Microsoft's Abuse of Dominant Market Position

Edward O'Brien – Senior Sophister

Microsoft is one of the largest corporations in the world, and dominates the market in operating systems for Intel-compatible PCs. They were recently found guilty of abusing their position in that market by the US government, a very prominent application of economic theory on monopolistic competition. Using examples such as Microsoft's bundling of Internet Explorer with Windows '95, Edward O'Brien describes the valid economic arguments employed in meeting that decision.

Virtually everything I did may be vulnerable on appeal.
- Judge Thomas Penfield Jackson.

Introduction

In the case of the Microsoft Corporation versus the United States Government, the court of Judge Jackson found that 'Microsoft engaged in illegal and anti-competitive conduct to maintain its monopoly in the market for Intel compatible PC operating systems. The court also has found that Microsoft attempted to monopolise the market for Browsers.'[1] As was widely anticipated, Microsoft has in fact appealed the verdict. The results, however, in this context may not be relevant. In this essay, I intend to prove, using sound economic arguments, that Microsoft was in fact guilty of anti-competitive behaviour. This will show the Findings of Fact to be correct and true, irrespective of the Conclusions of Law, suggested Remedies, or any appeal findings.

In the analysis that follows, I shall outline and discuss the following:

- Microsoft's power in the relevant market
- Emerging threats to Microsoft
- Theory of Vertical Restraints and Predation
- Application of these Theories to this case
- An Economic Verdict
- Welfare
- Concluding Summary

[1] Declaration of Carl Shapiro.

Finally, it is important to note some restrictions I have placed on this analysis. First, I shall consider only the economic content of the Findings of Fact for this case. The suggested Remedies shall not be considered. And second, I shall mainly consider Microsoft's actions regarding Netscape Navigator. I shall by and large ignore their actions regarding Sun's implementation of Java.

Microsoft's Power in the Relevant Market

Although it may be argued that this section is of little interest, it is still an important aspect of the case. One must consider Microsoft's position in the market place, before passing judgement on its subsequent behaviour. Therefore, although brief, this section is fundamentally important.

1. The *relevant market* is the licensing of all Intel compatible PC operating systems, worldwide. At present, no product is available which could readily act as a substitute, without incurring substantial costs for the user.[2]

    - Possible *alternatives* include the Mac operating system, manufactured by Apple Computers, a range of Information appliances, or Network computing and Middleware. However each of these alternatives has an associated cost, be it price, required training, lack of features, or required innovation.

    - *Network effects* are also relevant. A consumer will only purchase an operating system (OS) if they believe a large number of applications will be available for that OS, presently, and into the future. Similarly, Independent Software Vendors (ISV's), will only produce applications, implying large sunk costs, if they believe consumer demand exists for applications for that OS. Any new OS will have to attract enough support from both consumers and ISV's to survive. This will naturally inhibit the entry of any firm, who will have to expend considerable sunk, and hence irrevocable, costs, to enter the market for OS. This 'leader advantage' rewards the innovators, the first firms who entered the market. It rewards them with the position of dominant incumbency. Due to the problem of network effects, it is difficult for any firm to contest the dominance of the incumbent. This barrier to entry is very important.

[2] Findings of Fact, II, § 18.

This defines the relevant market. As argued no viable alternatives exist, or are likely to exist in the short term. The most likely alternatives to arise may be from Network computing or the use of Middleware. These shall require, however, further innovation and are several years away at best.

2. If Microsoft is to be accused of maintaining and extending its monopoly power, it is important to establish and to evaluate that power.

    - A useful indicator of Monopoly power is market share. It has been estimated that Microsoft's share of the relevant market (that for Intel compatible PC operating systems), is 95%, and growing.[3] This fact is further confirmed by the Original Equipment Manufacturers (OEM's). They are of the opinion that no substitute exists for Windows, a fact borne out in their minimal output of PC's without that OS pre-installed.
    - Another intuitive measure of monopoly power are barriers to entry. As previously mentioned, network effects are important. Over 70,000 applications have been written for Windows, Microsoft's Operating System. Given this fact, it is difficult to attract consumers or ISV's away from it. Also, corporate consumers are likely to be attracted to a system so familiar to its employees. This is known as the 'Applications' barrier to entry. All of this makes for a 'positive feedback loop' for Microsoft. However, for an opponent, attempting to gain entry to the market, this would be a vicious cycle. Empirical evidence also points to the existence of barriers to entry.
    - Microsoft's pricing behaviour is indicative of monopoly power. It gives no consideration to the pricing behaviour of their competitors. When launching Windows'98, Microsoft raised the price of Windows'95 to the level of the new software, thus encouraging maximum take up on its new software. This is not the behaviour of a company subject to competitive markets. Also, a Microsoft report claimed it could charge $49 for an upgrade to Windows'98. Instead it opted to charge $89.

The above evidence, of market share, barriers to entry, and pricing behaviour, combined with various actions Microsoft took against several firms, of which I shall speak more of later, suggest that Microsoft enjoys considerable monopoly power in this market, and is likely to do so for the foreseeable future.

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[3] Findings of Fact, III, § 35.

The Emerging Threats

The 'applications' barrier to entry stands due to the cost and difficulty of 'porting' applications between OS. So while Windows enjoys 70,000 applications, Microsoft is safe in the knowledge, that very few of these shall ever be 'ported' to other OS. However, Middleware sits on top of the underlying OS, and the applications run off the Middleware. This in effect makes the OS redundant from an applications viewpoint. The Middleware can then be 'ported' to all the various OS in use. However, there is no need to 'port' the applications, they just run off the Middleware. In the mid-1990's, Microsoft became aware that such a threat existed. They feared that this innovation may attract large numbers of developers. This could seriously damage the 'applications' barrier to entry. To the consumer, the choice of OS may become irrelevant, as Middleware becomes prominent. Open source developments such as Linux, an OS, available free gratis, could seriously damage Microsoft's profitability.

One of the major threats identified by Microsoft came from Netscape's web browser. It had the potential to severely damage Microsoft because:

- Netscape Navigator, unlike many other competitors, was a complement to Windows, not a substitute. It is an application used on Windows, not an alternative. This allowed Navigator access to Microsoft's vast installed base.

- Navigator can serve as a platform for other software. In other words, it is Middleware. It can allow applications and network computing to operate independently of the OS.

- Navigator has been 'ported' to more than fifteen different operating systems, allowing applications written for it to be used on any one of these operating systems (see above).

- Navigator also arrived at a time when consumer interest in the Internet was booming. After its launch in December 1994, it enjoyed far higher usage than any other web browser.

These facts did not go unnoticed at Microsoft. Bill Gates spoke of a "new competitor 'born' on the Internet." Those responsible for Corporate Strategy were "deeply concerned that Netscape was moving its business in a direction that could

diminish that applications barrier to entry."[4] Also, it is important to note that Netscape were not the only firm investing in this technology. Other firms' actions, such as Intel and IBM, were also been scrutinised by Microsoft.

So far, the scene has been set, Microsoft's position of dominance has been established, and the main threat to this position has been outlined. Microsoft's acknowledgement of this threat is also clear. I shall now proceed to discuss Microsoft's reaction to this threat. This shall be the crux of the analysis. I shall begin with some background theory.

Theory of Predation and Vertical Restraints

This section outlines the theory behind the main economic arguments which will follow. The essence of Predation and vertical restraints is market foreclosure. It is defined as the commercial practices that reduce the buyer's access to a supplier (upstream foreclosure), and/or limit the suppliers access to a buyer (downstream foreclosure). (Tirole, 1988) This can be achieved by various methods.

1. Predatory pricing is a strategy that requires a dominant incumbent firm to cut its prices below its rival's average cost, even if this means accepting short-run losses, to drive rivals from the market. Once the rival leaves the market, the incumbent raises prices and collects sufficiently large economic profits, the gains from monopoly power (Martin, 1993).

   - Non-Game-Theoretic models have however, suggested that predatory pricing will not work. With perfectly functioning Capital markets, the rival firms receive capital to stay in the market, motivated by the economic profits available in that market. In this model, economic profits fail to materialise. This model may also fail if consumers can anticipate the actions of the incumbent, and bear its rivals higher prices, for a better future. Again, economic profits will not arise. This relies on consumers holding perfect information and being rational.

   - Game Theory models have suggested that Predation may succeed. Given the requirements of the Non-Game-Theoretic models, and intuition, it is safe to assume that predatory pricing can in fact succeed.

[4] Findings of Fact, IV, § 72.

Predatory pricing can foreclose a market to a firm contemplating entry. A dominant incumbent may have the desire and ability to wage a protracted price war, to maintain monopoly power in a market. As a result, few firms will contemplate entry.

2. Vertical Restraints are the contractual impositions of an upstream firm (manufacturer) on a downstream firm (distributor or retailer). These restrictions may involve price, sales territory, or customer classes. Vertical restraints have traditionally been viewed as "an instrument of market power or as a device for correcting market failure, in the market for distribution services" (Martin, 1993). So vertical restraints may be required so that a manufacturer can obtain services from a dealer or can simply be a tool of market power.

   - Exclusive Dealing or Purchasing is a vertical restraint. In this instance, a distributor agrees to purchase from only one manufacturer. The contract between the two comprises of a price, and also damages, paid to the manufacturer, if the distributor uses another manufacturer. Aghion and Bolton (1987) state that a buyer is willing to enter into such a contract because he is as well off with it as without it. [5] The damages clause allows the incumbent to appropriate some of the price charged by any competitor. Exclusive dealing may also use long term contracts to hold competitors out of the market, thereby closing that market to them.

   - Tying and Bundling is another vertical restraint. Whinston (1990) shows that a firm with a monopoly in one market can reduce the profitability of a rival in another market, perhaps to the point of monopolising the second market as well.[6] Whinston's leverage argument implies that tying and bundling can be used to exclude rivals and extend a monopoly from one market to another. If this practice is observed over time, one expects that it is privately profitable.

   - Incompatibility is the final vertical restraint I shall look at. In this case, the dominant manufacturer makes his basic good incompatible with the complimentary goods sold by his rivals. Matutes and Regibeau (1986) found that a manufacturer that makes its systems incompatible with other systems imposes a tie-in of its various components (Tirole, 1988). Whereas compatibility raises consumer demand (by better meeting consumer tastes),

[5] Martin, chapter 12.

[6] Tirole, chapter 8

and softens price competition, incompatibility has the opposite effect. It reduces demand, and increases price competition, perhaps resulting in the exit of competing firms. Incompatibility is a further extension of the leverage theory. A dominant firm in one market can foreclose another market by creating incompatibility between the goods of each market.

Both predatory pricing and vertical restraints act to erect barriers to entry. Any firm contemplating entry, is liable to be subject to a price war with his own prices being severely undercut. That firm may have to suffer exclusive dealing, tying and bundling, or deliberate incompatibility. These barriers act to foreclose a market. The dominant firm will attempt to squeeze any competitor out of the market, almost before they enter it.

Microsoft and Barriers to Entry

At this point, an important distinction must be made. The applications barrier to entry exists. This is not in question (see Section II). It is a result of the leader advantage in the technology sector. Microsoft has inherited its position, however, if Microsoft's dominance was threatened, and the applications barrier to entry was deemed to be falling, and then Microsoft may react. By using the methods outlined above, Microsoft may erect barriers to entry, unrelated to the applications barrier to entry, but used to protect the applications barrier to entry. In effect, Microsoft erected barriers to entry to protect its application barrier to entry. In the face of a threat by Navigator (see section III), this is exactly what Microsoft set out to do. I shall now outline Microsoft's actions, and emphasise how these were in breach of the Anti-trust regulations of the USA.

1. *Netscape's Development of Navigator as a platform.* Microsoft's fear was that a web Browser could be used to host network computing or Middleware (see Section III). This could potentially erode the applications barrier to entry. Apart from this, Microsoft also wanted to set the standard for all systems on the Internet, and gain the "leader advantage", as it holds for OS. Microsoft was keen that Netscape should develop a browser that was complementary to Windows (but set to Microsoft's standards), and not a browser that provided an alternative platform for network centric applications. If Netscape agreed, Microsoft would assist Netscape in its development. If not, it would view Netscape as its competitor. In this case, Microsoft attempted to foreclose the market for alternative platforms, by using its leverage in the market for OS. Netscape could benefit by consent, but non-agreement would result in competition with a large

monopolist, and all its resources. Basically, Microsoft was attempting to remove the threat to its barrier to entry, before it became a reality. However, it failed, at least for now. Netscape opted not to enter into any agreements with Microsoft, however, Microsoft's relationship with Netscape suffered after this. As expected Microsoft began to "lever" Netscape, as it now was a competitor. This was achieved by withholding crucial technical information. This was required by Netscape to "port" Navigator to Windows'95. This resulted in Netscape postponing the launch of its Windows'95 browser. As a result, they failed to capitalise on sales at the launch of the new OS, and also missed the holiday season of 1995. This damage was inflicted by Microsoft on Netscape for refusal to give up its aspirations to develop an "alternative platform".

2. *Microsoft's actions towards Intel and IBM.* Netscape was not the only company to be developing software that alarmed Microsoft. Intel not only produced microprocessors, but also some software. When Microsoft became aware of Intel's development of OS independent platforms, they reacted. Microsoft informed Intel that it would not support future lines of Intel's processors, unless they halted the software work. Intel is indirectly dependent on Microsoft, because the vast majority of PC's unto which Windows is installed are based on Intel processors. If Microsoft ceased to support Intel, demand for their processors would fall dramatically. Therefore they felt they had to comply, and so, they did. This is evidence of exclusive dealing. Intel would have severe difficulty in selling processors if they were no longer compatible with Windows, and if Microsoft informed the OEM's that it no longer supported the Intel processors. IBM, amongst others, also faced the wrath of Microsoft. Like Intel, it to had software interests. While IBM was an OEM consumer of Microsoft software, it was also a competitor in the software market. Microsoft did not value this competition and proceeded to push IBM away from these markets. Microsoft offered a valuable deal to IBM, to induce it away from competition. This deal was potentially worth $48 million dollars to IBM.[7] When IBM refused the deal, Microsoft retaliated. It refused IBM a license for Windows'95 and access to the master code for that product. IBM finally received this information only fifteen minutes before the official launch of Windows'95. As a result, IBM lost substantial revenue in the post-launch sales boom, and lost considerable ground to its competitors. IBM believes they lost accounts worth $180 million as a direct result. Again, this is evidence of exclusive dealing. IBM's competitors were receiving preferential treatment from Microsoft, as they were compliant. IBM suffered exclusion, or at least partial exclusion, as it would not

[7] Findings of Fact, V, § 118.

"stop loading its PC" systems with software that threatened Microsoft's "interests".[8]

3. *Developing Internet Explorer (IE).* Microsoft was determined that Navigator would not become the standard software employed to browse the web. If Microsoft could demonstrate the Navigator would not become the 'standard', it would be unlikely to attract developer attention. And so, the applications barrier to Windows would remain intact. To this end, Microsoft deemed it necessary to expend huge effort to develop IE so it could compete with the then superior Navigator. Microsoft achieved this aim, with IE4.0 being considered the equal of Navigator. While this action alone is not anti-competitive, the motivations of Microsoft, and it further actions, may be questionable, as can next be seen.

4. *Giving it all away.* Microsoft's next step was telling. After the costly development of IE, it was to be given away for free, not only to consumers, but also to ISV's and Apple also. This form of predatory pricing would allow Microsoft maximise uptake of IE, to the detriment of Navigator. Microsoft was willing to forego substantial revenue, to protect its applications barrier to entry. Navigator was further hurt by the fact that its revenue would suffer. It too would have to give up charging for a license for Navigator. Also, some firms were to be rewarded for the promotion of IE usage. Internet Access Providers (IAP'S) and Internet Content Providers (ICP's), were rewarded for 'a commitment to promote and distribute IE, to inhibit promotion and distribution of Navigator, and to employ technologies that...relied on Microsoft's Internet technologies rather than those provided by Navigator'.[9] All of this effort and expense had not resulted in a desire to further improve Windows. What possible motivation might there be? 'This investment was only profitable to the extent that it protected the applications barrier to entry'.[10] This investment was only possible because of the resources Microsoft has gained from its monopolistic position. Whinston's leverage argument can be applied here.

5. *Channels of Distribution.* Although Microsoft now had a Browser product to match Navigator in quality, it certainly did not match it in quantity. Navigator

[8] Findings of Fact, V, § 129.

[9] Findings of Fact, V, § 139.

[10] Findings of Fact, V, § 141.

enjoyed a large installed base. Microsoft feared that despite its product now being as good, users were unlikely to switch from one product to the other, and this stage. And Microsoft had every determination that IE should achieve dominance in the market for Browsers. In order to achieve this they sought to exclude Navigator from the most important channels of distribution, naturally, to the benefit of IE. The two most important channels were OEM's and IAP's. For the consumer, the PC is the first point of contact for web access, and if this does not come with a Browser pre-installed, then the next most likely source is the consumer's IAP. Microsoft had identified these two channels as the most important, and targeted them accordingly.

Although it may be argued that web Browsers are separate products, Microsoft bundled IE with its Windows package. Apart from a brief period, Microsoft never allowed OEM's to ship Windows'95 without IE. This did not close the OEM route to Navigator, but OEM's were not inclined to install two Browsers onto each PC. Also, Microsoft endeavoured to bind IE to windows in such a way, that running any other Browser through Windows would be a 'jolting experience'.[11] Such was the level of binding that any attempts to remove IE could result in the disabling of Windows itself. So in general, one would be very disinclined to use Navigator with Windows'95, as one could encounter a host of problems, such as privacy breaches, degradation of performance, and increased incompatibility. The court found no technical justification for the binding of IE to Windows'95. This use of tying and bundling is further evidence of Microsoft's use it's monopoly power in the OS market, to leverage the market for Browsers. Designed incompatibility is a further vertical restraint.

Microsoft, however, was not finished with the OEM's yet. In order to prevent resourceful OEM's from pursuing the use of Navigator by further means, 'Microsoft threatened to terminate the Windows licence of any OEM that removed...chosen icons and program entries from the...desktop or the "Start" menu. It threatened similar punishment for OEM's who added programs that promoted third-party software to the Windows "boot" sequence'.[12] These actions ensured OEM could not unduly affect Microsoft's ambitions for IE with other interests.

Microsoft adopted a similar approach with IAP's. It offered a series of inducements to those IAP's who would promote IE at the expense of Navigator.

[11] Findings of Fact, V, § 160.

[12] Findings of Fact, V, §203.

Only after it had secured this route, did Microsoft relax the conditions imposed on the OEM's as above.

Apart from these two important channels, Microsoft also levered ICP's, ISV's, and Apple, inducing them by various means, to promote IE at the expense of Navigator. In the case of Apple, Microsoft threatened to cease production of Mac Office, a product vital to the continued success of Apple, if Apple did not support IE. These actions also suggest exclusive dealing. If these companies did not comply with the wishes of Microsoft, their access to Microsoft's products, vital for their survival, may be cut off.

Unsurprisingly, Microsoft's success was undoubted. 'The fact that Netscape was forced to distribute tens of millions of copies of Navigator through high-cost carpet bombing in order to obtain a relatively small number of new users only discloses the extent of Microsoft's success in excluding Navigator from the channels that lead most effectively to Browser usage'.[13] Apart from this, the data speaks for itself. From early 1996, to mid-1998, Navigators share of Browser usage fell from above 70% to around 50%, while IE usage grew from 5% to 50%. Also, the take up rate of IE was higher than that of Navigator. In other words, IE's share is still growing.

The Economic Verdict

The last section outlines the practices Microsoft engaged to protect and extend its monopoly. Below, these facts are summarised:

1. Attempting to use their Monopoly power in the OS market to leverage Netscape, and hence foreclose the potential market for 'alternative platforms'. This allowed Microsoft to maintain its monopoly, and extend it into the market for Browsers and future potential markets.

2. Coercing Intel and IBM through exclusive dealing. If these companies continued to operate as competitors to Microsoft, they would no longer be supported. Since Microsoft holds the monopoly for OS, they would be unable to continue their businesses.

[13] Findings of Fact, V, §357.

3. Used its considerable resources, results of a monopoly, to develop IE. While this alone is not anti-competitive, the motivations are. Microsoft's prime reason for developing IE was to protect its applications barrier to entry, by removing the potential threat of Navigator. The creation of IE was necessary to achieve this. Again, Microsoft used its dominance in the market for OS to gain dominance in the market for Browsers.

4. By not charging for IE and for Tying and Bundling with Windows. By giving IE away free gratis, Microsoft lost substantial revenue. However, knowing Netscape relied on revenue from Navigator, Microsoft believed that this predatory pricing could further promote IE. A dominant incumbent, can afford to give it away for free, while it waits for the competition to exit the market. This further ties in with Microsoft's decision to expend huge effort in developing IE. It gave Microsoft the ability to attack Netscape's revenue source. Also, Microsoft tied and bundled IE with Windows. By tying, Windows was made incompatible with other Browsers. This, combined with the decision to bundle, furthered Microsoft's interests. Both tying and bundling are methods by which a monopolist can leverage power from one market to another (see Section IV).

5. Closing the Channels of distribution through exclusive dealing and incompatibility. Microsoft coerced both OEM's and IAP's to promote IE at the expense of Navigator. If these groups failed to comply, they would not be granted 'preferential' treatment from Microsoft, treatment that was vital for their survival, again, leverage from one market to another. Microsoft also ensured these groups configured their systems to favour IE at the expense of other Browsers. This ensured a degraded performance, and more, should anybody attempt to use another Browser on those systems. This deliberate incompatibility furthered Microsoft's monopoly.

So in general, it can be said that Microsoft used various methods, to foreclose markets to Netscape, Intel and IBM. They did so using their own monopoly power in the market for Operating Systems. This maintained their current monopoly, by protecting the applications barrier to entry, and extended their monopoly into the market for Browsers. This extension was deemed necessary by Microsoft to protect its applications barrier. In erecting new barriers through predatory pricing, exclusive dealing, designed incompatibility, and tying and binding, Microsoft ceded control of the Browser market, monopolised it, and consequently protected its OS monopoly. In my estimation, this behaviour is in breach of Anti-trust regulation.

Welfare

Critics of the Court findings of this case, such as R. Schmalensee, have raised the issue of consumer welfare. It is argued that if consumer welfare has not been harmed, then Microsoft cannot be guilty of anti-competitive behaviour. These arguments assert that Microsoft behaviour actually increased consumer welfare in these markets, by improving the quality of Browser software, lowering its cost, and increasing its availability.

However, Microsoft has also been accused of harming consumer welfare. They ignored the demand for an OS without a Browser; they restricted OEM's from making their PC's more user friendly, and created confusion and frustration among consumers; they degraded the performance of those PC's; and they actively deprived consumers of software innovation.

In my own opinion, I do not think that consumer welfare is as relevant to this case as other Anti-trust cases. Due to the pace of change in the computer industry, is it ever possible to gauge welfare correctly? The market is dynamic as innovations occurs so rapidly. Also, as I have argued, Microsoft acted to protect itself from future threats. Who is to say what may have occurred in the future, had

Microsoft not distorted the marketplace. We cannot assess future damages where innovation is so dominant.

Conclusion

In summary,

1. Microsoft holds monopoly power in the market for operating systems, to such an extent that no viable substitute for Microsoft's products exist. This monopoly is based on 'leader advantage' and network effects, and is verifiable by measure of market share.
2. Several threats emerged that had the potential to erode Microsoft's monopoly, in bypassing the importance of operating systems. The most notable threat came from Netscape.
3. Having identified these threats, Microsoft set about counteracting them. By further developing its own software, and inducing many firms to 'tow the line', Microsoft effectively removed the threats to its business,

and monopolised the market for Browsers in the process.

4. The methods used by Microsoft to achieve the above, exclusive dealing, designed incompatibility, predatory pricing and tying and binding are all in this context in breach of anti-trust regulation.
5. Welfare issues may not be relevant to this case, as the technology sector is in a state of dynamic innovation.

Finally, to finish as I began, in the words of Judge Thomas Penfield Jackson:

> *Through its conduct toward Netscape, IBM, Compaq, Intel and others, Microsoft has demonstrated that it will use its prodigious market power and immense profits to harm any firm that insists on pursuing initiatives that could intensify competition against one of Microsoft's core products. Microsoft's past success in hurting such companies and stifling innovation deters investment in technologies and business that exhibit the potential to threaten Microsoft. The ultimate result is that some innovations that would truly benefit consumers never occur for the sole reason that they do not coincide with Microsoft's self-interest.*[14]

[14] Findings of Fact. VII, § 412.

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