

## MisUse of Network Effects in Competition Cases

### Recent Applications to the Computer Industry

Officials, lawyers and economists involved in competition law have shown increasing interest in the nature of competition in network industries. This has been particularly true in cases involving high-technology, information-based industries such as computers and software. The competitive analysis of such network industries has given rise to the concept of “network effects”. The existence of network effects, it has been argued, implies dominant market positions. However, the use of this economic concept has attracted considerable controversy - the flurry of contrasting papers discussing the recent *Microsoft* case in the US provides a good example. Here we explore some of the issues surrounding this controversy and the appropriate use of network effects in competition law cases.

#### Network Effects

Network effects exist when the value of a product or service to a user is affected by the number of other users. The network effect is therefore closely related to the economists’ concept of an externality or third-party effect. An externality is said to exist if a transaction imposes a cost or benefit on others not taken into account by the transacting parties. The classic case of an externality is pollution where the production of a good (for example, paint) gives rise to a third party effect (polluted rivers) not priced in the market. As a result the activity in question is over-expanded because society at large is effectively subsidising its production.

In network industries a similar effect occurs where consumers’ demand is interrelated. For example, the value of a telephone to any one customer is dependent on the number of other subscribers he or she can speak to. Thus the economic benefit or value of an additional subscriber exceeds the value of the transaction to individual subscribers. His or her connection confers an external benefit. It is argued that this demand interrelationship leads to reinforcing feedbacks that generate growth and economies for larger networks.

In this way, network effects are analogous to supply-side economies of scale which lower average costs, permitting the firm to lower prices and gain additional business from rivals. Continued expansion results in even lower average costs, justifying even lower prices. Similarly, the positive feedback from network effects builds upon

previous successes. In the computer industry, for example, users will pay more for a popular computer system, other things equal, or opt for a system with a larger installed base if the prices and other features of two competing systems are equivalent. This apparent advantage, it is argued, enables firms with a high market share to get larger, leading to monopolistic market outcomes.

Hence, in *Microsoft*, it was argued by plaintiffs that the market for operating systems were inherently monopolistic because users wanted to use a system which allowed them to exchange data and programs with other users and moreover, that there were more likely to be a wider range of applications software available for an operating system with a larger user base.

#### Potential Misuses

While it is appropriate to take into account the possibility that network industries exhibit elements of monopoly, with all theoretical concepts there is a risk of misuse and abuse in practical caselaw. As the controversy surrounding *Microsoft* has shown, much of the force of arguments alleging that network effects give rise to anticompetitive outcomes is entirely theoretical. Basing policy advice on stylised theoretical models is usually considered controversial. This is especially true where, as in this case, empirical analysis suggests that the importance of network effects in practice has been overstated and that only in very unusual cases do they provide a rationale for government intervention. In particular, there are several pitfalls which should be guarded against.

First the concept of a network effect is not applicable to all network industries. The reason is straightforward - there may be no demand inter-dependency. Cable television networks provide a good example. The impact and existence of an additional subscriber does not directly effect the value of cable television services to other subscribers. It is true that there are economies of density in cable networks and that infrastructure costs and the costs of settop boxes will decrease as total take-up increases. But this is a supply-side effect and is not unique to a specific cable operation but to the take-up of cable generally when unit costs fall with volume production.

Secondly, even when network effects are present they may be small. Like economies of scale, the positive feedback from network effects may be limited. For example, while DOS and Windows operating systems may have network effects, in the USA the Macintosh and Unix operating systems have a fairly stable (if smaller) share of total PC operating systems.

Thirdly, in many industries network effects are only one of a number of factors responsible for monopolistic tendencies. While network effects have greatly influenced the structure of public telecommunications' networks, economies of scale are the more important factor for the existence and persistence of monopoly in the provision of the local loop. Network effects in the computer software industry may create positive feedback effects that allow some firms to increase in size, but economies of scale are also important for these products. It is likely that the fixed costs of software development dominate, so that average costs fall dramatically and possibly continuously with succeeding units produced.

#### **A case-by-case approach**

The above suggests that there will often be a number of factors important in explaining the competitive functioning of a network industry. These different factors may affect competition in different ways and therefore need to be distinguished and treated separately rather than inappropriately sweeping them together under the heading "network effect". Again *Microsoft* provides a good example of the importance of making these distinctions. In *Microsoft*, it was the presence of economies of scale and the magnitude of switching costs facing consumers which gave rise to the important issues and not network effects as defined by demand-side externalities.

Even where it properly exists, the importance of the network effect, like other industry characteristics such as economies of scale and economies of scope, will be more important in some industries than in others. It is therefore incorrect to assume that conclusions reached in one context apply with equal force in another, albeit related, industry. This means that the examination of issues arising in network industries, such as standard setting, access and compatibility, product pre-announcements, leveraging and exclusive dealing, should be made on a case-by-case basis.

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