

cartels

Cartels are associations of firms that restrict output or set prices. They may divide markets geographically, allocate customers, rig bids at auctions, or restrict non-price terms. They have often been formed with the participation or support of state actors. In contrast to the pre-Second World War period, today most cartels are illegal in most jurisdictions. The average duration of cartels is between five and seven years, but the distribution of duration is skewed: a large number of cartels break down within a year but a sizable proportion last for over a decade.

Producers form cartels with the goal of limiting competition to increase profits.

Cartels are associations of independent firms that restrict output or set prices. They may divide markets geographically, allocate customers to specific producers, rig bids at auctions, or restrict non-price terms offered to customers. They have often been formed with the active participation or support of state actors. In contrast to the pre-Second World War period, today most cartels are illegal in most jurisdictions.

Upon its creation a cartel immediately faces three key problems: coordination, cheating and entry. In a dynamic economy, the solution to these problems will change over time, so successful cartels must develop an organizational structure that allows them to re-solve these problems continuously.

Stigler's (1964) classic article highlights the incentive to cheat as the most important source of instability undermining cartels. In a repeated setting, a firm weighs the expected gain from cheating today (the benefit from cheating) with the expected reduction in future discounted profits that follows cheating (the cost of cheating). In order for firms to be willing to refrain from cheating, the following must hold:

$$\sum_{t=0}^T \delta^t \frac{\Pi^m}{n} > \Pi^m$$

where Π^m is the one-period cartel profit, n is the number of firms in the industry, and δ^t is the discount rate. Thus, collusion is easier to achieve the larger the difference between cartel and non-cartel profits, the smaller the number of firms, and the more patient these firms are (Tirole, 1988).

Friedman (1971) demonstrates that firms may use 'off the equilibrium path' threats of price wars in retaliation for cheating to provide firms with the incentive not to cheat. However, because in his model any cheating would be observed immediately and therefore subject to swift retaliation, firms do not cheat and price wars are not observed. In the Green and Porter class of models (Green and Porter, 1984; Abreu, Pearce and Stacchetti, 1986), firms cannot observe one another's output (or pricing) actions nor infer them with certainty from public information. Economic fluctuations require that firms revert to equilibrium 'punishment' or 'price war' behaviour at times in order to maintain the incentives necessary to achieve collusion. Thus, the appearance of on-and-off collusion does not represent inherent cartel instability, but rather a mechanism that cartels use to stabilize themselves.

This theoretical perspective also implies a second mechanism for increasing cartel stability: a cartel may invest in information collection in order to better monitor individual firm activities. Improved monitoring both deters

cheating and allows cartels to avoid costly price wars that arise from the inability to distinguish cheating from external shocks.

The most successful cartels actively work to create barriers to entry. Sometimes this is done through collective predation, as in Scott Morton (1997) in which incumbent cartel members successfully deterred entry by financially weaker and smaller firms. In other cases, cartels have turned to the state to create regulations, tariffs, or provide anti-dumping protection with the goal of excluding outsiders. Cartels sometimes use vertical exclusion (for example, a joint sales agency) or restrict access to technology (for example, via a patent pool) to limit entry.

Cartels use direct and repeated communication to overcome obstacles to coordination. Cartel negotiations often begin with discussions of prices and market shares, but expand over time to restrict cheating in non-price dimensions, such as terms of sale, advertising, transport costs, and production capacities. Firm asymmetries and changes in firms' costs can make these negotiations challenging. Slade (1989) suggests that price wars arise from changes in firm or industry characteristics. These price wars then facilitate the learning necessary for firms to re-establish collusion. Cartels also learn how to structure incentives so that collusion is more profitable in the long run than cheating. For example, successful cartels often fashion self-imposed penalties or other compensation schemes for firms that exceed cartel quotas. Cartels sometimes develop elaborate internal hierarchies allowing for communication at various levels of management. A hierarchical cartel structure allows for high-level information exchange and bargaining activities to be separated from regional or local information exchange and monitoring efforts. When trust is particularly difficult to establish and firms doubt the accuracy of communication or data exchanges, cartels often turn to a third party – such as a trade association – to facilitate information sharing.

The average duration of cartels measured over a range of countries and time periods is between five and seven years (Levenstein and Suslow, 2006). There is considerable dispersion in cartel duration: the standard deviation of duration is almost as high as the average. Observed cartel duration is very skewed, with a large number of cartels lasting less than a year or two and a long tail of cartels that endure for a decade or more.

Predictable fluctuations in product or industry demand do not generally undermine effective cartels, but rapid industry growth and unexpected shocks do. Macroeconomic fluctuations, which are close to common knowledge, have little impact on cartel stability. Many successful cartels develop an organizational structure that allows them to weather cyclical fluctuations. Cartels that are disrupted by observable cyclical fluctuations may be inherently fragile.

Large customers can undermine cartel stability by increasing the incentive to cheat, as posited by Stigler (1964) and tested by Dick (1996). On the other hand, large customers sometimes benefit from the existence of a cartel if they receive preferential pricing compared with that received by their smaller competitors, and can even contribute to its stability.

Although posited by theory, there is no simple empirical relationship between industry concentration and the likelihood of collusion. This may reflect sampling bias in studies that focus on prosecuted cartels, since cartels with many firms or with the involvement of an industry association may be easier to detect. Or it may be that industries with a small number of firms are able to collude tacitly without resorting to explicit cartels. Finally, it may reflect the endogeneity of concentration: collusion may allow more firms to survive and remain in the market (Sutton, 1991; Symeonidis, 2002).

Analyses of the impact of cartels on prices and profits generally use one of three approaches: changes in price following cartel formation, comparison between ‘good times’ and ‘price war’ periods, and, comparison between the cartel price and a counterfactual or ‘but-for’ price that would have prevailed in the absence of collusion. Connor and Lande (2005) provide an exhaustive survey of studies of cartel price effects. They conclude that the median overcharge resulting from cartels is approximately 25 per cent.

Cartels can also affect investment and productivity. Cartel participants have often argued that cartels increase investment and productivity growth by allowing firms to smooth production over time. Others have argued that, by removing the pressure of competition, cartels reduce innovation and productivity growth. Theoretical models have suggested that cartels lead to increased investment in capacity either because excess capacity can deter entry and provide enforcement (Dixit, 1980) or because, when price competition is suppressed, firms compete in other dimensions (Feuerstein and Gersbach, 2003). In some cases, cartels explicitly restrict investment in new capacity. Where there are not such explicit restrictions, empirical studies have found cartels are associated with increases in investment. On the other hand, no consistent relationship between cartels and productivity growth or innovation has been established empirically (Symeonidis, 2002).

As firms have become increasingly global, international antitrust law and policy has faced new challenges. Competition authorities have increased enforcement, attempted to harmonize practices and procedures, and increased cooperation across jurisdictions. The United States is the country with the longest history of prosecuting explicit collusion, with state laws antedating the national ban on price fixing enacted with the passage of the Sherman Act of 1890. Many Western European countries adopted laws against price fixing following the Second World War, but also allowed a large number of exemptions. Since the mid-1990s these exemptions have been sharply reduced, and dozens of other countries have banned price fixing for the first time. Enforcement activities against cartels, and international cartels in particular, rose sharply in the United States in the late 1990s. European countries, including the newest members of the European Union, have also increased their enforcement activities against cartels, as have countries in Asia, Africa and Latin America. Price fixing – long a criminal offence in the United States – has now been criminalized in several other countries, including the United Kingdom and Ireland. This increased enforcement has demonstrated that cartels continue to be active in a wide range of industries in the 21st century.

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See also

<xref = A000223 > antitrust enforcement;

<xref = C000597 > cooperation;

<xref = M000070 > market structure;

<xref = xyyyyyy > Organization of Petroleum Exporting Countries (OPEC);

<xref = xyyyyyy > Stigler, George.

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Index terms

antitrust enforcement
 barriers to entry
 cartels
 cheating
 collusion
 communication
 concentration
 coordination
 entry
 innovation
 price fixing
 price wars
 productivity growth
 trust