

## ESM0595 perfect competition

### Definition

Perfect competition: a theoretical benchmark concept in economics that results in the achievement, in the long run, of maximum efficiency, and is used as the basis against which to measure market performance for other theoretical and real world market structures and other economic concepts.

### Abstract

Perfect competition describes one of the two endpoints of the continuum used to categorize market conditions. As such, it is the antithesis of the other continuum endpoint – **MONOPOLY**. Whereas monopoly refers to the circumstance where there is just one seller of a product in a market, perfect competition refers to a circumstance where there are an infinite number of sellers in a market, and **COMPETITION** is unrestrained except by market forces. The concept of perfect competition is often traced to the ideas articulated in the 18th century by Adam Smith of ‘natural price’ and the reduction in price that occurs as the number of sellers increases. The concept was refined, ultimately through mathematical formulation, resulting by the 1950s in the concept as we understand it today. Perfect competition can best be perceived as a benchmark used to illustrate other economic concepts. No real world market can satisfy all its requirements.

Perfect competition is a term used in economics to describe one of the two endpoints of the continuum used to categorize market conditions. As such, it is the antithesis of the other continuum endpoint – **MONOPOLY**. Whereas monopoly, in the sense the term is used in economic theory (as opposed to its use in antitrust analysis), refers to the circumstance where there is just one seller of a product in a market (i.e., it describes a circumstance in which there is the absence of competition), perfect competition refers to a circumstance where there are an infinite number of sellers in a market, and competition is unrestrained except by market forces.

The concept of perfect competition is often traced to the twin ideas articulated in the 18th century by Adam Smith of ‘natural price’ and the reduction in price that occurs as the number of sellers increases. It was further developed through the ‘rule of unlimited competition’ set forth by Cournot in the 19th century (Stigler, 1957). The concept was further refined and developed through logical analysis and ultimately through mathematical formulation, resulting by the 1950s in the concept as we understand it today (e.g.,

see Arrow, 1959; Debreu, 1959; and McKenzie, 2002; and Weintraub, 2002).

In mathematical terms, in a perfectly competitive market price is set at **MARGINAL COST**. The marginal cost is just equivalent to the opportunity costs of making a good. The point at which demand – the salient characteristics of demand being captured by a ‘demand curve’ (often illustrated by a straight line in economic texts) which represents the marginal benefit to society of a product – and supply – again a curve, representing the marginal cost to society of producing a good – intersect defines both the price at which the product is sold and the quantity supplied at that price. In the long run, at equilibrium in a perfectly competitive market, marginal revenue equals average revenue, which is the market price. This equilibrium is stable (unless perturbed by some exogenous event), in the sense that no producer has any incentive to produce more or less and no buyer is willing to purchase more or less.

While some economists (and many non-economists) contend that few perfectly competitive markets exist in the real world – the wheat market (in terms of producers, i.e., farmers) is sometimes cited as one of the few examples of a perfectly competitive real world market – strictly speaking, as the concept is understood in economic theory, there are no real world markets that satisfy all the manifold very restrictive conditions required for a market to be perfectly competitive (e.g., Samuelson, 1985; and Pindyck and Rubinfeld, 2004). These conditions include:

- Infinite number of sellers, each willing to supply the product at a certain price.
- Infinite number of buyers, each willing to buy the product at a certain price.
- Price taking, in the sense that no buyer and no seller (and no feasible combination of buyers or sellers) is able to influence price. Each buyer and each seller takes the price as given. The implication of this fact is that any seller who attempts to raise price, even by a very small amount, above the ‘competitive market’ price will lose all sales, and any buyer who attempts to secure product at a price that undercuts, even by a small amount, the ‘competitive market’ price will find no seller willing to provide any product to her/him.
- No entry and exit barriers. This implies that firms incur no non-recoverable costs if they enter and none if they exit (while the definitions of entry barriers and exit barriers are controversial among

## perfect competition

economists, they generally agree that the lack of non-recoverable entry and entry costs are consistent with the lack of entry or exit barriers). Furthermore, entry and exit into perfectly competitive markets is assumed to be instantaneous.

- Homogenous, perfectly divisible outputs. All firms sell identical products and buyers perceive the products of any one producer to be perfect substitutes for those of any other producer. Perfect divisibility implies that output is continuously variable and that any output level is feasible.
- No transaction costs. Transaction costs are assumed to be zero both on the production side and the buyer side. Therefore all factors of production are perfectly mobile (and can therefore be reallocated in response to changes in demand) instantaneously and without cost, and buyers incur no costs to purchase products.
- Perfect information. Both buyers and sellers possess all relevant information and perfect foresight. No one has any informational advantage.
- Constant returns to scale in production and no technological advantage. Any technological progress is immediately propagated throughout the market.
- Profit maximization. Firms are assumed to sell at the point at which marginal cost equals marginal revenue. In long run equilibrium, marginal cost would equal average cost. So each firm would just cover its costs (a condition that economists refer to as 'zero economic profits', or profits just sufficient to cover all variable costs, and provide a return to capital just sufficient to cover the opportunity cost of capital) (Varian, 2005).
- No EXTERNALITIES. Each firm bears all the costs of its production and imposes no uncompensated costs on others.

No real world market can satisfy all these requirements. Perfect competition can be analogized to a hypothesized frictionless surface used to illustrate certain physics concepts. As such, perfect competition can best be perceived as a pedagogical tool or benchmark used by economists to illustrate other economic concepts. For example, a perfectly competitive market, in contrast to most real world markets, is in equilibrium in the long run. It is also both productively and allocatively efficient – that is, it results in production at least cost (productively efficient), and production occurs at the point where the

marginal benefit to society is equal to the marginal cost of production (allocatively efficient).

More to the point, because a perfectly competitive market in equilibrium by definition maximizes social welfare, it is the means by which the performance of other, more realistic, MARKET STRUCTURES can be defined and measured. In other words, the performance of other market models can be defined in terms of the deviations from social welfare or prices or cost structures that characterize them in comparison to the perfectly competitive market model. These alternative market models are collectively termed 'imperfectly competitive'. They can violate any one (or several or all) of the assumptions that underpin the perfectly competitive market model, but generally (although not always), imperfectly competitive markets are characterized by relatively few sellers, non-standardized, differentiated products, barriers to entry and imperfect information available to buyers, sellers or, more often, both.

The deviations of alternative market models from the perfectly competitive benchmark may be best represented by the concept of economic negligibility, which is central to the notion of perfect competition (Aumann, 1964). Economic negligibility implies that no agent within the economic system – either on the selling or the buying side – can affect outcomes – prices or quantities. Stated differently, economic negligibility implies that no participant in a perfectly competitive market has any degree of market power. In the other market models developed by economists, economic negligibility is discarded and agents can affect outcomes. Of course, in real world markets, firms continuously vie for competitive advantage against their actual and potential rivals and strive to earn above-competitive rates of return on their investments. The prospect of above-competitive returns, which can often be achieved by at least some firms in the real world, motivates entrepreneurs and managers and energizes market competition.

The most obvious foil to perfect competition is the classical monopoly, whose most salient characteristic is the single seller (or, in the case of the monopsonist, the single buyer) that can extract positive economic profits (e.g., returns in excess of the opportunity cost of capital) because it faces no competition. That is, the monopolist can choose its price (subject only to the specific characteristics of the demand curve, but not to any competitive constraint), its output and its profit level. Unlike the economically negligible

participant in a perfectly competitive market, the monopolist exercises substantial market power – the power to price without regard to competitive constraint.

Other imperfectly competitive economic models, such as oligopoly (few sellers) and monopolistic competition (multiple sellers of differentiated products), vary the amount and/or duration of market power available to agents. Consequently, agents in such markets are described as having some degree of market power – i.e., some degree of control over price. Practically, this means that, unlike agents in perfectly competitive markets, agents in imperfectly competitive markets can increase price without necessarily losing all their customers. In what are described as ‘oligopolistic markets’, there are few sellers of identical or differentiated products. For example, in oligopolistic markets, firms are generally aware of their influence over price, are cognizant that their pricing and output decisions are interdependent with the corresponding decisions of other firms and can often earn rates of return that exceed opportunity costs. In ‘monopolistically competitive’ markets, competitive firms sell differentiated products that are viewed as only imperfectly substitutable for the products of other firms. Imperfect substitution gives each firm some degree of market power and allows them to charge prices exceeding marginal costs, at least in the short run (the degree of long run power being related, at least in part, to entry conditions). In mathematical terms, firms have some discretion over price and/or product quality because they face downward sloping demand curves.

Many other economic concepts, too, are usefully analysed as deviations from the conditions that are required in order for a market to be perfectly competitive markets and, viewed through that lens, illustrate the implications of such deviations on market performance and social welfare. Just some of the more prominent examples include:

- Externalities, which are uncompensated costs or benefits that economic entities impose or confer on other economic entities. The existence of externalities makes perfect competition impossible because prices no longer represent social costs. As a result, the existence of externalities, when they have significant effects, requires some type of market intervention, such as government regulation (e.g., environmental regulation to reduce

pollution or internalize its costs to the entity that causes it).

- Public goods are products that, if supplied to one person, are available to others at no additional cost. An example is national defence. In contrast with private goods, for which consumption of a unit by one party precludes consumption of that same unit by another party, public goods cannot be supplied by private markets, even perfectly competitive ones, because a supplier cannot confine consumption of the good to those who pay for it. As a consequence, no individual supplier would provide such a good (i.e., because it could not obtain adequate compensation or, in the extreme, any compensation for it through private transactions). Since collective action is required to supply a public good, supply violates one of the fundamental assumptions associated with perfectly competitive markets, which posits economic negligibility for any entity or group of entities (Pearce, 1992).
- Entry and exit costs. Whatever one’s definition of entry and exit barriers, non-recoverable costs associated with these actions introduce friction into the market and are both common in the real world and incompatible with perfectly competitive markets. They reduce the potential for arbitrage, the ‘lubricant’ that facilitates adjustment to equilibrium (and which is assumed to occur instantaneously in perfectly competitive markets).

For each and every assumption that underpins the economic model of perfect competition, a similar analysis of deviations from the model’s requirements could be developed. As one deviates further from the idealized model, more realistic – in the sense of describing real world market conditions – market characteristics emerge, and more complex and more nuanced market behaviour (and its price and non-price implications) can be analysed. This encapsulates perfect competition’s real world relevance – as a theoretical benchmark for assessing social welfare implications (Carlton and Perloff, 2005).

Finally, it should be noted that, because perfect competition is a pedagogical economic tool and not a descriptor of real world markets, it is not the benchmark used in antitrust analysis to determine whether conduct is anti-competitive or whether a merger would substantially lessen competition (e.g., see Pleatsikas and Teece, 2001). The proper economic benchmark for gauging firm behaviour in an antitrust

## perfect competition

context is a workably competitive market. In a workably competitive market, some (or even all) market participants may have some market power (i.e., some discretion over price), but no market participant has a substantial degree of market power (which, as defined by economists, indicates an entity that has no competitive constraint on its ability to price or for which competitive constraints are relatively unimportant). In a workably competitive market, at any specific point in time, prices can deviate from underlying costs and the deployed technologies can deviate from the most efficient ones currently available. However, in such markets, economic forces drive the market, albeit not instantly, towards efficient prices, outputs and costs.

CHRIS PLEATSIKAS

### See also

COMPETITION; CONTESTABILITY; EFFICIENCY; EXTERNALITY; MARGINAL COST; MARKET STRUCTURE; MONOPOLY; SUPPLY AND DEMAND

### References

Arrow, K. J. 1959. Toward a theory of price adjustment. In *The Allocation of Economic Resources*, ed. M. Abramovitz. Stanford, CA: Stanford University Press.

- Aumann, R. J. 1964. Markets with a continuum of traders. *Econometrica* 32, 39–50.
- Carlton, D. W. and Perloff, J. M. 2005. *Modern Industrial Organization* (4th edn). Boston, MA: Pearson Addison-Wesley.
- Debreu, G. 1959. *The Theory of Value*. New York: John Wiley & Sons.
- McKenzie, L. W. 2002. *Classical General Equilibrium Theory*. Cambridge, MA: The MIT Press.
- Pearce, D. W. ed. 1992. *The MIT Dictionary of Economics* (4th edn). Cambridge, MA: The MIT Press.
- Pindyck, R. S. and Rubinfeld, D. L. 2004. *Microeconomics* (6th edn). Upper Saddle River, NJ: Prentice Hall.
- Pleatsikas, C. and Teece, D. 2001. Economic fallacies encountered in the law and economics of antitrust: illustrations from Australia and New Zealand. *Trade Practices Law Journal* 9, 73–94.
- Samuelson, P. A. 1965. *Foundations of Economic Analysis* (2nd edn). Cambridge, MA: Harvard University Press.
- Stigler, G. 1957. Perfect competition, historically contemplated. *Journal of Political Economy* 65, 1–17.
- Varian, H. R. 2005. *Intermediate Microeconomics: A Modern Approach* (7th edn). New York: W.W. Norton & Company.
- Weintraub, R. 2002. *How Economics Became a Mathematical Science*. Durham, NC: Duke University Press.

## Non-Print Items

**Classifications:** key concepts/overview; industrial organization, foundations

**Keywords**

benchmark; competition; efficiency; equilibrium; marginal cost; monopoly; price taking

**Additional index items**

welfare

scale economies

public goods

**Author Query Form**

No Queries