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Senior Editor
ROBERT LEGH

Head of the Competition Law Unit of Bowman Gilfillan Inc, Johannesburg

This issue by
ANN BONIWELL

*Former Senior Associate: Bowman Gilfillan Inc
(now studying for a Masters in Law degree at the London School of Economics)*



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Decisions in the past decade concerning the activities of the Microsoft Corporation¹ in the United States have generated considerable debate regarding the manner in which markets characterised by network effects should be regulated. In economies host to an increasing number of high-technology industries, it bears consideration whether competition authorities should proactively limit the extent to which a single firm may benefit from direct or indirect network effects, primarily by limiting the extent to which dominance may be achieved; alternatively, whether an incumbent firm should be allowed to capitalise positive network externalities to the exclusion of smaller, less efficient rivals.

Network effects exist where the utility or benefit that a consumer derives from the use of a product increases with the number of other consumers using the same type of product.² In other words, network effects occur when a good or service becomes more valuable as greater numbers of customers use it.³ “Network effects are often referred to as ‘positive network externalities’ because, by definition, each additional customer adds value to the network. Each existing customer therefore receives a benefit when another customer joins the network.”⁴

A distinction may be made between direct and indirect network effects. Direct network effects occur where one user’s consumption of the network good directly increases the benefit obtained by another user. For example, users of a telephone network, constrained to the services offered by that network, experience a direct network effect each time an additional user joins the

¹ *United States v Microsoft Corp.* 56 F. 3d 430 (3d Cir. 1997); *United States v Microsoft Corp.* 147 F. 3d 935 (D.C. Cir. 1998)); *United States v Microsoft Corp.* 87 F. Supp. 2d 30 (D.D.C. 2000); *United States v Microsoft Corp.* 253 F.3d 34 (D.C. Cir. 2001).

² MA Lemley and D McGowen, *Legal Implications of Network Economic Effects*, (1998) 86 Cal. L. Rev. 479, 483

³ WJ Kolasky, *Network Effects: A Contrarian View*, 7 Geo. Mason L. Rev. 577 (1999), 579.

⁴ *Loc cit.*

network.

In contrast, indirect network effects occur where the increasing size of the network encourages the production of complementary goods, thereby generating rewards for consumers.⁵ For example, where a large group of users have adopted a particular computer operating system, programmers are more likely to develop software for use on that system. This development renders the network more valuable to its users. Indirect network effects arise from the effect a larger network has on the production of complements and not directly from increases in the size of the original network.⁶

Network effects can have significant implications for competition law.⁷ Markets characterised by network effects tend toward natural monopoly. Once established, the network effects that helped to create dominance may constitute significant barriers to entry⁸, affording the incumbent an opportunity to turn its focus away from innovation toward entrenchment and stifling sequential competition for the relevant field.⁹ For this reason, many scholars and policy makers call for additional regulation of these markets in order to safeguard the ability of superior products to succeed.¹⁰

According to Soma and Davis, “the key to breaking the cycle of network effects in the technology industry is to restrain companies from acquiring monopoly power before network effects occur”.¹¹ Once a company achieves a dominant market share, rebalancing the market

⁵ DF Spulber, *Consumer coordination in the small and large: implications for antitrust in markets with network effects*, 2008 J.C.L. & E. 207, 213.

⁶ G J Werden, *Network Effects and Conditions of Entry: Lessons from the Microsoft Case*, 69 Antitrust L.J. 87 2001, 90.

⁷ *Op cit note 5*, 252.

⁸ *Op cit note 5*, 207 and 212.

⁹ J McGaraghan, *A Modern Analytical Framework for Monopolisation in Innovative Markets for Products with Network Effects*, 30 Hastings Comm. & Ent. L.J. 179 2007-2008, 189.

¹⁰ SF Ross, *Network Economic Effects and the Limits of GTE Sylvania's Efficiency Analysis*, 68 Antitrust L.J. 945 2000-2001, 959.

¹¹ JT Soma and KB Davis, *Network Effects in Technology Markets: Applying the lessons of Intel and Microsoft to future clashes between Antitrust and Intellectual Property*, 8 J. Intell. Prop. L. 1 2000-2001, 48.

becomes extremely difficult.¹² For this reason, the authors suggest that competition regulators implement policies to prevent monopolies in markets with network effects *before* a company becomes entrenched on the market. This may be done by obliging firms which achieve an approximate 40% market share to agree to certain restrictions.¹³ Such restrictions include the capping of licence agreements to a period of one year and undertakings by the relevant firm not to make use of exclusive licensing agreements or to engage in any form of inducement; alternatively, to penalise customers in instances in which they elect not to renew a particular licence.¹⁴

It is important to bear in mind, however, that competition to achieve a monopoly is an important form of competition. The more protection from competition a monopolist enjoys, the more competition there will be to achieve that monopoly.¹⁵ In this regard, the feasibility of challenging an existing network monopolist is critical to an assessment of network effects. Where barriers to entry to the relevant market are low, the realisation of positive network externalities may be expected both to benefit the consumer, through either a reduction in price associated with economies of scale in consumption or increased utility as the size of the network increases, and to stimulate the rate of innovation.¹⁶ However, where barriers to entry are high, the same conduct may have significant exclusionary effects, as new entrants must overcome the fact that so many customers already use the dominant firm's product. For this reason, competition law has typically been concerned with anti-competitive behaviour that enables a dominant firm to maintain market share despite its product's relative qualitative inferiority.¹⁷

Whereas barriers to entry into real or physical networks are typically indistinguishable from the forces at play in other markets, the effect of these same barriers to entry in respect of high-

¹² *Loc cit.*

¹³ *Loc cit.*

¹⁴ *Op cit note 11, 49.*

¹⁵ RA Posner, *Antitrust in the New Economy*, 68 *Antitrust L.J.* 925 2000-2001, 929.

¹⁶ *Op cit note 15, 929-930.*

¹⁷ *Op cit note 10, 951.*

technology virtual networks can have a far greater exclusionary effect. As demonstrated in the various *Microsoft* decisions,¹⁸ it is considerably more difficult for a potential competitor to overcome indirect network effects where it must rely on complementary products to benefit from network externalities. If the firm cannot directly establish its own complementary network, it must rely on independent third parties who may either be tied in to the incumbent monopolist¹⁹ or may require a degree of subsidisation to render their programs compatible.²⁰ In the alternative, a new entrant must offer consumers an offsetting advantage, creating a niche for its differentiated product independent of the network. In the absence of innovation, the only way in which a virtual network may be contested is by offering customers a significant advantage as compensation for the loss of established network effects²¹ and the costs incurred by switching. For example, a firm may offer a competing product at a considerably lower price.

In innovation markets characterised by research and development, a dominant firm benefiting from network effects may raise barriers to entry by, *inter alia*, filing overly broad patents, making use of restrictive licensing agreements, product leverage, and adopting a strategic merger-and-acquisition policy.²² “These activities can take place parallel to, and independent of, competition in the relevant market.”²³ As a result of such behaviour, competition “in” the market may change to competition “for” the market. Rather than developing a product to compete with the current standard, thereby constraining the ability of a dominant firm to sustain an inflated price, competitors rely on innovation to develop a product or platform to supplant the current market leader because of its superiority.²⁴ In this way, an incumbent firm is pressurised into affording its customers regular upgrades at a competitive price or risks being displaced, at which

¹⁸ *Op cit* note 1.

¹⁹ *Op cit* note 6, 92.

²⁰ SC Salop and RC Romaine, *Preserving Monopoly: Economic Analysis, Legal Standards, and Microsoft*, 7 *Geo. Mason L. Rev.* 617 (1998-1999), 621.

²¹ *Loc cit.*

²² *Op cit* note 9, 195.

²³ *Loc cit.*

²⁴ *Op cit* note 9, 194.

point the cycle will repeat itself.

Product markets characterised by rapid innovation and network effects provide the greatest benefit to consumers when that innovation is fostered and when those network effects are protected.²⁵ According to McGaraghan, in innovative markets the goal of competition law, namely, the protection of the competitive process in order to maximise consumer welfare through lower prices, better products, wider choice and greater efficiency, will be achieved when competition for the field, rather than competition in a particular product market, is protected.²⁶ In applying traditional antitrust principles to these markets, primarily those aimed at limiting the extent to which a firm may achieve market power, the law becomes a mechanism for protecting competitors, rather than protecting consumers through regulating the healthy function of the market itself. The resulting beneficiaries of such an approach are firms who seek only to provide an alternative source for a product already on the market, rather than innovating. This approach may have a chilling effect on innovation in these fields as fewer firms will feel the incentive to innovate themselves, choosing instead to free-ride on the innovator's research and development by manufacturing an equivalent competing product, at a lower price. In McGaraghan's view, "to protect these providers is to chip away at the powerful network effects by siphoning off a portion of the public to a secondary provider".²⁷

While a number of antitrust authorities have cited network effects as a reason for greater regulatory intervention in high technology markets, a careful review of the relevant literature reveals that early arguments regarding network effects were largely overstated.²⁸ Notwithstanding the fact that these markets tend toward natural monopoly, network effects alone do not necessarily result in the exclusion of viable and efficient competitors and do not in and of themselves, always create high barriers to entry.²⁹ Rather, these markets should be regarded as

²⁵ *Op cit note 9, 200.*

²⁶ *Loc cit.*

²⁷ *Loc cit.*

²⁸ *Op cit note 3, 578.*

²⁹ *Op cit note 3, 578.*

largely self-regulating, more so where barriers to entry are low. Bearing in mind that consumers derive considerable benefits from positive network externalities, regulatory intervention may be justified only in instances in which an incumbent monopolist takes steps to prevent the introduction of a superior product to the market. Such exclusionary behaviour is already captured under Chapter 2 of the Competition Act 89 of 1998 (as amended) and does not require the adoption of any further regulations specific to markets which experience network effects. By adopting measures aimed at altering the structure of a network industry, regulators risk interfering with a market's ability to generate the efficiencies so highly prized by competitors and consumers alike.

Any questions or comment on the content of this *Sibergramme* may be directed to Robert Legh at rlegh@bowman.co.za.

