Collusive and Non-Collusive Oligopoly

What is an oligopoly?

An oligopoly is a market dominated by a few producers. An oligopoly is an industry where there is a high level of market concentration. Examples of markets that can be described as oligopolies include the markets for petrol in the UK, soft drinks producers and the major high street banks. Another example is the global market for sports footwear – 60% of which is held by Nike and Adidas.

However, oligopoly is best defined by the conduct (or behaviour) of firms within a market.

The concentration ratio measures the extent to which a market or industry is dominated by a few leading firms. Normally an oligopoly exists when the top five firms in the market account for more than 60% of total market sales.

Characteristics of an oligopoly

There is no single theory of price and output under conditions of oligopoly. If a price war breaks out, oligopolists may choose produce and price much as a highly competitive industry would; whereas at other times they act like a pure monopoly.

An oligopoly usually exhibits the following features:

1. Product branding: Each firm in the market is selling a branded product.

2. Entry barriers: Entry barriers maintain supernormal profits for the dominant firms. It is possible for many smaller firms to operate on the periphery of an oligopolistic market, but none of them is large enough to have any significant effect on prices and output.

3. Inter-dependent decision-making: Inter-dependence means that firms must take into account the likely reactions of their rivals to any change in price, output or forms of non-price competition.

4. Non-price competition: Non-price competition is a consistent feature of the competitive strategies of oligopolistic firms.

Duopoly

Duopoly is a form of oligopoly. In its purest form two firms control all of the market, but in reality the term duopoly is used to describe any market where two firms dominate with a significant market share. There are many examples of duopoly; including Coca-Cola and Pepsi (soft drinks), Unilever and Proctor & Gamble (detergents), Sotheby's and Christie's (auctioneers of antiques/paintings), Standard and Poor's and Moody's (credit rating agencies), BSkyB and Setanta (live Premiership football), and Airbus and Boeing (aircraft manufacturers).

In these markets entry barriers are high although there are usually smaller players in the market surviving successfully such as Virgin Cola. However, if it had not been for the European Competition Commission Sky’s monopoly in the market for live television coverage of

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Premiership football in the UK would have continued. The high entry barriers in duopolies are usually based on one or more of the following: brand loyalty, product differentiation and huge research economies of scale.

Source: Adapted from Robert Nutter, EconoMax, October 2007

Kinked Demand Curve Model of Oligopoly

The kinked demand curve model assumes that a business might face a dual demand curve for its product based on the likely reactions of other firms to a change in its price or another variable. The common assumption is that firms in an oligopoly are looking to protect and maintain their market share and that rival firms are unlikely to match another's price increase but may match a price fall. I.e. rival firms within an oligopoly react asymmetrically to a change in the price of another firm.

- If a business raises price and others leave their prices constant, then we can expect quite a large substitution effect making demand relatively price elastic. The business would then lose market share and expect to see a fall in its total revenue.

- If a business reduces its price but other firms decide to follow suit, the relative price change is smaller and demand would be inelastic. Cutting prices when demand is inelastic also leads to a fall in total revenue with little or no effect on market share.

The kinked demand curve model makes a prediction that a business might reach a stable profit-maximising equilibrium at price P1 and output Q1 and have little incentive to alter prices.

The kinked demand curve model predicts there will be periods of relative price stability under an oligopoly with businesses focusing on non-price competition as a means of reinforcing their market position and

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increasing their supernormal profits. Short-lived price wars between rival firms can still happen under the kinked demand curve model. During a price war, firms in the market are seeking to snatch a short term advantage and win over some extra market share.

Recent examples of price wars include the major UK supermarkets, price discounting of computers in China and a price war between cross channel speed ferry services. Price competition is frequently seen in the telecommunications industry.

**Changes in costs using the kinked demand curve analysis**

One prediction of the kinked demand curve model is that changes in variable costs might not lead to a rise or fall in the profit maximising price and output. This is shown in the next diagram where it is assumed that a rise in costs such as energy and raw material prices leads to an upward shift in the marginal cost curve from MC1 to MC2. Despite this shift, the equilibrium price and output remains at Q1. It would take another hike in costs to MC3 for the price to alter.

There is **limited real-world evidence** for the kinked demand curve model. The theory can be criticised for not explaining *why* firms start out at the equilibrium price and quantity. That said it is one possible model of how firms in an oligopoly *might* behave if they have to consider the likely responses of their rivals.

**The importance of non-price competition under oligopoly**

**Non-price competition** assumes increased importance in oligopolistic markets. This involves advertising and marketing strategies to increase demand and develop brand loyalty among consumers. Businesses will use other policies to increase market share:
o **Better quality of service** including guaranteed delivery times for consumers and low-cost servicing agreements.

o **Longer opening hours** for retailers, 24 hour online customer support.

o **Discounts on product upgrades** when they become available in the market.

o **Contractual relationships with suppliers** - for example the system of tied houses for pubs and contractual agreements with franchises (offering exclusive distribution agreements). For example, Apple has signed **exclusive distribution agreements** with T-Mobile of Germany, Orange in France and O2 in the UK for the iPhone. The agreements give Apple 10 percent of sales from phone calls and data transfers made over the devices.

**Advertising spending** runs in millions of pounds for many firms. Some simply apply a profit maximising rule to their marketing strategies. A promotional campaign is profitable if the marginal revenue from any extra sales exceeds the cost of the advertising campaign and marginal costs of producing an increase in output. However, it is not always easy to measure accurately the incremental sales arising from a specific advertising campaign. Other businesses see advertising simply as a way of increasing sales revenue. If **persuasive advertising** leads to an outward shift in demand, consumers are willing to pay more for each unit consumed. This increases the potential consumer surplus that a business might extract.

Relatively high spending on marketing is important for new business start-ups (consider the huge and often extravagant sums spent on marketing by the emerging dot-coms during the internet mania of the late 1990s and into 2000) and also by firms trying to break into an existing market where there is consumer or brand loyalty to the existing products in the market.

**Price Collusion in Oligopoly**

Collusive behaviour is thought to be a common feature of many oligopolistic markets. In this section we look at different forms of collusion starting with tacit collusion based around price leadership.

**Tacit collusion** refers to a situation where prices and price changes established by a dominant firm, or a firm are usually accepted by others and which other firms in the industry adopt and follow. When price leadership is adopted to facilitate tacit (or silent) collusion, the price leader will generally tend to set a price high enough that the least cost-efficient firm in the market may earn some return above the competitive level.

We see examples of this with the major mortgage lenders and petrol retailers where many suppliers follow the pricing strategies of leading firms. If most firms in a market are moving prices in the same direction, it can take some time for relative price differences to emerge which might cause consumers to switch their demand.

Firms who market to consumers that they are "**never knowingly undersold**" or who claim to be monitoring and matching the cheapest price in a given geographical area are essentially engaged in **tacit collusion**. Does the consumer really benefit from this? Tim Harford's article "**Match me if you Can**" in February 2007 is especially worth reading on this pricing strategy.

**Tacit collusion** occurs where firms undertake actions that are **likely to minimise a competitive response**, e.g. avoiding price cutting or not attacking each other's market.

It is often observed that when a market is dominated by a few large firms, there is always the potential for businesses to **seek to reduce uncertainty** and engage in some form of collusive behaviour. When this happens the existing firms engage in **price fixing cartels**. This behaviour
is deemed illegal by UK and European competition law. But it is hard to prove that a group of firms have deliberately joined together to raise prices.

**Case Study: Tacit Price Collusion in the UK Energy Market?**

There has been concern for some time that the UK retail energy sector has become consolidated into dominance by only six major companies - an oligopoly. The six companies with the major market shares are British Gas, Scottish and Southern Energy, EDF, E.ON, ScottishPower and npower who also are the members of the Energy Retail Association (ERA). The meetings of the ERA have been seen by groups such as Energywatch as a cartel where prices are fixed to boost the members’ profits.

Industry insiders believe that the ERA meetings have resulted in member companies’ prices of gas and electricity rising in step within a few weeks of each other. A few large companies selling a homogeneous product which is price inelastic in demand has all the makings of a cartel. The big energy suppliers have become increasingly vertically integrated in recent years, both generating and retailing gas and electricity.

There may well be no cartel but rather a complex monopoly in which an oligopoly may not actually collude but the outcome in the market suggests that they have.

*Source: Robert Nutter, EconoMax, October 2007*

**Explicit Price Fixing**

Collusion is often explained by a desire to achieve joint-profit maximisation within a market or prevent price and revenue instability in an industry. Price fixing represents an attempt by suppliers to control supply and fix price at a level close to the level we would expect from a monopoly.

To collude on price, producers must be able to exert some control over market supply. In the diagram below a producer cartel is assumed to fix the cartel price at price Pm. The distribution of the cartel output may be allocated on the basis of an output quota system or another process of negotiation.

Although the cartel as a whole is maximising profits, the individual firm's output quota is unlikely to be at their profit maximising point. For any one firm, expanding output and selling at a price that slightly undercuts the cartel price can achieve extra profits! Unfortunately if one firm does this, it is in each firm’s interests to do exactly the same and, if all firms break the terms of their cartel agreement, the result will be excess supply in the market and a sharp fall in the price. Under these circumstances, a cartel agreement can break down.
Collusion in a market or industry is easier to achieve when:

1. There are only a **small number of firms in the industry** and barriers to entry protect the **monopoly power** of existing firms in the long run.

2. **Market demand is not too variable** (or cyclical) i.e. it is reasonably predictable and not subject to violent fluctuations which may lead to excess demand or excess supply.

3. **Demand is fairly inelastic** with respect to price so that a higher cartel price increases the total revenue to suppliers – this is easier when the product is viewed as a necessity.

4. **Each firm’s output can be easily monitored** (this is important!) – This enables the cartel more easily to control total supply and identify firms who are cheating on output quotas.

5. **Incomplete information** about motivation of other firms may induce tacit collusion.

**Possible break-downs of cartels**

Most cartel arrangements experience difficulties and tensions and some cartels collapse completely. Several factors can create problems within a collusive agreement between suppliers:

1. **Enforcement problems**: The cartel aims to restrict production to maximize total profits of members. But each individual seller finds it profitable to expand production. It may become difficult for the cartel to enforce its output quotas and there may be disputes about how to share out the profits. Other firms – not members of the cartel – may opt to take a **free ride** by producing close to but just under the cartel price.

2. **Falling market demand** creates excess capacity in the industry and puts pressure on individual firms to discount prices to maintain their revenue. There are good recent examples of this in commodity markets including the collapse of the coffee export cartel.

3. **The successful entry of non-cartel firms into the industry** undermines a cartel’s control of the market – e.g. the emergence of online retailers in the book industry in the mid 1990s led ultimately to the end of the Net Book Agreement in 1995.

4. **The exposure of illegal price fixing by market regulators** such as **UK Office of Fair Trading**.

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Exposure of cartels within the European Union and the USA

In recent years a substantial number of price-fixing agreements have been uncovered by the European Union, UK and USA competition authorities. Some of the most prominent examples can be explored by using the links below:

- Law broken on pricing by tobacco firms (2008)
- Airlines fined $504m in US air-cargo price fixing probe (2008)
- BA given massive fine for fuel surcharge price fixing (2007)
- How arch rivals colluded to hike up cost of air travel (2007)
- Supermarkets fined £116m for dairy price-fixing (2007)
- Dutch brewing cartel (2007)
- Lift manufacturers cartel (2007)
- Rubber cartel (2007)
- Chemicals price fixing cartel (2006)
- Copper price fixing cartel (2006)
- Lift companies cartel (2005)
- Plastics bags cartel (2005)
- Sotheby's fined £12m for price fixing (2002)

More recent articles on collusion are available from the Tutor2u blog.