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Two-Sided Markets

It takes two to tango and solve the 'chicken and egg' problem

Many markets cater simultaneously for two or more groups of customers. They need to attract both to develop a saleable product because each groups' demand is interrelated. Media (newspapers, television), the Internet, shopping centres, dating and employment agencies, auction houses, exhibitions, payment systems (credit cards), and video game consoles all have this feature. Economists call these two- or multi-sided markets.

The distinctive features of two-sided markets have largely been ignored by economists and competition authorities. Baxter's (1983) analysis of credit card interchange fees was the first to formally analyse these markets but it was only recently, as a result of antitrust actions against international credit card networks, that economists' attention was drawn to the subject. Even where two-sided markets have been recognised by antitrust authorities - such as *AOL/Time Warner, Microsoft*, credit card and brokers' charges – the treatment has been superficial. Here the rudiments of two-sided markets, and some implications for competition law are set out.

Concept defined

A two-sided market is one where the demand of two groups of customers is interrelated. The two customer groups may be physically distinct or switch between being buyers and sellers. Their demand is interrelated through network effects (see *Casenote*, Jan. 1997). Network effects are positive external benefits conferred by one group on another e.g. for a credit card to be used and valued, merchants must accept the card and their customers must be willing to use it, and clearly the attractiveness of the card to each group is determined by how many customers/merchants use the card.

Typically, the two customer groups cannot contract directly because transactions costs are prohibitive. Thus an intermediary group provides a valuable service by internalising the otherwise external benefits. Bringing together the two sides of the market – the 'chicken and egg' problem – is an important feature of two-sided markets.

Rochet & Tirole (2004) define a two-sided market more formally as one where total output depends both on the distribution of prices and their aggregate level. This means that 'balancing' prices on both sides of the market is important because the price to one group of customers not only affects their demand, but also the demand of the other group of customers.

To illustrate a two-sided market consider the problem of setting admission prices to a disco. A disco is a two-sided market – it must attract both men and women to create a viable product and successful business. Heterosexual men will tend to go to discos with more women. The disco owner must therefore attract women in order to attract men. One way of doing this is to charge women less than men. The lower entrance price to women is a way of attracting more women which, in turn, attracts more men despite the higher entrance price for men.

Several fundamental principles of two-sided markets emerge from this simplified example. The first, echoing Rochet & Tirole, is that the structure of prices is as important as their level in determining demand and output. The second is that both sides of the market have to be analysed. The lower price for women can only be fully understood if the reaction of men is examined. What might appear a predatory price if women only are assessed, transforms into pro-competitive pricing when both sides of the market are considered. Third, and crucially, prices in competitive two-sided markets are not cost related, but determined by demand-side factors. As a result of these considerations, one-sided logic applied to two sided markets will generate erroneous analysis and conclusions.

Effect on Market Definition

Markets are now commonly defined by reference to the SSNIP (the **S**mall but **S**ignificant **N**on-transitory **I**ncrease in **P**rice) test. This looks at whether a hypothetical monopolist of a collection of products could profitably raise their price by 5% or 10%. Typically the SSNIP test is applied to one product or service i.e. one-side of the market. Thus the question of whether, say, magazines are in a separate market to other print media would be investigated by examining how circulation and profit margins react to a 5% increase in cover prices holding all other factors constant. However, the profitability of a cover price increase depends not solely on the impact that lower circulation has on subscription profits but also its impact on advertising revenues (the other side of the magazine market). That is, market definition must be

based on the impact of a price increase on both sides and not one side of the market.

Two-sided markets have other implications for market definition. It is now widely accepted that the Cellophane Fallacy limits the reliability of the SSNIP test in Article 82 cases. The correct application of the SSNIP test is a price uplift on the competitive price, and not the prevailing price which is likely, by implication, not to be the competitive price. However, for two-sided markets' competitive prices may be indeterminate. Further, the use marginal costs as a proxy for the competitive price will not resolve the difficulty, because prices in two-sided market under competitive conditions will not be cost related.

New and emerging markets cause difficulties for competition authorities. Often firms form joint ventures to bring together different sides of the market. However, competition authorities often see this as an attempt by established firms to secure a first mover advantage which in the presence of network effects increases the likelihood of 'prospective' dominance. Two-sided market analysis cautions against this view since such arrangements have a strong efficiency justification in resolving the 'chicken and egg problem' of getting the two sides of the market together in the formative stages of product development.

Competitive implications

Two-sided markets provide a challenge to many standard principles of competitive analysis. Here a few are considered.

Cross-subsidisation: Efficient prices in two-sided markets will result in a degree, perhaps a high degree, of customer and product 'cross subsidisation'. In the disco example, women are charged less than men even though the costs of providing the service to both are the same. This 'cross-subsidisation' is not evidence of anticompetitive pricing. It arises from the interrelated nature of demand which prompts a profit maximising firm to set individual prices in a way that maximises aggregate sales.

***Price discrimination*:** In two-sided markets prices are not based on individual cost differences. They are based on the way individual prices stimulate overall demand when the demand of the different customer groups are interrelated - women attract more men. The price differentials boost aggregate demand, and are intrinsic to creating the product. They would not be eliminated as competitive pressures increase. What competition will do is reduce the aggregate price level but not the price differentials.

***Price-cost margins**:* A high profit margin or price/cost margin for one side of the market is not evidence of monopoly pricing in two-sided markets. In our example the price/cost margin for women will be low, whereas that for men high. The high cost/price margin for men does not correlate with output reductions due to monopoly practices. On the contrary it is associated with increased output by creating a product that men want to buy.

***Predatory pricing**:* It follows from the preceding that the low price charged to women even if below average or incremental costs is not necessarily predatory. It would survive in a competitive market. Indeed, in two-sided markets a product on one side of the market may be given away free. This is the case for free to air television where programmes to viewers are free and funded entirely by advertisers. The use of credit cards as a payment system is free and often attracts benefits that can be viewed as 'subsidies' paid by merchants and card users who use their cards to obtain unsecured credit at fairly high APRs. In *Microsoft*, some economists argued that bundling Microsoft's web browser with the windows operating system free of charge was, *inter alia*, not predatory because it boosted the demand for the bundled product, and the increased incremental revenues meant that the marginal cost of adding the web browser was in fact negative!

Relevance of two-sided markets

Two- and multi-sided markets are prevalent and have recently attracted considerable antitrust and regulatory attention. The discriminatory pricing and 'cross-subsidisation' of customer groups and products in these markets have a strong economic and competitive logic. Unfortunately, two-sided markets suffer from regulatory double jeopardy - the treatment of pricing in EC competition law is generally flawed; and the use of even good one-sided market analysis biases the analysis against optimal pricing arrangements in two-sided markets.

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