

# Microsoft, Domination and Anti-competition

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## I. Introduction

Microsoft Corporation dominates about 90 percent of the operating system market with Windows 95, the most popular operating system in the computer industry. Also, Microsoft controls  $\frac{3}{4}$  of the market “productivity applications software” including word processors, spreadsheets, and databases. As a comparison, we note that Coca-Cola’s market share of the soft-drinks market is only 50%. Moreover, after releasing Windows 95, Microsoft used a clever strategy to bundle all the PC productive software -- Word, Excel, Power Point and Access -- as a suite called “Office”. The price of Office is less than half of the prices of the different components separately. In this way, Microsoft steals market shares from Lotus and WordPerfect, which currently dominate the market for spreadsheets and word processing<sup>1</sup>. As a matter of fact, this strategy has made Microsoft a big dominant firm in the software market facing a number of smaller fringe companies. Because of the success of its strategy, Microsoft even wants to go further. It currently bundles a web browser application, called Internet Explorer, with Windows 95. This brings about a controversial dispute between Microsoft Corporation and Netscape Communications Corporation. Washington federal government asked a judge on October 20, 1997 to order Microsoft Corp. to stop forcing makers of personal computers to include its Internet browser when they install its Windows 95 operating system. In this paper, we would like to learn more about Microsoft by studying its behavior using theoretical models. In addition, we also want to see arguments between Microsoft Corp. and Netscape Communication Corp.

## II. Reasons of Microsoft’s domination

There seem to be at least three reasons to view Microsoft as a dominant firm in the software market. First of all, the economies of scale cause Microsoft to have lower costs of production of software [figure

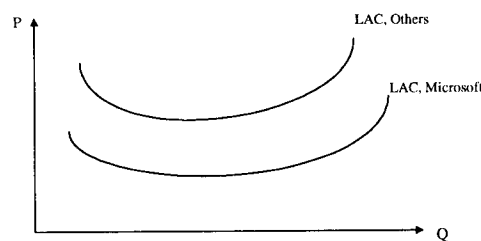


Figure 1

<sup>1</sup> See the article “The tyranny of success”, *The Economist*, May 25, 1996 v39 n7967 pS9(4).

1]. Hence, MC can price lower than other companies, such as WordPerfect Corporation and Lotus Development Corporation. Because prices are lower, they attract more customers; quantity demanded will increase as well. Therefore, it generates more market share to Microsoft<sup>2</sup>.

Secondly, Microsoft monopolizes its Windows 95 operating system as a superior product in the market where other firms produce a differentiated product. Moreover, from MS-DOS to Windows 3.1, then to Windows 95, Microsoft has much experience in developing operating systems. This superiority raises the reputation of the company. The better the reputation of Microsoft, the larger the market share it can gain. In this case, the price of its products will increase because of the increase in the demand for the products, such as Windows 95, Office, etc. Therefore, it has a positive effect of the profit of Microsoft.

Better management is also a crucial reason why Microsoft Corp. has a large share of the market because it makes Microsoft Corporation more efficient. It lowers the cost relative to other software companies. To organize and manage the company, Microsoft adopts a strategy to use smart people who know both the technology and the business. Bill Gates, the chairman and chief executive officer of Microsoft Corporation, not only knows how to run his company but also fully understands the procedures of making software, because he was a programmer before establishing his company. Since Microsoft is a well-known company and has more resources than the others, more smart people will be attracted to work in Microsoft. The benefits of hiring smart people are huge because Microsoft has approximately 5000 software developers and program engineers in a field where the best software programmers may write about ten to twenty times more code in the same time as the least productive members of the same team<sup>3</sup>. Mike Maples, who was Presentation Manager, noted that, "the quality of the people is an unmeasurable benefit. Not everybody has the luxury we have of getting MIT's best and Stanford's best." Since production processes are more efficient, the cost of production is lower definitely. Furthermore, Microsoft also created many different small Units<sup>4</sup> which is a good example of the importance of division of labor. It is more flexible to provide the freedom for groups to operate as relatively small development centers [Appendix 1 & 2]. They can distribute their labor resources to specialize into particular production line. Thus, all these factors cause Microsoft to have lower production costs than its competitors.

### **III. Netscape's advantages in Internet browser competition**

Next we would like to discuss is the web browser market. There are two firms in this market, Microsoft Corporation with Internet Explorer and Netscape Communication Corporation with Netscape Navigator. Even though Microsoft has a big advantage in the software market, its market share of the web browser market is still far smaller than Netscape's. Recently, Netscape Navigator has about 70 percent of

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<sup>2</sup> See the article by George J. Stigler, "Barriers to entry, Economies of scale, and Firm size", *The Organization of Industry*, June 1969.

<sup>3</sup> see the article by Cusmano and Selby, "Organizing and Managing the Company", *Microsoft Secrets*, 1995

the market while Microsoft Internet Explorer has only 30 percent<sup>5</sup>. Although both of the software packages have the same functions, they have different market shares. This is interesting for us to discuss.

Product differentiation (firms produce similar but not identical products, e.g. Internet Explorer and Netscape Navigator) can cause the difference in the market shares. For example, the established brand name product (Netscape) may make it more difficult for the new brand (Internet Explorer) to enter. This is because Netscape Communication Corporation founded and released the first version of its web browser in 1994<sup>6</sup>, way earlier than Microsoft Corporation released its web browser. Thus, Netscape has a first-mover advantage<sup>7</sup>: the firm had lower marketing cost when it first entered the market because it faced no rivals. Microsoft may have higher costs to enter the market now because it has to compete with Netscape. On the other hand, even though Microsoft Corporation has lower production cost of web browser software, it still has to spend money gaining reputation and educating consumers about the use of the new product. Netscape, which has been used for 3 years, already has a reputation in the market and consumers are used to it. In order to make it difficult for consumers to switch from Netscape's product to Microsoft's product, Netscape may use different commands and operating ways so consumers will have high switching cost. Since the switching cost and retraining cost are higher, consumers will prefer to use the original product. Therefore, this strategy increases marketing cost to attract customers for Microsoft. Consumers will stick with Netscape Navigator and may be reluctant to switch to Internet Explorer because they are more familiar with Netscape. However, Microsoft may try to imitate Netscape Navigator in order to reduce the switching costs for consumers.

Netscape Communication Corporation can reduce its cost through learning by doing. In order to increase the sales in Phase 1, the firm would set a lower price of the products. Thus, the profit in Phase 1 will be lower but it can increase production in Phase 2 after gaining good reputation. Netscape has followed this strategy. It released some beta versions of the product, and after that, put an improved product with more functions in the market. Moreover, learning by doing also enables Netscape to get market information and get to know better what consumers want. It can improve its products to gain a better reputation in the market. Hence, learning by doing becomes a kind of investment for the firm to increase profits in subsequent periods.

Besides those marketing strategies, Netscape Navigator has its own advantages<sup>8</sup> over Internet Explorer. The business and technology strategy of Netscape is to provide full capabilities across all platforms - including multiple versions of the same platform, for example, Mac OS, Unix, Windows3.1, Windows95 and Windows NT. In contrast, Microsoft depends on customers upgrading to the most recent version of each operating system, such as Windows 95 and Windows NT. Aberdeen Group stated that, "Netscape's groupware offers similar functionality to BackOffice and will embrace Windows NT, but also other

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<sup>5</sup> see the article, "Microsoft IE and Antitrust Law", *Ming Pao*, 10 / 28 / 1997

<sup>6</sup> Netscape homepage, URL: <http://home.netscape.com/>

<sup>7</sup> see the chapter by Carlton and Perloff, "Competition", *Modern Industrial Organization*, second edition, 1994

platforms. It is highly differentiated from Microsoft's product because it will be open and available on different platforms." Therefore, Netscape Navigator is more flexible and suitable to cover different kinds of consumers in the market. Netscape requires no gateways, whereas the gateways and connectors required by other vendors increase management cost, lower performance, and de-grade fidelity.

#### IV. Microsoft's bundling strategy

As Netscape has strong advantages in the web browser market, Microsoft Corporation bundles its popular Windows 95 and Internet Explorer together to fight back Netscape Navigator. Microsoft required personal computer manufacturers in America to take the Microsoft version of the browser (Internet Explorer) in order to get Windows 95. Moreover, Bill Gates, the chairman and chief executive officer of Microsoft announced that the latest version of the windows operating system would be combined with Internet Explorer as a bundle called Windows 98. He also stated that Internet Explorer 4.0 would be trying to occupy 50 percent of the market<sup>9</sup>. It is interesting for us to see how the bundling strategy can fight back Netscape in web browser market.

Microsoft dominates the operating system market with its 90% market share. It nearly monopolizes the whole market. Intuitively, it is a good strategy for Microsoft to tie-in its new product with a product which monopolizes the market. Why does Microsoft benefit from this strategy? Recently, Microsoft sells Windows 95 with free Internet Explorer. Let us now analyze this case formally. Suppose that the market price of Windows95 with free Internet Explorer is  $P_w$ . Even though Microsoft sells Internet Explorer for free, Window95 and Internet Explorer still have costs of production,  $C_w$  and  $C_{ie}$  respectively.

Two types of consumers consider purchasing Windows95 in the market. One type likes Internet Explorer. If those consumers want to have Windows95 with free Internet Explorer at  $P_w$  whereas they have to pay the price of Internet Explorer at  $P_{ie}$  basically, the actual price of Windows95 for those consumers is  $P_w - P_{ie}$ . It means that the price of Windows95 is relatively lower. Therefore, the quantity demanded of Windows95 increases in the market where consumers like Internet Explorer. The profit of Windows95 in this market will be:

$$\pi_{Win95+IE} = P_w * Q' - (C_w + C_{ie}),$$

where  $Q'$  is new quantity demanded such that  $Q' = Q + \Delta Q$ ,  $\Delta Q \geq 0$

However, originally, if Microsoft did not use the bundling strategy, it could sell Windows 95 and Internet Explorer separately, then, she would gain the profit in this market such that:

$$\pi_{original} = P_w * Q - C_w + P_{ie} \Phi - C_{ie}$$

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<sup>9</sup> Netscape's homepage, URL: <http://home.netscape.com/>

where  $P_w * Q - C_w$  is the profit of Windows95 only, and  $P_{ie} \Phi - C_{ie}$  is the profit of Internet Explorer, and  $\Phi$  is the quantity demanded for Internet Explorer in this market.

Now we would like to compare between  $\pi_{win95+IE}$  and  $\pi_{original}$  to determine which strategy is more profitable in this market. Therefore, we would like to see whether

$$P_w * Q' - (C_w + C_{ie}) \text{ is greater or smaller than or equal to } P_w * Q - C_w + P_{ie} \Phi - C_{ie},$$

where  $Q' = Q + \Delta Q$ ,  $\Delta Q \geq 0$

Then, we can have:

$$P_w * \Delta Q \text{ is greater or smaller or equal to } P_{ie} \Phi$$

where  $\Delta Q \geq 0$ .

Since Microsoft monopolizes Windows95, it can charge higher price in Windows95 to maximize its profit. On the other hand, there are two web browser companies and Microsoft has less market share which means that Microsoft has a lower residual demand curve in the market. So, Microsoft can only charge a low price for Internet Explorer. Thus, we know that  $P_w > P_{ie}$ . However,  $\Delta Q$  and  $\Phi$  are determined by market demand and we cannot exactly know how large they are. We cannot compare which one is larger. Therefore, it is not possible to determine that which strategy is more profitable in this market. However, as long as the market share of Internet Explorer is getting larger and larger,  $\Delta Q$  will become bigger and bigger in several periods later. Then, bundling will be a profitable strategy.

The second type of consumers, those, who do not want Internet Explorer, is indifferent between the bundle and Windows 95 without Internet Explorer. Even though they want to buy Windows95 only, they still have to pay  $P_w$  for the products. In this case, the quantity demanded for bundling product, Windows95 with Internet Explorer, does not change, but the cost of production of the package increases by  $C_{ie}$ . Therefore, the profit of bundling strategy will be:

$$\pi_{\text{bundling strategy}} = P_w * \Phi - (C_w + C_{ie})$$

where  $\Phi$  is quantity demanded for bundling product, Windows 95 with Internet Explorer.

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<sup>9</sup> see the article, "Microsoft IE and Antitrust Law", *Ming Pao*, 10 / 28 / 1997

On the other hand, if Microsoft did not use bundling strategy, both products would be sold separately. However, since consumers do not want Internet Explorer, the total revenue of Internet Explorer in this market would be zero, but Microsoft still spent  $C_{ie}$  to produce Internet Explorer in this market. The profit of Non-bundling strategy in this market would be:

$$\pi_{\text{non-bundling strategy}} = (P_w * \Phi - C_w) + (P_{ie} * 0 - C_{ie})$$

Therefore,

$$\pi_{\text{bundling strategy}} = \pi_{\text{non-bundling strategy}}$$

As a result, Microsoft Corporation may not even increase the profit by using the bundling strategy. If this is true, why is Microsoft willing to sacrifice maximizing her profit to combine Windows95 and Internet Explorer as a package?

Microsoft not only wants to maximize her profit, but also seeks to dominate the web browser market. Netscape Communication Corporation leads the web browser market nowadays. In order to win this competition, Microsoft prefers gaining web browser market share to maximizing profit right now. Thus, Microsoft is willing to sacrifice its current profit to gain reputation and educate consumers. This strategy is successful. According to an article published by New York Times on November 18, 1997, Microsoft Corporation has doubled its share of the Internet browser market in the past nine months. Microsoft's Internet Explorer had a 39.4 percent market share as of September 30, while it had 20 percent at the end of 1996. Even though Netscape still leads with 57.6 percent at the end of the third quarter, this is a drop from its 73 percent dominance nine months earlier<sup>10</sup>. Dataquest, a California-based market research company, said Microsoft would continue to cut into Netscape's lead as Microsoft packages Internet Explorer with its Windows software. Microsoft's strategy is very successful. Bundling causes Microsoft to gain both market share and future profit in the web browser market and cut the power of Netscape Communication Corporation in this market. However, it also brings out a controversial question. How can we justify this combination? Is it right or wrong? Therefore, those questions can be divided into three parts -- government's points of view, Netscape's critics, and Microsoft's arguments -- to justify this action.

#### **V. Which one is better, monopoly or duopoly?**

For the consumers, duopoly is certainly better than monopoly because the market power of each company will be lower in the duopolistic market. Also, the market price will be lower than that in the monopolistic market. Hence, consumers can gain more surplus in the web browser market. That is one of the considerations that that government takes into account. Figure 2 depicts the difference between duopoly and monopoly. Figure 2a shows the situation in the duopoly. The consumer surplus,  $CS_{\text{duopoly}}$  (lighter

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<sup>10</sup> See the article, "Survey Finds Microsoft Double Browser Share", *New York Time's Homepage*, November 18, 1997.

colored triangle) in duopoly is larger than the consumer surplus,  $CS_{\text{monopoly}}$ , in the monopoly. Some of the consumer surplus is transferred to producer's profit in the monopoly. Moreover, the deadweight loss,  $DWL_{\text{duopoly}}$  (the darker triangle), in duopoly is smaller than  $DWL_{\text{monopoly}}$  in the monopoly. This means that the society will be better off if the market is a duopoly. Even though both of the market models generate a deadweight loss to the society, the duopoly model is still better in this case. Thus, in order to maximize the benefit to society, government should encourage two or more firms in the market. Moreover, monopoly also threatens innovations<sup>11</sup>. Monopoly has less incentive for innovation, because it does not need to worry about the competition with other rivals. Therefore, development of new technology is not efficient in the monopoly market.

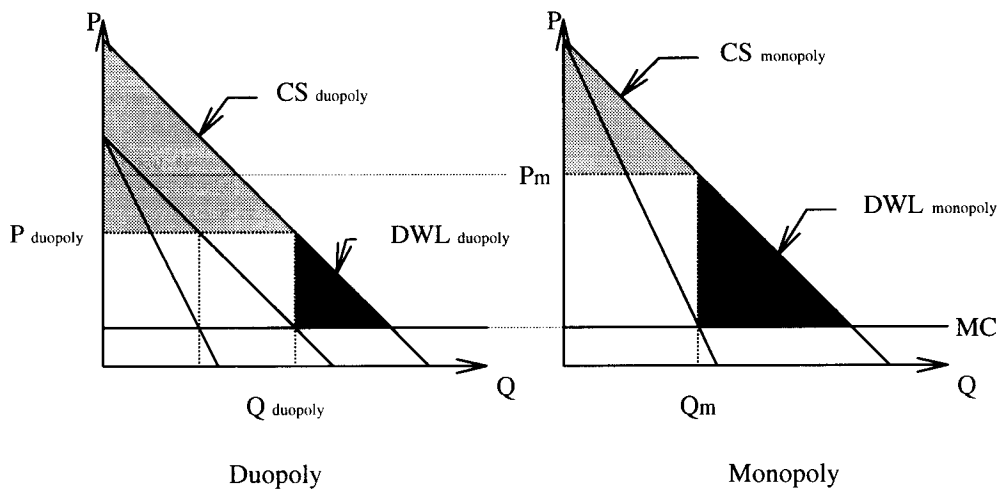


Figure 2a

Figure 2b

## VI. Government's points of view

Furthermore, government also argues that Microsoft limits the consumers' right to choose. Consumers would be able to choose either Internet Explorer or Netscape Navigator. However, Microsoft puts both Windows95 and Internet Explorer together and sells them as a bundle to consumers. Some consumers may not know how to uninstall the Internet Explorer for their computers, then, Microsoft is trying to force consumers to use its product indirectly. Therefore, this action actually limits the right to choose for consumers in the market. It is not only unfair for the consumers but also unfair for Netscape Communication Corporation. Microsoft is also exploiting other companies to develop their software businesses by using illegal strategies. For example, in order to get rid of the homepage editing software

<sup>11</sup> see the article, "How to Control Microsoft", *New York Times homepage*, November 18, 1997

companies Microsoft bundles the software of homepage editor called FrontPage with Microsoft's monopoly operating systems<sup>12</sup>. Reno, Attorney General, said, "Microsoft is unlawfully taking advantage of its Windows monopoly to protect and extend that monopoly and undermine consumer choice."<sup>13</sup> That is also the reason why government tried to intervene and make Microsoft stop using its bundling strategy.

## VII. Microsoft's explanation

On the other hand, the chairman of Microsoft Corporation, Bill Gates, said that Microsoft is not violating antitrust agreements. He defended that browsers are the software through which people navigate the electronic links between computers in homes, offices, and institutions around the world<sup>14</sup>. The definition of operating system is defined as any set of instructions, codes, and ancillary information that controls the operation of a Personal Computer System and manages the interaction between the computer's memory and attached devices such as keyboards, display screens, disk drives, and printers.<sup>15</sup> From his points of view, this definition should be a little bit broader. Web browser software is another type of platform for computers to connect other servers around the world. It is a connection among computers. An operating system not only manages one computer at each time, but also controls many different computers by using servers and web software. Therefore, he thought that it made sense to combine Windows 95 – PC's platform – with Internet Explorer. That is also an argument of bundling.

Moreover, Gates said he believed that his company had the right to improve and add innovations to the basic features of the Windows operating system, under the terms of a 1995 consent decree with the Justice Department that settled an earlier antitrust dispute<sup>16</sup>. Innovation is very important in this competitive software market. However, we have to consider whether this kind of innovation is a basic feature of the Windows operating system or an independent and commercial feature for computers.

## VIII. Netscape's objections

In contrast, Netscape Communication Corporation, however, does not agree with Microsoft's explanation. Gary L. Reback, an attorney based in Palo Alto, California, sent a letter<sup>17</sup> to persuade President Clinton's Justice Department to enforce the antitrust laws against Microsoft. He pointed out several illegal actions by Microsoft in the Internet market. The most serious ones are predatory pricing, discount,

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<sup>12</sup> See the article, "Microsoft's illegal conduct: Text of Netscape's Letter to the U.S. Justice Department", *Antitrust Law and Economics Review*, Vol. 27, No. 2, 1996.

<sup>13</sup> see the article, "Government Accuses Microsoft Of Violating Antitrust Agreement", *New York Times Homepage*, 10/21/1997

<sup>14,16</sup> see the article, "Gates Says His Company Is Not Violating Antitrust Agreement", *New York Times Homepage*, 10/22/97

<sup>15</sup> "United State vs. Microsoft Corp., Final Judgement" URL: <http://www.usdoj.gov/atr/microjudge.html>

<sup>17</sup> See the article, "Microsoft's illegal conduct: Text of Netscape's Letter to the U.S. Justice Department", *Antitrust Law and Economics Review*, Vol. 27, No. 2, 1996.



bundling strategies and under-the-table deals. Microsoft offers OEM<sup>18</sup> discounts on the license price of the Windows operation system if the OEM not only continues to feature the Microsoft browser on its desktop, but also makes competitors' browsers far less accessible to users. Moreover, Microsoft executes her monopoly power to force the OEM to combine Internet Explorer with Windows 95. It prohibits the OEM to carry Netscape Navigator under her license. For example, when Compaq wanted to install a button on its computer screens giving users easier access to Netscape's Internet browser instead of Microsoft's, Microsoft objected to remove the icon and sent a letter to Compaq that Microsoft would terminate the agreement for doing so<sup>19</sup>. In this case, Microsoft uses this under-the-table deal to destroy the business of Netscape Communication Corporation. According to the letter, it states that, " If estimates are correct that Windows 95 is selling at a rate of 40 million copies or more a year, it will cost OEMs more than \$10 million to offer their customers non-Microsoft Internet software on an equal footing with that of Microsoft." OEMs will combine them definitely because they do not need to pay extra \$10 million to have one more feature. Microsoft not only enforces losses to Netscape but also hinders consumer choice. Hence, the price-zero predatory pricing strategy and under-the-table deal are certainly intervened by the government.

### IX. One million per day

Washington federal government asked a judge on October 20, 1997 to order Microsoft Corporation to stop forcing makers of personal computers to include its Internet browser when they install its Windows 95 operating system. Moreover, the Justice Department imposes a \$1 million a day fine on Microsoft if she continues to violate the court order. Is it effective to stop Microsoft's actions? Analysts forecast that Microsoft is still gaining net income of \$565 million, including a charge<sup>20</sup>. Thus, charging may not be effective against the illegal actions of Microsoft. From Microsoft's point of view, the fine is a cost of production. Even though Microsoft's profit has decreased certainly, she is willing to pay the fine. It is because Microsoft can still maximize her profit by doing that.

Theoretically, the government's action is inefficient unless the fine is large enough to offset the extra profit of using bundling strategy. The profit of bundling of every single day is  $\pi_1$ . Let the amount of fine be \$F, therefore, the profit of Microsoft after charging fine is  $\pi_1 - F$ . However, if Microsoft stops bundling and sells Windows 95 and Internet Explorer separately in the market, the profit will be  $\pi_2$ .

In this case, Microsoft will stop using bundling strategy, as long as the profit of Microsoft after charging fine is less than or equal to the profit of selling products separately such that:

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<sup>18</sup> "OEM" means an original equipment manufacturer or assembler of Personal Computer System or Personal Computer System components (such as motherboards or sound cards) or peripherals (e.g., printers or mice) that is a party to a License Agreement.

<sup>19</sup> See the article, "Microsoft's tough tactics", *The Wall Street Journal*, 10/23/1997.

<sup>20</sup> See the article, "Microsoft Profit Tops Analysts' Forecasts", *The Wall Street Journal*, 10/21/1997.

$$\pi_1 - \$F \leq \pi_2$$

Then,

$$\pi_1 - \pi_2 \leq \$F$$

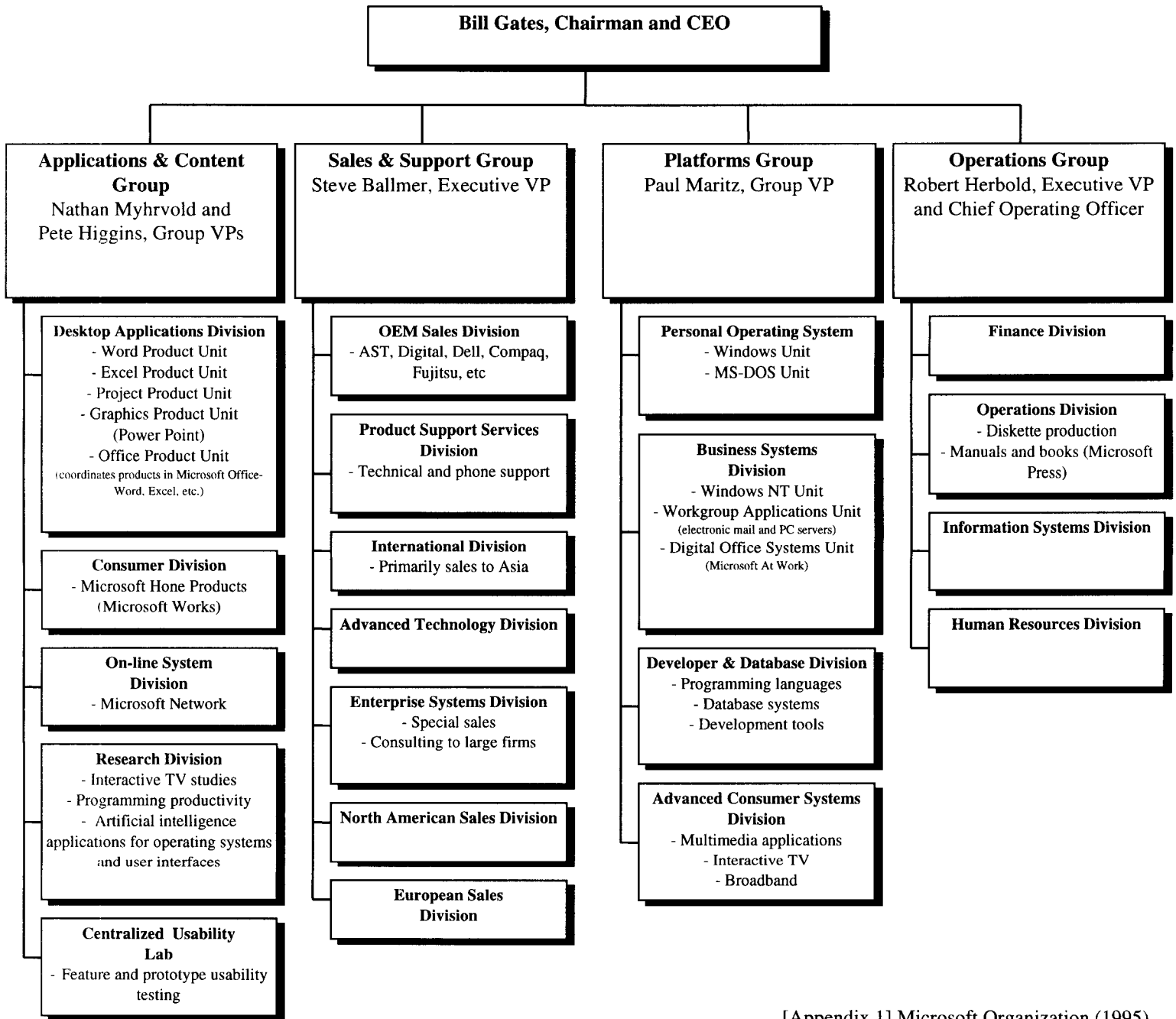
where  $\pi_1 - \pi_2$  is extra profit of bundling.

Since Microsoft is still using bundling strategy even though it has been charged one-million-fine-per-day. It implies that Microsoft can still gain profit from it and the fine is not large enough.

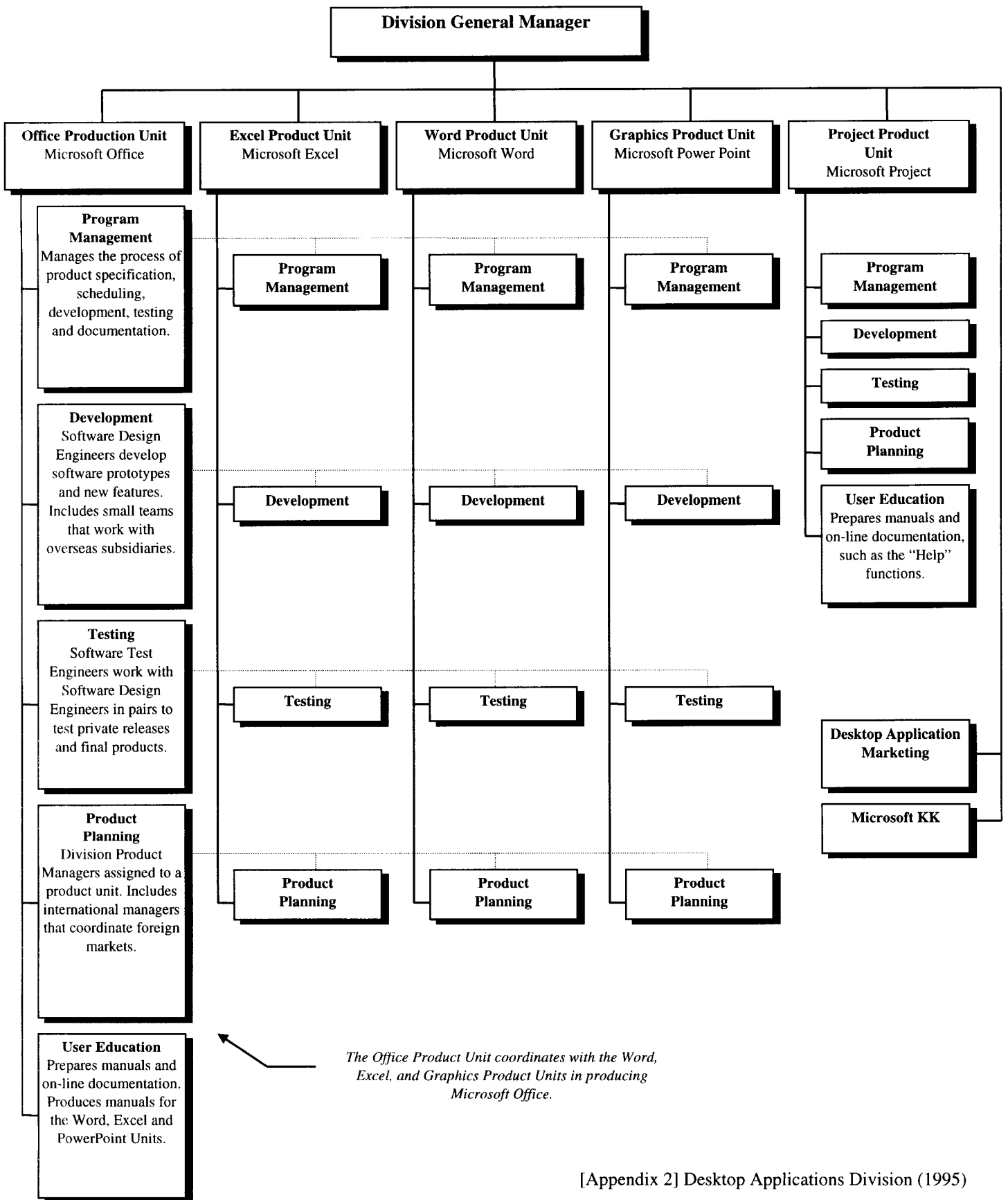
Moreover, government should also consider the future effect of bundling strategy of Microsoft. Microsoft intends to use this strategy to steal the market share from Netscape. Once it gains enough market share, it stops using bundling strategy so that it does not need to pay any fine. However, its profit is still larger than  $\pi_2$  in later periods. Therefore, Microsoft not only can gain more market share, but also maximizes its profit without paying any fine in later periods.

## X. Conclusion

In conclusion, Microsoft has its advantages in developing software. However, having the first-mover advantage and other better strategies, Netscape Corporation is still leading the web browser market. However, In order to generate future profit and cement its market share to be a kingdom of software, Microsoft has to use bundling strategy even though Microsoft may decrease its profit at the beginning. Its strategy is very successful. Although the market share of Internet Explorer is still less than that of Netscape Navigator, they are getting closer and closer. It is what Microsoft wants to achieve because Microsoft is now seeking market share of Internet Browser market instead of profit maximizing. On the other hand, Microsoft not only sells Windows 95 and Internet Explorer as a bundle, but also forces makers of personal computers to include Microsoft's Internet Explorer as a condition of licensing the Windows 95. Thus it makes Government to use Antitrust Laws and charges Microsoft one-million-per-day fine if the company failed to change its policy. However, the fine is not large enough to stop it efficiently. Moreover, the government should also consider the effect of bundling strategy in the future to determine how large the fine the government should charge on Microsoft. Therefore, in order to encourage more firms to enter into the market and increase the social welfare, it is better for government to reconsider the punishment of Microsoft.



[Appendix 1] Microsoft Organization (1995)



[Appendix 2] Desktop Applications Division (1995)

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