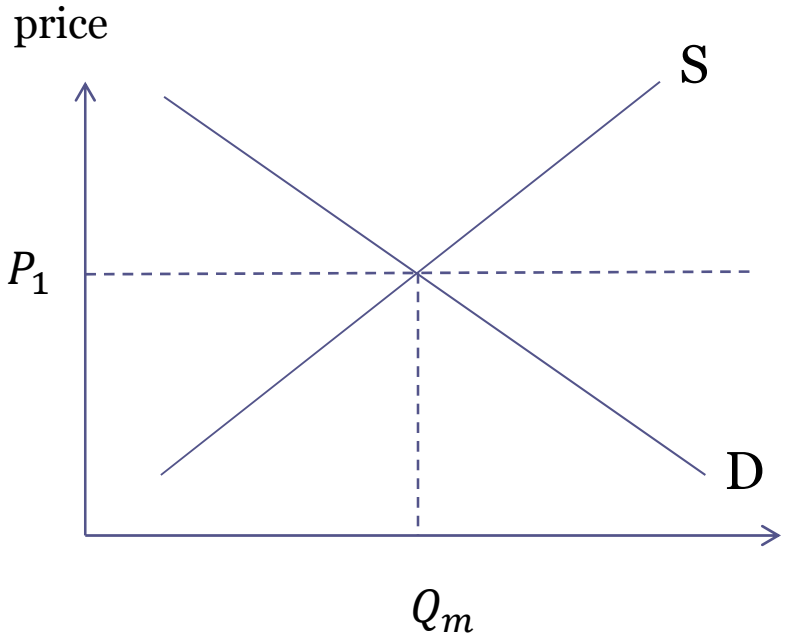


The Firm

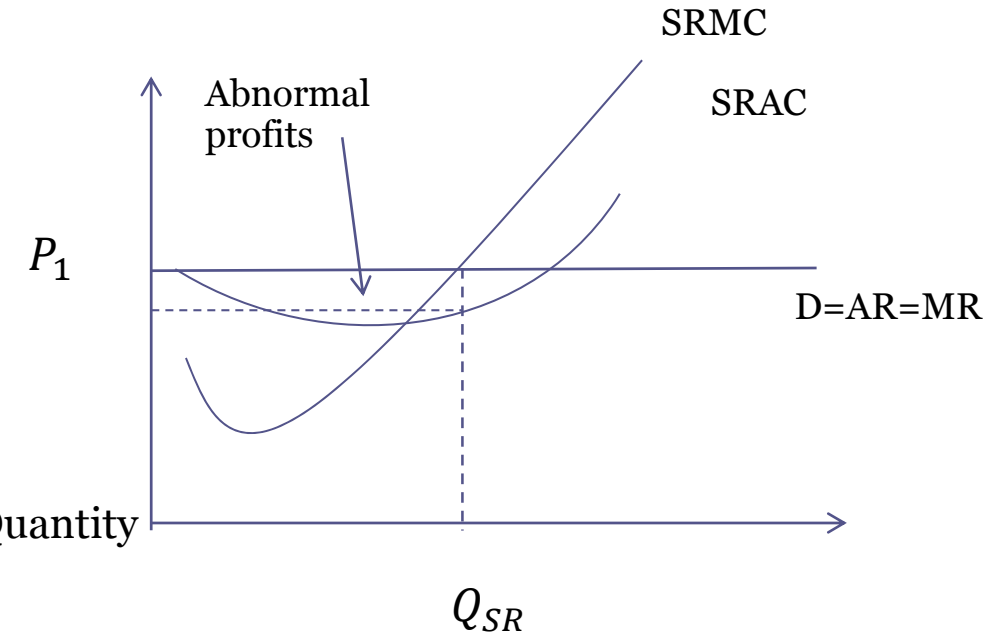


Perfect competition, SR position(profits)

The Market

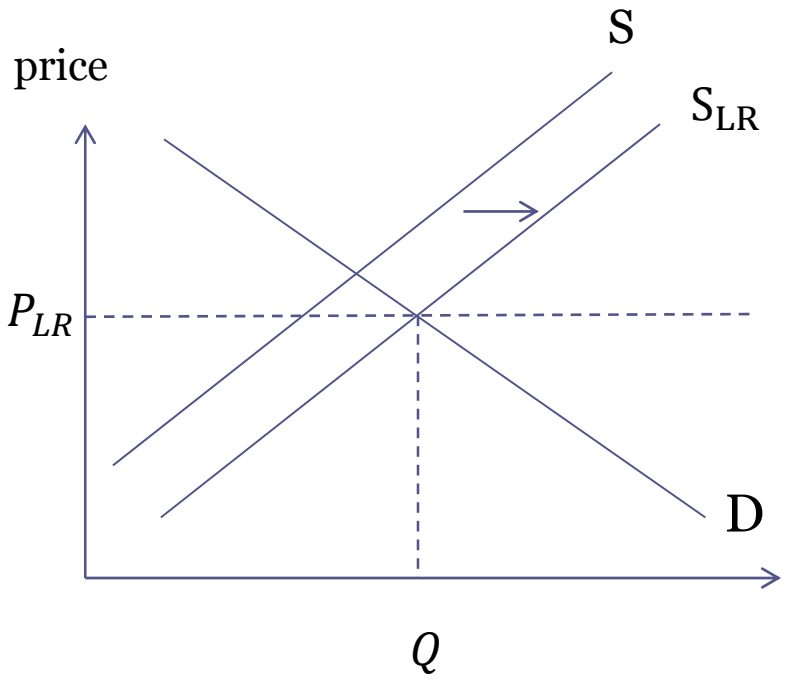


The Firm

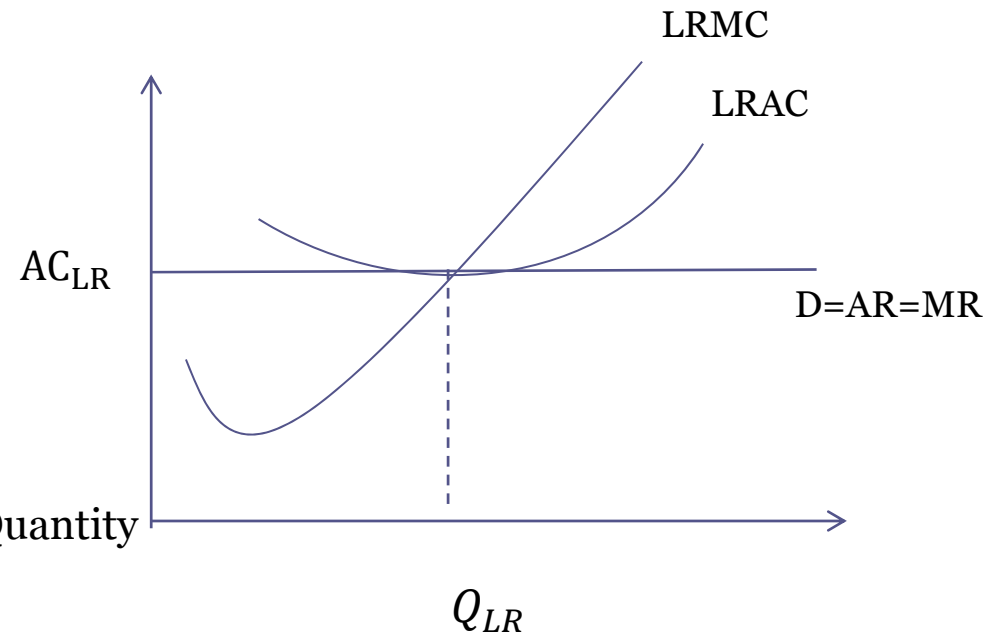


Perfect competition, LR position

The Market

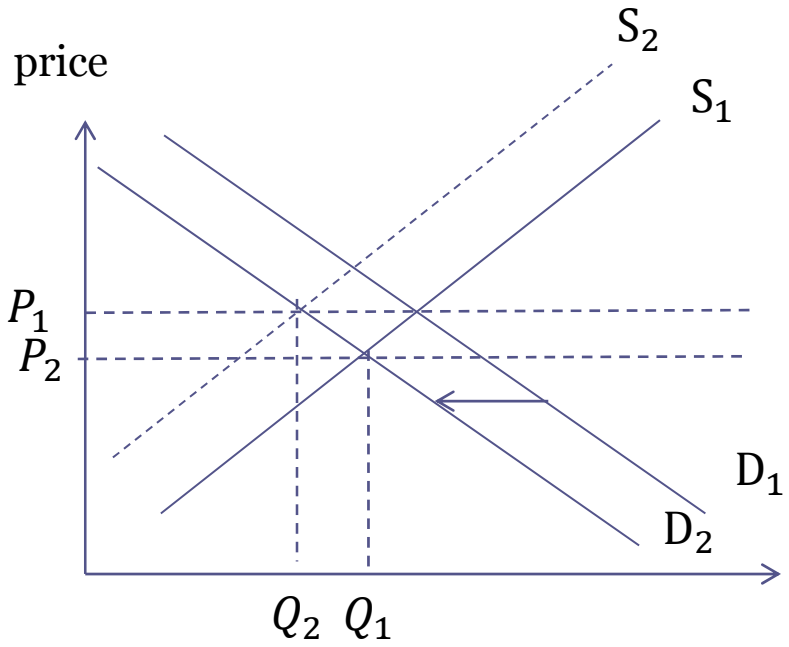


The firm

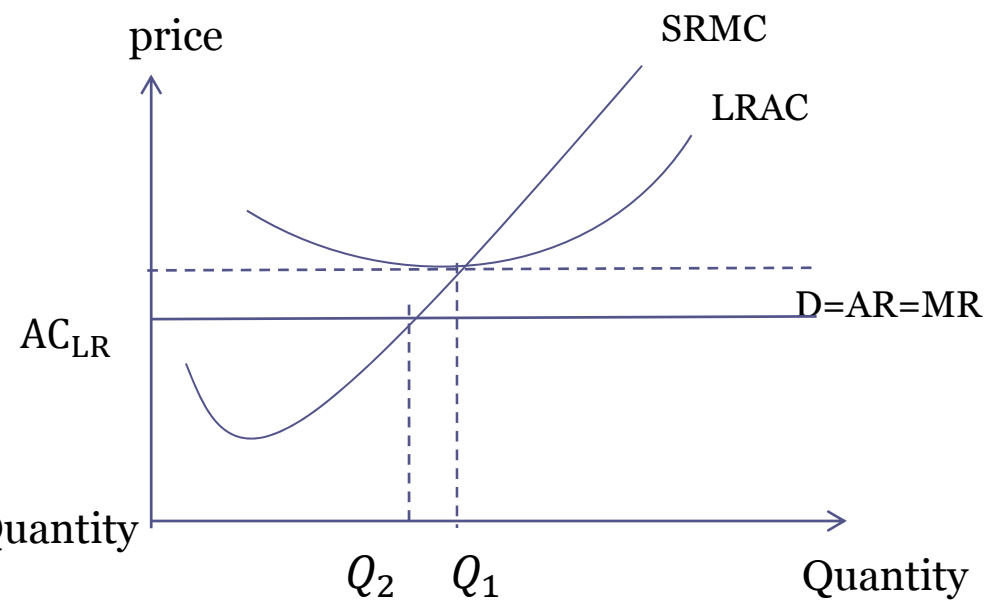


Perfect competition, SR position(losses)

The Market for Clyde Built Ships



Clydeside Shipbuilders



- Further assumptions:
  - Non increasing production technologies, thus there are no economies of scale
  - Non rivalry in consumption- consumption by one individual does not preclude consumption by another
  - Absence of externalities, all benefits and costs are private and thus taken into account in market based decisions
  - No government intervention to ‘interfere’ between the forces of demand and supply

No economies of scale and no advantages in larger-sized firms

- If there were increasing returns to scale, then there would be an in-built incentive for firms to increase in size in order to lower average costs and thus be in a position to undercut smaller rivals and gain a larger share of the market

- If increasing returns to scale existed over the whole market size, the ultimate conclusion would be a monopoly, where one firm would face a position of no competition

Non rivalry in consumption

- Consumption by one person does not affect the consumption of the good or service by someone else
- If one person consumes the good it does not make it unavailable to others
- If consumers want a given product they can get it

Externalities

- Costs of a given activity fall not only on those that benefit from that activity but also on others who do not
- The problem with externalities are that they are not taken into account when making a market-based decision as the externality has no market value
- The road user does not consider the costs on the environment when deciding whether or not to use the car
- Market failure – may lead to over or under consumption of a particular good or service due to the presence of externalities

Government intervention

- Government intervention is a form of market failure as it would interfere with market signals and thus lead to an inefficient outcome
- E.g. paying subsidies for certain goods or services interferes with these signals by encouraging consumers to buy products they do not really want
- Subsidies encourage the tying up of resources in the production of goods or services at a higher cost than the benefit derived from the consumption of those goods or services

Case study

Road haulage and the economist's model of perfect competition

- Many buyers and sellers
  - 102,000 goods vehicle operator licenses
  - 441,000 registered vehicles
  - Three quarters of road haulage operators operate a fleet size of two vehicles or less, with a very high percentage of single-vehicle firms operated by owner-drivers
  - Few larger operators with an average fleet size of around 20 vehicles
  - The industry has many firms, this appears to consist of a very clear division of small and large companies
  - There would appear to be a significant number of firms that are of a size to influence the market, not all firms are price takers

- A homogenous product
  - Firms operate a basic low-tech service to transport goods from one location to another, e.g. a driver and a lorry
  - There can be deviation from that basic assumption and certainly an element of product differentiation
  - One factor that plays a key role in the road haulage industry is the firm's reputation
  - Hauliers with good reputations for high quality services that deliver on time could feasibly charge higher prices and will almost certainly acquire a degree of consumer loyalty

- Perfect information
  - Three aspects of perfect information: prices, production and performance
  - Information on market price and production technologies would appear to be relatively easy to obtain; however, potential entrants to the industry may be limited to those with an inside knowledge of the prevailing business environment

- No barrier to entry and exit
  - The basic components required for a road haulage firm are a qualified driver, an operator’s license and a suitable vehicle

- Non-increasing returns to scale
  - Are there any advantages for larger firms with regarded to improved productivity or lower average cost?
  - Evidence tend to suggest that economies of scale do exist in road haulage, but are not as extensive as in other industries such as rail freight

Perfect competition and efficiency

- Strong competition disciplines all producers to accept the market price that is at the level that simply covers the cost

- Assuming that those consumers who most value a product are willing and able to pay the highest price for it, a perfectly competitive market is also allocatively efficient

- As there are productive and allocative efficiency within perfect competition, there is also Pareto efficiency

- Productive efficiency
  - The level of average costs in comparison to the minimum that is feasible
  - A productively efficient producer or market is operating at the lowest point on the average cost curve
  - A productively efficient producer or market maximizes its output form a given amount of resources

- Allocative efficiency
  - An allocatively efficient market is one that distributes and uses resources in the way that produces what consumers most value; and then distributes those products to those who will gain the most utility from them

  - A more formal definition is that allocative efficiency is achieved when the price is equal to the marginal cost

$$P=MC$$

Pareto efficiency

- A market with Pareto efficiency is a state in which no one can be made better off without making someone else worse off

- Maximizing the total surplus in a market

Case study:

Tramp shipping

- Shipping is a vital part of the European transport sector for some 90 per cent of all products imported into the Union

Shipping market is made up of three parts

- Liner market involves the transportation of relatively small cargoes

- Bulk market involves the transportation of large cargoes of homogenous products on a relatively infrequent basis (between 6 and 12 voyages a year per vessel)
  - This market is dominated by the transportation of energy-related products such as coal and oil

- Specialized market involves the bulk transportation of products that can be transported more effectively by using specifically designed vessels, loading equipment, docks and other facilities

Large numbers of small producers with homogenous products

- 1451 ship-owning companies in the EU 15 in 2004, owning a total of 8323 vessels, including liner, bulk, specialized and deep sea ships
- Over a third of those companies had only a single vessel
- The bulk market is competitive as the service provided is homogenous, an individual vessel can be viewed as the competitive unit and they are price takers

Free entry and exit

- A whole array of support services that help new companies to enter the market

- Ship management companies will manage vessels; chartering brokers will arrange the employment of vessels and the collection of revenues, and will deal with any claims; sale and purchase brokers will buy and sell vessels

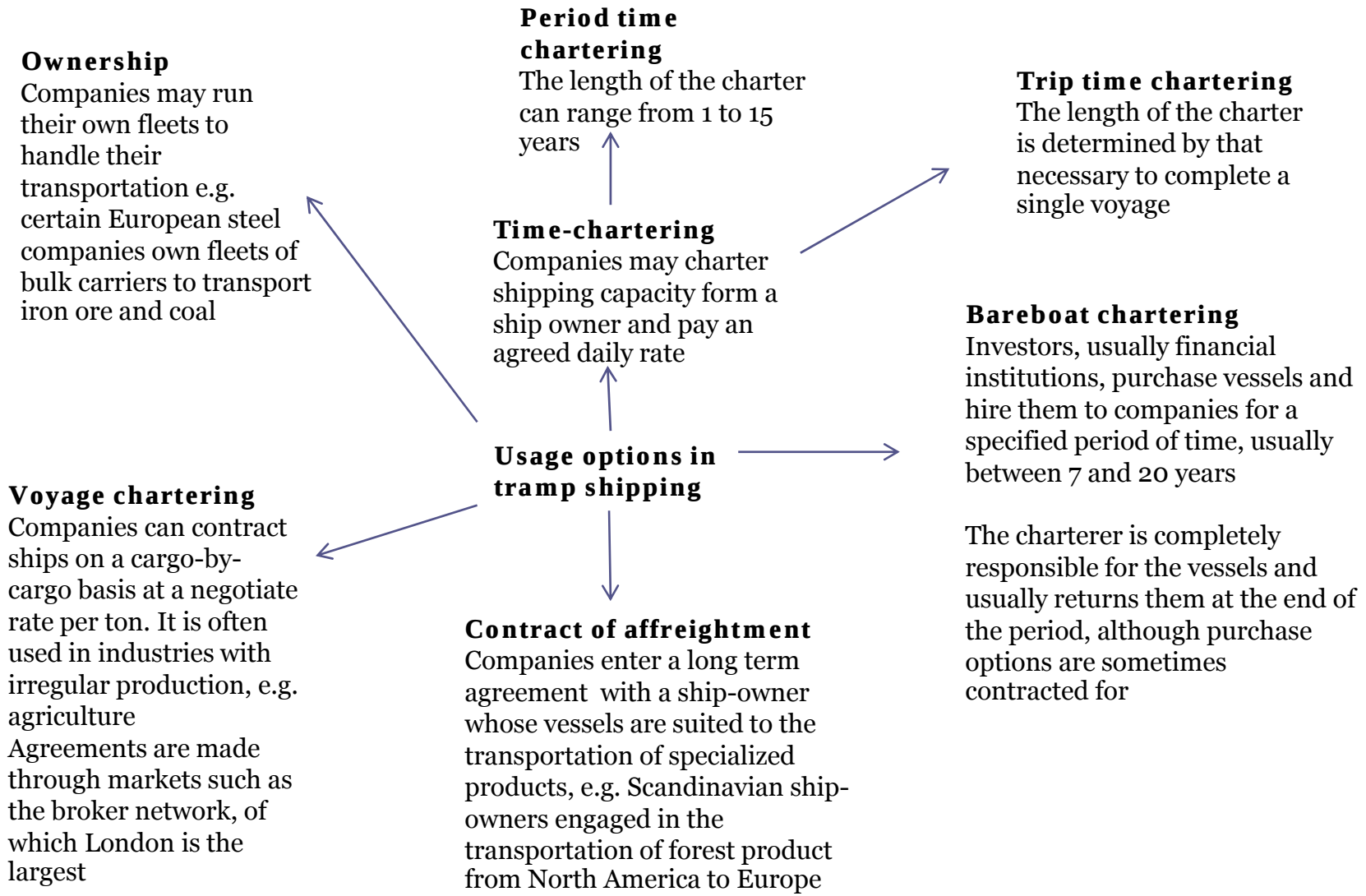
Information

- A high degree of knowledge within tramp shipping
  - Strong transparency
  - Allowing consumers and producers to know that their counterparts are doing and to make informed decisions based upon this
  - Information about revenues and asset prices is published daily by ship-broking businesses and is widely circulated throughout the industry

Movement of goods

- Geographically mobile
- Customers in one European country are able to freely purchase the services of providers in another
- Supply to move in response to changes in demand
- Flexibility in the tramp shipping market is helped by the wide range of ways in which shipping services can be purchased

Usage option in the tramp shipping market



Reference

- Mallard G., and Glaister S. (2008). Transport Economics: Theory, Application and Policy. Palgrave Macmillan.

- Cowie J. (2010). The Economics of Transport. Routledge.