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AN ASSESSMENT OF THE EFFECTIVENESS OF THE SETTLEMENT AGREEMENT IN
U.S. v. MICROSOFT

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ABSTRACT

United States v. Microsoft is a monumentally important court decision that had a major impact on forming the way in which we access the internet. This case permitted internet browsers to be bundled with operating systems. Thus, upon the purchase of an operating system, the browser is offered at no additional charge. This vital aspect of the case's outcome raises a number of questions, and warrants further study. What are the ramifications of offering internet browsers free of charge on the marketplace? Did this result hamper the government's ability to accomplish its initial regulatory goals? How does regulation of this matter in the United States compare to other countries? Further examination of this topic, with a focus on these questions, yields a wealth of knowledge about one of the world's largest antitrust disputes. Consequently, such research will hopefully help improve future antitrust regulation.

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Chapter 1 - Introduction

On May 18, 1998 the United States Government brought an antitrust lawsuit against Microsoft, alleging that the company had violated the Sherman Act (Evans, 2002). This government coalition consisted of the United States Department of Justice, 19 State Attorney Generals, and the Attorney General of the District of Columbia (Gilbert and Katz, 2001). The government asserted that Microsoft illegally bundled their internet browser (Internet Explorer) to their operating system (Windows), which consequently diminished the level of competition, and contributed to Microsoft's dominant market shares. Years of litigation ensued, which featured a grueling trial and an extensive appellate process. Ultimately, Microsoft was found guilty. Consequently, the court required a conduct remedy be instituted to rectify the anticompetitive situation created by Microsoft. The conduct remedy implemented was a "settlement agreement" in which Microsoft agreed to alter some of its behavior. By analyzing the effectiveness of this agreement in great detail, a better understanding of how to appropriately enforce anti-trust laws in high-technology marketplaces can be reached.

How Microsoft Bundled Internet Explorer and Windows

Microsoft ensured that if a consumer purchased windows (or a PC with windows) that Internet Explorer would also be included with that purchase. Thus, the two goods were a "bundle." Microsoft also took actions to specifically discourage the use of other internet browsers by consumers using the windows operating system. There are a number of different

accusations that the government levied against Microsoft regarding how they bundled these two goods to the detriment of competitors. I have distilled these accusations down to a list of major allegations that feature exclusionary and predatory practices (Gilbert and Katz, 2001):

- a. Pricing Internet Explorer Below Cost
 - i. Microsoft gave Internet Explorer away for free with windows
- b. Contractual Arrangement with Online and Internet Service Providers (ex. AOL, AT&T Worldnet)
 - i. ISP denies most subscribers choice of internet browser in exchange Microsoft agrees to create a feature that makes it easier to create an account with the ISP
- c. Contractual Arrangement with PC Manufacturers
 - i. Manufacturers cannot remove Internet Explorer icon, or feature a rival browser more prominently than Internet Explorer
- d. Contractual Arrangement with Internet Content Providers
 - i. Give preferential placement on Internet Explorer channel bar, in exchange for not featuring their content on Netscape Navigator, or making it more attractive when used on Internet Explorer

Microsoft did not charge consumers for Internet Explorer, as the browser came with the operating system. In addition, the company also tried to make Internet Explorer the most convenient browser of choice, through creating contracts with other relevant parties. Clearly, the intention was to make the economic cost of using Internet Explorer as low as possible. By entering into a contract with ISPs, Microsoft was able to prevent users from initially choosing their Internet Browser. Instead Internet Explorer became the default. Through agreements with PC manufacturers Internet Explorer became a permanent fixture on Windows. Contractual arrangements with Internet Content Providers gave internet content desired by consumers more attractive placement in Internet Explorer than any other browser. In other words, these contracts were intended not just to make Internet Explorer more attractive to users, but also to make other browsers less convenient. Microsoft bundled these two goods together by offering the internet browser free of charge. This lowered the effective cost of using Internet Explorer. The company then enhanced the decreased economic cost of using Internet Explorer by attempting to increase

the economic cost of using other browsers through a number of contractual agreements (Gilbert and Katz, 2001).

Why Microsoft Bundled Internet Explorer and Windows

There are a number of motivating factors that caused Microsoft to bundle their operating system and their web browser. In this section we focus our attention to the motive given by the United States government as to why the government contends Microsoft engaged in illegal, anticompetitive behavior.

The government contended that Microsoft attempted to monopolize the web browser market, in order to protect their dominance over the operating system market (Gilbert and Katz, 2001). The decision to bundle these two goods, in an attempt to destroy Netscape's market share, was motivated by the fact that Netscape is a distribution vehicle for Java. Java, as a programming language, is independent of the underlying operating system, and widespread deployment of Java would threaten to reduce barriers to entry in the operating system marketplace. In other words, Microsoft feared that Windows would one day become unnecessary and obsolete, if Netscape remained the dominant web browser. Thus, the government contended, that if Microsoft used Internet Explorer to box Netscape Navigator off of many user's computer screens, the dominance of Windows in the operating system market would have been better protected. Netscape Navigator was Microsoft's main threat, because if Navigator continued to be the overwhelming favorite, it increased the probability that windows would no longer be necessary, since Netscape Navigator functions independent of an operating system. The government contended that Internet Explorer was bundled with Windows in order to protect

Microsoft's lucrative operating system monopoly. (Gilbert and Katz 2001, Evan and Nichols and Schmalensee 2001)

Davis' Model

Davis presents a simple economic model that explains the economic incentive for Microsoft to bundle their internet browser to their operating system (Davis, 2002). Through a basic theory of pricing and demand, this model explains how a multi-product firm with complementarity demand for two of its products, has an incentive to price one of the goods below marginal cost, (If at $p=0$, then called "zero-price bundling") in order to boost demand for a complementary good.

In this model we assume there is a firm with two products that have complementary demand. As it relates to Microsoft, a user of Internet Explorer would have an increased demand for a windows operating system, as they are complementary goods. We also assume that there are downward sloping, linear demand curves for both products:

$$\begin{aligned}q_1 &= a_1 - b_1p_1 - dp_2 \\q_2 &= a_2 - b_2p_2 - dp_1\end{aligned}$$

In these equations, q and p denote quantities and prices, while a , b , and d denote demand parameters. Also, assume that the firm produces at sells both goods and marginal costs c_1 and c_2 .

Consider the following numerical example:

$$\begin{aligned}a_1 &= 100 \text{ (Windows)} \\a_2 &= 50 \text{ (Internet Explorer)} \\b_1 &= b_2 = 1 \\c_1 &= c_2 = 10 \\d &= 0.5\end{aligned}$$

In this example the first product has a bigger demand, which resembles the Microsoft situation, where Windows had a larger demand than Internet Explorer. Using these numerical values and the above demand curves, profit maximization requires the following prices:

$$\begin{aligned}p_1 &= 55 \\p_2 &= 5\end{aligned}$$

Not only is the price of the first product (Windows) significantly greater than the price of the second product (IE), the second product is priced below marginal cost ($c_2 = 10$). This is to bolster sales for good 1.

In a situation where the above numerical example is altered so that the marginal cost of the second good is zero ($c_2 = 0$), the profit-maximizing price of the first good becomes $p_1 = 33.3$, while the profit-maximizing price of the second good becomes $p_2 = 0$. This instance would be labeled as zero-price bundling. This exemplifies the Microsoft situation, since the marginal cost of an additional unit of Internet Explorer, is about zero. Again, the low price of good two, which in this case is now zero, bolsters the demand for good 1. This is very logical, as a low price of one product generates a higher demand for that product and all complementary products contained within the bundle. The two-product firm has an advantage over its single-product competitors as the two-product firm can internalize the demand spillover.

Davis' model shows the incentive for Microsoft to price its complementary good (Internet Explorer) below the price of its base good (Windows) and also approximately below marginal cost. The incentive is that the marginal cost of the complementary good is so low, that by pricing the good at zero, no loss is sustained. Meanwhile, demand for the more expensive base good is increased, yielding a higher overall profit. This tactic of zero-price bundling can only exist for multi-product firms, much to the disadvantage of an entity like Netscape. It is

important to note that Netscape was priced to consumers at \$39-49, while Internet Explorer was included for free with Windows,

Sequence of Legal Proceedings

Prior to the “settlement agreement”, which is the focus of this paper, Microsoft had a fairly lengthy history of legal interactions with the United States Government. In this section we quickly review these preliminary skirmishes, in order to reach a greater understanding of the background and context with which the US Government and Microsoft reached their ultimate settlement agreement.

Microsoft’s antitrust troubles first began in 1990 with an FTC investigation. These allegations focused on Microsoft’s licensing practices with personal computer manufacturers. The investigation ended in 1993 with the commission deadlocked in a 2-2 vote (Gilbert Katz, 2001).

Shortly thereafter, on July 15, 1994, the U.S. Department of Justice continued the deadlocked FTC investigation. The DOJ alleged that Microsoft utilized exclusionary and anticompetitive contracts with the manufacturers of personal computers in the interest of maintaining an unlawful monopoly over the personal computer operating system market. On June 16, 1995, Microsoft and the DOJ entered into a “Consent Decree” which was intended to place restrictions on Microsoft’s licensing arrangements. Controversy arose quickly following the consent decree, as its vague wording led Microsoft to interpret the agreement differently from the government (Gilbert and Katz, 2001).

Following the Consent Decree, Microsoft began requiring computer manufacturers to license and install Internet Explorer in order for the manufacturers to obtain a license for the Windows 95 operating system. It was at this point that Internet Explorer was bundled with Windows, and the ensuing change in the following graph is caused. Essentially, this explains why a newly purchased computer came equipped with an Internet Explorer icon. Although it was still possible to download another browser, Internet Explorer is already there, making it considerably more convenient. On December 11, 1997, Judge Thomas Penfield Jackson ordered Microsoft to abandon this practice of tying the Internet Browser to the Operating System. Microsoft appealed the ruling, and Judge Jackson's order was reversed. In other words, the government had failed to successfully obtain an injunction that would prevent Microsoft from tying the browser to the operating system (Gilbert and Katz, 2001).

Finally, on May 18, 1998 the government brings a large antitrust suit against Microsoft, alleging that they engaged in the aforementioned forms of predatory conduct and thus violated sections 1 and 2 of the Sherman Act. It was at this point, after years of aforementioned legal skirmishes, the two sides finally went to trial. It should be noted that we define the government as the U.S. Department of Justice, 19 State Attorney Generals, and the Attorney General of the District of Columbia. The government won this trial, and Judge Jackson found Microsoft guilty of violating the Sherman Act (Gilbert and Katz, 2001). Both the government and Microsoft were permitted to propose "conduct remedies." Ultimately Judge Jackson accepted the government's proposed remedy, which included a breakup of Microsoft into two parts. One section would receive the operating system, the other would receive application programs and other lines of business. Both sections would get intellectual property rights to Internet Explorer. Ultimately,

however, Judge Jackson's ruling regarding breaking up the company was not upheld by the appellate court. Thus, Microsoft was saved from a breakup (Economides, 2001).

In lieu of breaking up the company, the government and Microsoft reached a settlement agreement. This settlement agreement became the only method with which the United States Government was able to attempt to accomplish their objective of more fairly distributing market power in the internet browser market.

Chapter 2 – Effectiveness of the Settlement Agreement

Overview of the Settlement Agreement

Microsoft and the Department of Justice reached a settlement agreement on November 2, 2001 (Evans, 2002). This agreement received harsh criticism from multiple groups including prosecutors and antitrust scholars nationwide (Jennings, 2006). Consequently, this agreement was revised and took effect one year later on November 1, 2002 (Harmon, 2002). It is important to note that acceptance of the agreement did have some variation from state to state, and multiple State Attorney Generals appealed the agreement. The last appeal was by the State of Massachusetts. This appeal was denied in June of 2004, effectively ending the Department of Justice's case against Microsoft (Jennings, 2006). For the purposes of this paper we will identify the start date of the settlement agreement as November 1, 2002, since this is the first date of the agreement in its revised and finalized form. The agreement expired in 2007 (Jennings, 2006).

The agreement enacted a number of changes to Microsoft behavior. Despite these changes, it is important to note that Microsoft was not prohibited from bundling its operating system to its web browser, and Internet Explorer is still included free with Windows. The agreements major changes to Microsoft's behavior are as follows:

- 1.) Microsoft cannot enter into contracts with Computer Manufacturers and Internet Access Providers that prohibit competing programs from being added to Windows
- 2.) Microsoft must disclose information regarding how Windows interoperates with its "Middleware Products" (Programs, like Internet Explorer, that increase the functionality of the basic operating system)
- 3.) Microsoft must allow users to add/remove programs (including Internet Explorer)

In Chapter 1 an overview of “How Microsoft Bundled Internet Explorer and Windows” is provided. The two main aspects of this bundling arrangement are the pricing of Internet Explorer below cost, as well as a multitude of anti-competitive contractual arrangements.

The first of the three major provisions of the Settlement Agreement, listed above, prevents Microsoft from unfairly promoting Internet Explorer, as well as unfairly discouraging the use of Netscape, through contractual agreements with Computer Manufacturers and other software/content providers. This provision directly addresses the issue of anticompetitive contracts, and prevents their use. Thus, this provision does not prevent Microsoft from literally bundling the two goods together, however it damages the effectiveness of the existing bundle.

Provision number two of the Settlement Agreement, listed above, requires Microsoft to disclose information about how IE and Windows operate and interact with one another. The purpose of this provision is to make it easier for IE competitors to create browsers that are compatible with the dominant Windows Operating System. Unfortunately, Judge Kollar-Kotelly indicated to the court that this aspect of the agreement was not as effective as predicted. In order to have access to this information, competitors must pay Microsoft for a licensing agreement. The judge and government antitrust officials overestimated the number of competitors that actually paid for a licensing agreement.

The third provision of the settlement agreement requires Microsoft to allow users to be able to add/remove programs from Windows, including Internet Explorer. This provision, could have had the potential to be monumental, as it seems to allow users to effectively “unbundle” the two goods. However, in reality, Internet Explorer still remained as the default browser, and many PC users did not elect to remove and replace IE (Bresnahan and Yin, 2007). There are two main

reasons why many users did not elect to remove and replace IE. One is many users were first time PC owners, who did not have the motivation, desire, or knowledge to make such an update. The second reason is that, unlike in today's browser market, the only other major competitor at the time of the agreement was Netscape Navigator, and Netscape was not free. Thus, despite having the ability to remove IE from Windows, users lacked the incentive.

Government Enforcement Goals in US v. Microsoft

The United States Government had three goals in bringing these charges against Microsoft. These three goals were: prevent Microsoft from repeating anticompetitive behavior, deprive Microsoft of the fruits of its misdeeds, and to foster competition in the Operating System Market and Web Browser market, by extension rectifying the injustice incurred by Netscape (Harmon, 2002). In this section we explore how appropriate the components of the Settlement Agreement were to accomplishing these stated goals. In the following section on "Changes in the Browser Market," we will more quantitatively explore the effects of the Settlement Agreement.

Many critics argue that the provisions of the Settlement Agreement did not realize their full potential to prevent Microsoft from continuing its anticompetitive behavior. Although the agreement did bar Microsoft from entering into contracts with OEMs and ISPs, the agreement did not prevent Microsoft from bundling IE to Windows. As we will explore in the next section, this had a monumental effect on how the browser industry would develop, and by extension how the Operating System industry would develop. Moreover, by not preventing Microsoft from bundling, in the viewpoint of many scholars, the courts neglected to address a major competitive advantage Microsoft honed over Netscape. Allowing users to add/drop programs was not enough

to encourage the influx of PC users, to switch to IE (Oshri, de Vries, and de Vries, 2010). This is indicated by the fact that an influx of new PC users during this time were more inclined to use IE as their default, and not pay for Netscape. Moreover, Macintosh users rarely switched to IE, even as newer and better versions of the browser were released (Oshri, de Vries, and de Vries, 2010).

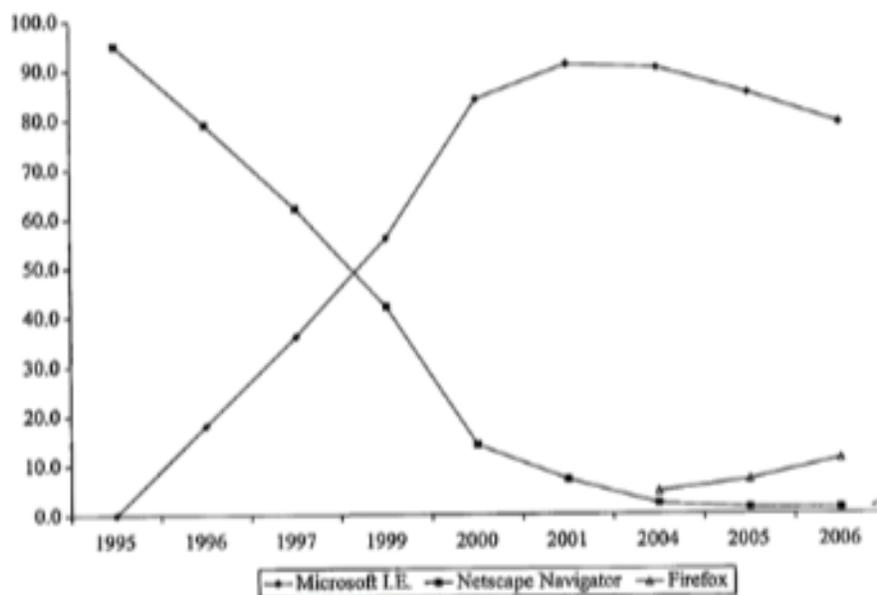
The second goal of the Settlement Agreement was to deprive Microsoft of the fruits of its misdeeds. Again, the agreement was effective in depriving Microsoft of the benefits of its anticompetitive contracts, but not effective in depriving Microsoft of reaping the benefits of bundling, since Microsoft was still permitted to bundle. The agreement essentially, it seems, tried to merely hamper the benefits from bundling. The aforementioned work concludes that this strategy did not convince users to switch browsers. Moreover, the second aspect of the agreement, which focused on Microsoft disclosing more information to its competitors did not work nearly as effectively as planned, only a small number of entities purchased the certificates offered.

The final goal of the Settlement Agreement was to foster more competition. This goal will be explored in more detail in the next section, as changes in the market are analyzed. However, it is important to note that Netscape never saw a resurgence in prominence. Enabling users to add/drop programs simply did not go far enough to make users actually add/drop IE. This is because users were just not incentivized to drop their “default” browser and pay extra for Netscape. As we will see in Chapter 3, European enforcement went about accomplishing this goal of fostering more competition in a more effective fashion. In the United States, as outlined in the next section, there are no changes in the browser or operating system industry following the Settlement Agreement that are directly attributable to the agreement.

Changes in the Browser Market Post Settlement Agreement

As previously mentioned, the initial Settlement Agreement was created in November of 2001, and finalized in November of 2002. In the two years following the Settlement Agreement, there were no major changes in the browser or operating system markets. Then, in 2004, IE begins to decline, and the market share of Mozilla Firefox begins to increase. It is important to note that there is no evidence that the Settlement Agreement played a direct or a substantial role in causing the growth of Mozilla Firefox (Oshri, de Vries, and de Vries, 2010). This trend is shown in Figure 1, which is featured in Eli Noam's Media Ownership and Concentration in America.

Figure 1:



The Noam data has a gap between during 2002 and 2003. This is likely a result of the fact that Netscape Navigator was divided up by Time Warner on July 15, 2003. In order to corroborate that there was indeed no significant change in market share during this two year time period, we refer to four other independent sources. These sources are: onestat.com, proquest, statmarket, and computer world.

Onestat.com features four different surveys of internet user's browser choice each canvassing a group of about 2 million internet users. The first survey, released on April 29, 2002, shows that IE shares continue to rise, approximating their market share at 96%. The second onestat.com survey released in December of 2002 show that IE market share is about 95%, and thus no significant change has occurred immediately following the Settlement Agreement. The third survey, released on July 28 of 2003, asserts that IE market share continues to rise. This survey registers 97% of internet users as using IE. The fourth onestat.com survey released on January 19, 2004, shows IE still dominating the market at 94.8%. These onestat surveys show a lack of change in internet browser industry during the time immediately following the Settlement Agreement.

In addition to these two different organization's surveys, a New York Times article released on September 9, 2002 featured a survey by Statmarket, which also corroborates IE's dominance of the market. This survey indicates that IE maintains about 96% of the market. Computer World also contends that Microsoft had more than 94% of the browser market in June 2003.

Finally, in 2004 we begin to see a slight decline in IE, as users begin downloading Mozilla Firefox. Mozilla Firefox's rise was not a direct result of the Settlement Agreement.

Mozilla's rise was caused by three factors. These factors are: IE halting innovation, Mozilla Firefox had a significant marketing push, and Mozilla made their browser more user friendly. Due to security concerns, IE halted innovation of its web browser in 2004. This corresponded with Mozilla's decision to heavily advertise its new browser. This advertising campaign featured stunts like asking users for \$10 donations in order to buy a full-page advertisement in The New York Times. Over 10,000 people donated \$250,000 in under 48 hours. More importantly, however, the product Mozilla was advertising had made significant improvements to user conveniences. By increasing the browser's speed, advertising blocker, and inter-operating system ability, users were becoming intrigued with the new and superior product. There is no evidence to suggest that these innovations were caused by the Settlement Agreement. It is possible that the negation of Microsoft's anticompetitive contracts helped to partially bolster Mozilla's growth, however the growth itself was sparked by the three factors mentioned above which are naturally-occurring conditions in the marketplace (Oshri, deVries, and de Vries, 2010).

Chapter 3 – European Enforcement

Early Skirmishes

The European Union's investigation of Microsoft's anticompetitive practices began in October of 1997, which was four years after the US Department of Justice started its investigation. This initial skirmish did not involve Internet Explorer, instead it was a response to a complaint filed by Sun Microsystems. This complaint alleged Microsoft withheld vital information that Sun Microsystems needed for its computer systems to communicate with Windows-based PCs. In August 2000, the EU Commission issued its first Statement of Objections to Microsoft. A Statement of Objections informs involved parties of objections made against them. After further investigation the Commission issued a second Statement of Objections that amplified the allegations. This statement accused Microsoft of illegally bundling Windows Media Player into the Windows Operating System. Two years later, a third Statement of Objections was issued that incorporated possible remedy proposals to rectify the anticompetitive situation. Ultimately, the commission found that Microsoft had illegally leveraged its dominance of the PC operating system market into the media player market and work group server market. The Committee's decision gave Microsoft 120 days to disclose the necessary protocols in order for its competitor's servers to interoperate fully with Windows PCs and servers. The Commission also required Microsoft to offer a version of its operating system that did not include Windows Media Player. Microsoft was, however, still permitted to offer the bundled version to consumers as well. This last provision is very significant as it identifies a key

difference between the focus of US enforcement and EU enforcement. US enforcement aims to promote competition, while EU enforcement concentrates more on protecting competitors. It also should be noted that Microsoft appealed this court's decision, however their appeal was denied (Jennings, 2006).

Implementation of a Browser Selection Page

In January of 2009 the EU Commission issued a Statement of Objections to Microsoft, in which they accused the company of illegally tying Internet Explorer to Windows. Unlike the several years of litigation that followed this accusation in the United States, the EU issued a resolution in December of 2009. The investigation originated from a December 2007 complaint filed by a Norwegian based company named Opera Software ASA. Opera alleged that Microsoft was foreclosing the browser market through leveraging control of its operating system. The EU required that Microsoft implement a browser selection page starting with their next Windows update on March 1, 2010. This page was required to appear upon starting the PC for the first time. On the page, a number of browsers were listed, and users were required to select a default browser. This provision ultimately resulted in 84 million browser downloads. In February of 2011, Microsoft violated the Commission's decision and stopped including a browser selection page on their operating system. As a result, 15 million users did not see the selection screen. The company cited "technical difficulties as the reason for the oversight. The EU forced Microsoft to return the browser selection page to its operating system in May of 2013, and issued a 561 million Euro fine (BBC, 2010, 2013).

Data For EU

Tables 1, 2, and 3 display internet browser market shares in Europe from July 2008 to May 2012. Using this data we can determine if there are any changes in the browser market that directly correlate with the implementation of the browser selection page. This data is based on aggregate data collected by “StatCounter” on a sample exceeding 15 billion page views per month collected from across the StatCounter network of more than 3 million websites.

Table 1 shows changes in browser market share from July 2008 to February 2010. This is the time period immediately preceding the implementation of the browser selection page on March 1, 2010. During this time period, we can see that Internet Explorer was decreasing at an average rate of -0.63 per month. This simple calculation was derived by dividing the difference of the first month and the last month by the number of periods.

$$(45.5 - 58.19) / 20 = -0.63$$

Table 1:

Date	IE	Firefox	Chrome	Safari	Opera	Other
2008-07	58.19	35.52	0	2.37	3.69	0.23
2008-08	58.31	35.53	0	2.47	3.49	0.2
2008-09	56.35	33.77	1.04	2.45	6.2	0.18
2008-10	56.52	33.41	0.98	2.52	6.38	0.19
2008-11	55.08	33.74	0.91	2.3	7.77	0.2
2008-12	51.84	36.7	1.25	2.25	7.35	0.61
2009-01	50.48	37.71	1.38	2.3	7.25	0.88
2009-02	50.29	37.69	1.49	2.38	7.29	0.86
2009-03	49.13	38.54	1.73	2.43	7.34	0.83
2009-04	47.89	39.04	2.05	2.53	7.63	0.85
2009-05	46.65	38.59	2.49	2.52	8.75	1.01
2009-06	45.97	38.79	2.78	2.64	8.69	1.12
2009-07	46.69	39.7	3.05	2.81	6.84	0.9
2009-08	46.01	39.62	3.36	2.95	7.12	0.94
2009-09	46.44	39.26	3.59	3.14	6.64	0.93
2009-10	47.78	39.87	3.99	3.37	4.05	0.94
2009-11	46.57	40.12	4.43	3.52	4.27	1.09
2009-12	44.84	40.8	5.06	3.4	4.44	1.46
2010-01	44.91	39.86	5.78	3.68	4.33	1.43
2010-02	45.5	38.99	6.52	3.67	4.29	1.02

Source: Stat Counter Global Stats

On March 1, 2010 the browser selection page is implemented. Table 2 shows browser market shares from February 2010 until January 2011. February 2011 is the first date listed, since it enables us to see any immediate changes between March and February. While January 2010 is the last month in the table, since it is the last month in which Microsoft violated its requirement to include a browser selection page. During this time period IE browser market share decreases by -0.72.

$$(36.91 - 45.5) / 12 = -0.72$$

Table 2:

Date	IE	Firefox	Chrome	Safari	Opera	Other
2010-02	45.5	38.99	6.52	3.67	4.29	1.02
2010-03	45.32	38.28	7.36	3.76	4.32	0.98
2010-04	44.1	38.72	8.27	3.8	4.15	0.97
2010-05	43.32	38.61	8.89	3.88	4.41	0.9
2010-06	43.18	38.09	9.6	3.9	4.4	0.83
2010-07	42.61	37.98	10.13	3.89	4.55	0.86
2010-08	42.01	37.94	10.81	4.11	4.33	0.81
2010-09	40.26	38.97	11.32	4.32	4.48	0.65
2010-10	39.52	38.66	12.29	4.55	4.38	0.61
2010-11	38.91	38.5	13.09	4.64	4.27	0.59
2010-12	37.52	38.11	14.58	4.62	4.57	0.6
2011-01	36.91	37.92	15.47	4.91	4.23	0.55

Source: Stat Counter Global Stats

Thus, with the browser selection page, there is a 0.1% increase in the rate at which IE decreases. Since the EU begins decreasing more quickly after implementing the browser selection page, this indicates the effectiveness of the browser selection page.

In February of 2011 Microsoft disabled the browser selection page, which was a direct violation of the law. The selection page remained disabled for one year, until February 2012. During this time period, shown in Table 3, IE's rate of decline slowed to -0.45.

$$(36.91 - 30.61) / 14 = -0.45$$

Table 3:

Date	IE	Firefox	Chrome	Safari	Opera	Other
2011-01	36.91	37.92	15.47	4.91	4.23	0.55
2011-02	36.44	37.56	16.28	4.87	4.27	0.57
2011-03	35.92	37.12	17.19	4.88	4.31	0.54
2011-04	35.27	36.84	18.14	4.93	4.22	0.59
2011-05	35.15	36.19	18.87	5.16	3.94	0.68
2011-06	35.47	34.67	19.96	5.3	3.91	0.68
2011-07	35.12	34.2	20.92	5.24	3.8	0.7
2011-08	34.7	33.79	21.8	5.32	3.73	0.65
2011-09	34.87	33.04	22.1	5.56	3.78	0.66
2011-10	33.14	33.17	23.35	5.73	3.91	0.71
2011-11	32.56	32.55	24.37	5.81	4	0.7
2011-12	31.28	32.45	25.54	5.84	4.13	0.76
2012-01	31.05	31.19	26.86	6.31	3.83	0.77
2012-02	30.61	30.69	27.9	6.42	3.73	0.66

Source: Stat Counter Global Stats

This is a notable decline. The removal of the browser selection page occurred in conjunction with a Windows update. Thus, it is very likely that the sudden lack of a browser selection page helped to slow IE's rate of decline. This appears very much like a "smoking gun" since it reveals the impact the selection page had over browser market share. However, it is important to confirm that this drop in IE's rate of decline is isolated to Europe. Therefore, it is essential to compare IE's decline in Europe to other countries.

Regional Comparisons

For the purposes of this paper, it is useful to compare IE's rate of decline in the EU to IE's rate of decline in other countries. These countries have been selected both for their comparable level of development in relation to the EU, and because of their geographic diversity to one another. In other words, the selected countries are comparable to the EU, and present us

with a wide array of regions across the globe. Such an analysis helps to confirm the effectiveness of browser selection page, and consequently the necessity of regulating zero-price bundling by “unbundling”. The graph below compares the rate of decline of IE in eight countries and the EU prior to, during, and after the removal of the browser selection page in Europe.

Table 4:

Region	Pre-Selection Page	Selection Page	Post-Selection Page
European Union	-0.63	-0.72	-0.45
United States	-0.732	-0.338	-0.504
Argentina	-0.809	-0.73	-1.52
Australia	-0.686	-0.5	-0.59
Canada	-0.521	-0.489	-0.39
Brazil	-1.042	-0.5	-1.03
Indonesia	-1.204	-0.314	-0.84
South Africa	-0.542	-0.416	-0.62
Puerto Rico	-0.801	-0.675	-0.71

Source: Stat Counter Global Stats

The European Union is the only region in the above sample that experiences an increase in the rate of IE’s market share decline upon imposing the browser selection page. This increase can be seen when comparing the “Pre-Selection Page” column to the “Selection Page” column.

(-0.63 vs. -0.72) All of the other countries in the sample experience a slowing in IE's rate of decline. This indicates that the trend in Europe upon the implementation of the selection page is an anomaly compared to the rest of the world, which reinforces the existence of the measurable influence the selection page had on market share.

When comparing the impact in Europe of illegally removing the selection page the rate of decline of IE's market share decreases from -0.72 to -0.45. Seven of the eight comparable countries actually witness an increase in the rate of decline of IE's market share during this period. Thus, while these comparable countries were experiencing one trend, the removal of the selection page in the EU likely caused this region to experience the opposite. It should be noted that Canada was the only other country that experienced a decline during this period. Canada's decline was much less than the EU. Canada rate of decline changed from -0.489 to -0.39, while the EU went from -0.72 to -0.45.

By comparing IE's rate of decline in the EU to other countries, the effectiveness of the browser selection page is reinforced, since we can confirm that the changes witnessed in Europe were not experienced world-wide. Moreover, this data provides further proof towards the necessity of unbundling zero-price bundled goods, if trying to more fairly distribute market share.

The graphs below further help to illustrate the impact of the browser selection page. The EU is the only concave line on the graph, which highlights how it experienced a different trend than other comparable regions. In bottom of the two graphs, South Africa, Argentina, and Puerto Rico have been omitted to help avoid clutter, and more clearly highlight the trend.

Figure 2

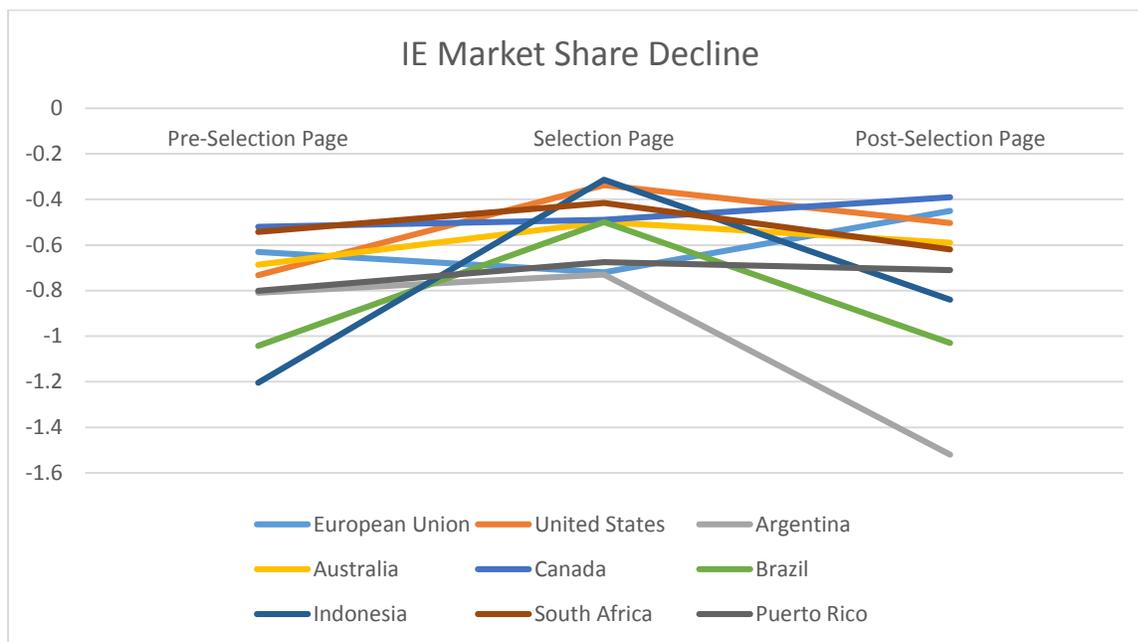
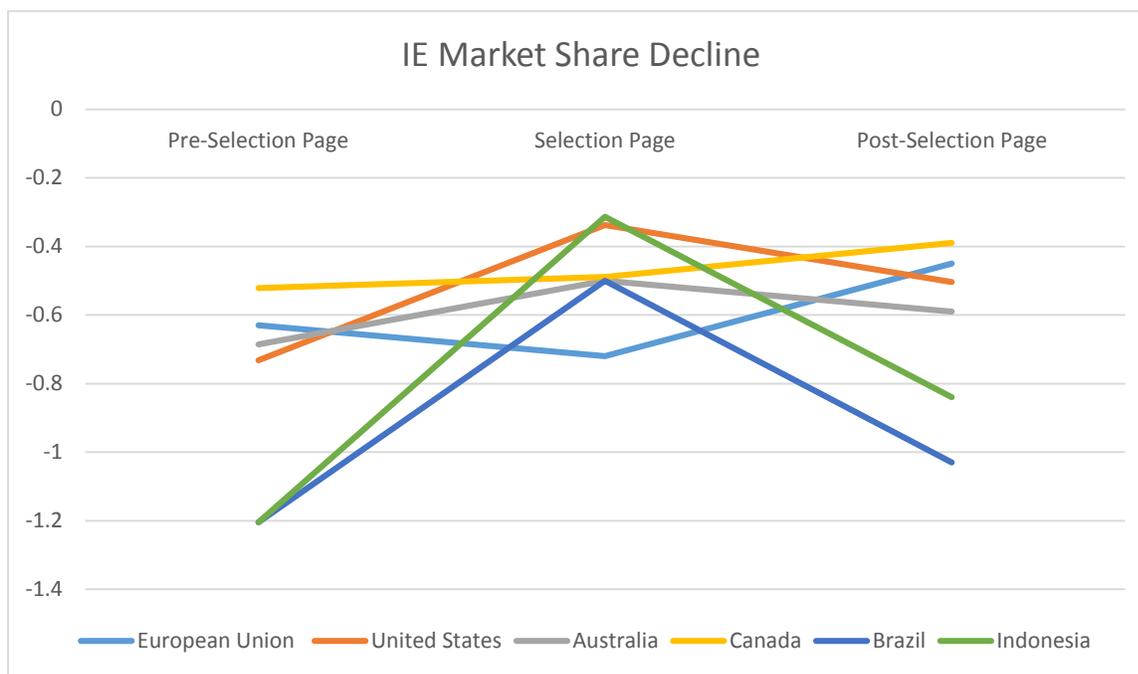


Figure 3:



Chapter 4: Conclusion

Ramifications of the Ultimate Remedy in the United States

In Chapter 2, the goals of the settlement agreement are outlined, followed by an analysis why the settlement agreement failed to reach those goals. The ramifications of the failed settlement agreement are difficult to quantify, but important to discuss. The lawsuit that resulted in the ultimate settlement agreement commenced in 1998, and concluded in 2002. Four years was not efficient. By the time the lawsuit concluded, the browser market was vastly different from when the case began. The most notable change was that, shortly after the case concluded, Time Warner divided up Netscape. Thus, the entire purpose of the case, which was to more fairly regulate competition between IE and Netscape, become moot.

Since, the lawsuit in the United States was ineffective, the biggest ramification of the case was the opportunity cost of failing to implement an effective remedy. There are two major opportunity costs. One is the opportunity cost to the industry of relying on the natural forces of the marketplace, as opposed to regulations, to adapt to changes. Although to some this may not be a negative cost, there is an undeniable time lag associated to IE's decline, because it waited for natural market forces, as opposed to regulatory influences. The other major opportunity cost associated with this case is the misallocation of the court's resources. Judge Collar-Ketley herself mentioned, during official testimony that her priority was for the two parties to negotiate an agreement outside of court, in order to make room on the docket for a number of antiterrorism cases that arose after September 11. In light of the findings of this paper, it would be very reasonable to assert that this case wasted the valuable time and resources of a federal court.

Ramifications of the Ultimate Remedy in Europe

Chapter 3 examines the effectiveness of the EU Browser Selection page. It is clear that there was a measurable effect on market share by unbundling IE from windows through using a browser selection page. Thus, there are positive ramifications of the EU remedy, as we can conclude it had an effect and was not a total waste of resources. There are two major reasons why the EU enforcement method was more effective than the Settlement Agreement in the United States. The first reason is that EU enforcement actually involved a partial unbundling of the IE from windows. The second reason is timing. It only took the EU one year to issue a resolution after sending Microsoft a Statement of Objections. EU enforcement was simply more efficient and more effective.

The EU commission put more of an emphasis into the economic effects of the case, while the US court system put more of a focus on the legal and political ramifications associated with the case's outcome. Consequently, from an economic standpoint, as opposed to a legal standpoint, the EU put forth a more effective remedy.

Limitations

The major limitation to the viability of this research is the ability to control for other variables that impact consumer preferences for web browsers. Examples of such variables include advertising expenditure, computer literacy, and PC preferences. Changes in both of these variables can have a major impact on which Internet Browser a consumer would be using. These variables would be another force, in addition to government regulation, that impacts browser

market share. It is very difficult to quantify the impact of these variables, and thus my research is limited to merely analyzing their effect qualitatively.

Role and Significance of this Research

This research is significant as it reveals the shortcomings of a major antitrust regulation. This case was so major it shaped the price of the internet, making it free with an operating system, forever. The shortcomings of the US enforcement method expose the difficulties of applying old laws, like the Sherman Act, to new marketplaces. The functionality of these markets, particularly in terms of the speed and interconnectivity, were not even fathomable when the laws that regulate these abilities were written. Moreover, this case reveals the constant struggle to balance a legal result and economic effects. Although testifying economists focus more on the economic impact of a case, many judges and lawyers are more focused on the legal outcome. Such a system is not likely to optimize the quality of economic analysis which influences the court's ultimate decision. The lessons learned through examining this case, can hopefully have a positive impact on the regulation of other high-technology markets in the future.

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