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Abstract:

Michael Betts is currently pursuing a J.D. at The University of Oklahoma College of Law. Below, Mr. Betts expands upon his prior publication, *Plunging into the Information Age: The Effect of Current Competition Policy on United States Science and Technology Policy*, which he discussed the problems Section 1 of the Sherman Antitrust Act posed of effectuating United States' Science and Technology Policy. Refer to 3 Okla. J.L. & Tech. 33 (2007) for a full copy of *Plunging into the Information Age*. In this publication, Mr. Betts introduces possible implications of Section 2 of the Sherman Antitrust Act given the unique nature of competition in IT industries.

# STANDARDIZATION IN INFORMATION TECHNOLOGY INDUSTRIES: EMERGING ISSUES UNDER SECTION TWO OF THE SHERMAN ANTITRUST ACT



## I. Introduction

The e-Brief *Plunging into the Information Age: The Effect of Current Competition Policy on United States Science and Technology Policy*[1] discussed whether the United States could effectuate its Science and Technology Policy (S&T Policy) in the face of antitrust regulation.[2] Its focus was on the United States' emphasis on strengthening its Information Technology (IT) industry and the problems antitrust regulation may pose to the industry.[3] However, the scope of the inquiry was limited to Section 1 of the Sherman Antitrust Act (Section 1).[4] A thorough analysis led to the conclusion that Section 1 afforded enough flexibility to promote, rather than hinder, the unabashed pursuit of United States S&T Policy.[5] The purpose of this e-Brief is to expand the scope by introducing possible implications of Section 2 of the Sherman Antitrust Act (Section 2) given the nature of competition in IT industries.

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[1] *See* Michael Betts, *Plunging into the Information Age: The Effect of Current Competition Policy on United States Science and Technology Policy*, 3 OKLA. J.L. & TECH. 33 (2007).
[2] *Id*. (manuscript at 1).
[3] *See generally id*. (manuscript at 1-4) (stating that United States policy makers argue for strengthening IT industries primarily through R&D projects; however, such policy raises antitrust issues of illegal collusion and monopolization).
[4] *See id*. (manuscript at 1 n.2).
[5] *Id*. (manuscript at 9).

As discussed in the previously mentioned e-Brief, competition in IT industries can be likened to a race. Indeed, it is a race to develop new technology.[6] However, describing the winner as the firm that brings the new product to the market first may not be enough. Instead, the winner is the firm that can control the technology standard.[7] This is important because controlling the technology standard leads to "winner-take-all" outcomes.[8]

Furthermore, racing for the technology standard does not come cheap. IT industries incur substantial R&D costs that are largely independent of output.[9] This means that as output increases, total cost per unit decreases. The implication is that IT firms no longer set price equal to marginal cost.[10] This is consistent with traditional monopolist pricing strategy.

Given these considerations, competition in IT industries creates monopolization issues in addition to issues of collusion among competitors. To better frame these potential issues, the following section analyzes competition in IT industries, focusing on the economics of standards. The next section briefly surveys current Section 2 monopolization jurisprudence. The final section explicates the only relevant Section 2 issue raised by standards competition in IT industries.

## II. Competition in IT Industries

In IT industries, competing firms try desperately to take advantage of rapidly changing technology to become the market leader or to oust the incumbent.[11] To achieve this, firms race to establish and control the industry standard. However, once a firm reaches leadership position, it

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[6] *See* David Encaoua & Abraham Hollander, *Competition Policy and Innovation*, 18 OXFORD REV. ECON. POL'Y 63, 64-65 (2002).
[7] *See* Thomas Hemphill & Nicholas Vonortas, *U.S. Antitrust Policy, Interface Compatibility Standards and Information Technology,* 18 KNOWLEDGE, TECHNOLOGY & POLICY (Issue Two) 126, 127-128 (2005).
[8] *See* Victor Stango, *The Economics of Standard Wars*, 3 REV. NETWORK ECON. 1, 2 (2004), http://www.rnejournal.com/articles/stango_mar04.pdf.
[9] *See supra* note 6.
[10] *Id*.
[11] *See* Hemphill & Vonortas, *supra* note 7, at 133-134.

may employ anticompetitive tactics to maintain its position.[12] To gain a deeper understanding, a brief look into the economics of standards is necessary.

**A. Standardization and Network Effects**

A standard is a set of characteristics that describe features of a product, process, service, interface, or material.[13] Additionally, standards are specifications that determine the compatibility of different products.[14] For example, video game technology has had several standards during the past years: Nintendo 8-bit, Sega 16-bit, Playstation 32-bit, and more recently X-Box and Playstation 2. These technologies are differentiated not only by their characteristics (such as sound and graphics quality), but also by the fact that games made for one standard cannot be played by using equipment of another standard (one cannot play Nintendo 8-bit games on an X-Box console).

Standards are often characterized as whether the standard is sponsored or unsponsored. A sponsored standard is that which is "owned" by the firm.[15] For example, in the video game industry, the X-Box would be Microsoft's sponsored standard. On the other hand, an unsponsored standard is that which is available for use by anybody.[16] For example, a watch manufacturer can use quartz without purchasing rights from another firm. The distinction may seem trivial; however, the market mechanisms for each are not. For an unsponsored standard, consumers are the sole drive for adoption of new standards.[17] For a sponsored standard, adoption is borne both on the consumer and the strategic decisions of a firm.[18] Since a firm plays a significant role in pushing for adoption of new standards, it is more likely that firms with

[12] *Id*.
[13] *Id*. at 129.
[14] *See* Stango, *supra* note 8, at 2.
[15] *Id*. at 3.
[16] *Id*.
[17] *Id*. at 4.
[18] *Id*.

sponsored standards will partake in anticompetitive behavior to push their standard on the market for adoption.

Standardization is the adoption of a common standard by the entire market.[19] If standardized by way of competitive forces, the new industry standard is said to be *de facto*.[20] By creating a *de facto* market standard, the winning firm can increase the efficiency of economic activity.[21] In fact, standardization may: promote market efficiency and expansion, encourage competition by lowering barriers to market entry, and speed diffusion of new technologies.[22] Again, the major drawback remains: standardization leads toward "winner-take-all" outcomes where a single firm emerges on top while others disappear.

Standardization is so prevalent because IT industries display strong network effects.[23] Network effects are complementary relationships in value creation among adopters of a common standard.[24] In other words, as the number of users of a particular standard increases, the value each user derives from the standard increases.[25] The fax machine is a classic example. As more people use the fax machine, the more valuable it becomes to all users.

Network effects can be direct or indirect.[26] In the fax machine example above, adoption of fax machines, in and of itself, confers a benefit on all who participate in the fax machine standard.[27] This is a direct network effect. *Ceteris Paribus*, the existence of strong direct network effects pushes the market to adopt a single standard, because adopters benefit most

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[19] *Id*. at 2.
[20] *Id*. at 4.
[21] *See* Hemphill & Vonortas, *supra* note 7, at 130.
[22] *Id*.
[23] *See* Stango, *supra* note 8, at 3.
[24] *Id*.
[25] *See* Encaoua & Hollander, *supra* note 6, at 64.
[26] *See* Stango, *supra* note 8, at 3.
[27] *Id*.

when all users are on the same standard.[28] Indirect network effects, on the other hand, are typified by video game consoles. Adoption, in and of itself, does not confer benefits on the users of the particular game console.[29] Rather, greater adoption of the particular game console should generate a greater variety of gaming software.[30] The greater variety of gaming software indirectly confers a benefit on users of the gaming console.[31]

**B. Economic Implications of Standardization and Network Effects**

Standardization and network effects have important economic implications. First, network effects in the market substantially increase "switching costs." Second, standardization in a market with high network effects enables the firm establishing the *de facto* standard (the winning firm) to easily achieve economy of scale.[32] Taken together, these two implications allow the "winning firm" to establish and maintain a monopoly.

"Switching cost" refers to the costs associated with switching to a new standard.[33] In this context, the cost is foregoing the increasing benefits as more firms adopt a particular standard. Recall that with strong network effects, the benefits of the standard increase as more employ the standard.[34] If the cost of foregoing the benefits the old standard confers by switching to a new standard becomes too high, firms will resist switching to a new standard.[35] In such a case, switching standards becomes virtually impossible.[36] The result is a market "locked into" the standard. That is to say, switching costs get so high that firms with different standards cannot enter the market.

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[28] *Id.*
[29] *Id.*
[30] *Id.*
[31] *Id.*
[32] *Id.*
[33] *See* Hemphill & Vonortas, *supra* note 7, at 133.
[34] *See supra* note 25.
[35] *See* Hemphill & Vonortas, *supra* note 7, at 133.
[36] *Id.*

Economy of scale refers to a reduction in total cost per unit as output increases.[37] Economic theory posits that most industries will eventually encounter diminishing returns because cost will eventually rise.[38] However, IT may not experience diminishing returns because, while costs of information (research and development) may be high, the cost of reproduction is lowered due to standardization.[39] Given this, the more a firm reproduces, the lower its total cost per unit will be.[40] The implication is that price will not be set at marginal cost.[41] Thus, economy of scale such as this breeds natural monopolies.[42]

As stated above, standardization may lead to "winner-take-all" outcomes where the firm that establishes the industry standard emerges as market leader.[43] This is true because the winning firm can achieve economy of scale through its *de facto* standard.[44] The increasing returns to scale may then potentially result in a monopoly for the winning firm.[45] And, because network effects create such high switching costs, the winning firm can maintain its leadership position.

## III. Current State of the Law

### A. Sherman Antitrust Act

The Sherman Antitrust Act of 1890 has only two substantive provisions.[46] In fact, the Act itself is quite enigmatic. Thus, it has been characterized as a "charter of freedom with a generality and adaptability comparable to that found desirable in constitutional provisions."[47]

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[37] *Id.*
[38] *Id.*
[39] *Id.*
[40] *Id.*
[41] *See supra* note 10.
[42] *See* Hemphill & Vonortas, *supra* note 7, at 133.
[43] *See supra* note 8.
[44] *See supra* note 39.
[45] *See supra* note 42.
[46] 15 U.S.C. §§ 1-2 (Supp. IV 2004).

Section 1 provides that "[e]very contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is hereby declared to be illegal."[48]

Section 2 creates liability for "[e]very person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce."[49] Unlike Section 1, Section 2 may apply to only a single firm's conduct. Because the primary concern in IT industries is unilateral action potentially being anticompetitive, Section 2 is particularly on point. Accordingly, a brief overview of Section 2 monopolization jurisprudence follows.[50]

**B. Monopolization Under Section 2**

Three elements must be met to find illegal monopolization under Section 2. First, there must be finding of economic monopoly.[51] Second, the monopolist must engage in exclusionary or anticompetitive conduct.[52] Third, the monopolist must have a general intent to engage in the conduct.[53] Liability, however, is subject to the "thrust upon" affirmative defense.[54]

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[47] *See* Appalachian Coals, Inc. v. United States, 288 U.S. 344, 359-60 (1933), *rev'd on other grounds*, Copperweld Corp. v. Independence Tube Corp., 467 U.S. 752 (1984) (stating that the purpose of the Sherman Anti-Trust Act is to prevent undue restraints of interstate commerce, to maintain its appropriate freedom in the public interest, and to afford protection from the subversive or coercive influences of monopolistic endeavor).
[48] *See* 15 U.S.C. § 1.
[49] *See id.* § 2.
[50] In this e-Brief, the focus is on illegal monopolization. However, it is important to note that a firm can violate section 2 by attempting to monopolize.
[51] *See* United States v. Microsoft Corp., 253 F.3d 34, 50 (D.C. Cir. 2001) (holding that while merely possessing monopoly power is not itself an antitrust violation, it is a necessary element of a monopolization charge).
[52] *See* Walker v. U-Haul Co. of Miss., 734 F.2d 1068, 1074 (5th Cir. 1984) (holding that mere possession of monopoly power, absent evidence that such power was willfully acquired or maintained, does not violate the Sherman Act).
[53] *See* Times-Picayune Pub. Co. v. United States, 345 U.S. 594, 626 (1953).
[54] *See* Aluminum Co. of Am., 148 F.2d at 430 ("The successful competitor, having been urged to compete, must not be turned upon when he wins").

An economic monopoly consists of the power to control prices[55]or to exclude competition[56]. Whether a particular monopolist is efficient or "good" is irrelevant.[57] A predominant share of the market may also suffice to show an economic monopoly.[58] Generally, a firm with ninety percent market share is presumed to be an economic monopolist.[59] However, even below the ninety percent threshold, other factors may be considered to show an economic monopoly. These factors include: the size and strength of competing firms; freedom of entry into the field;[60] and the willingness of consumers to substitute products from outside the relevant market.[61]

The mere existence of monopoly power is not enough to violate Section 2.[62] For a violation, there must be monopoly power plus deliberate action to achieve monopoly status.[63] Such action may consist of maintaining the monopoly[64] or eliminating rivals[65]. In either event, the monopolist's action must harm competition, not competitors.[66] In other words, the goal is not to protect a specific competitor, but to protect competition in general.

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[55] *See id*. (holding that a firm is monopolistic if it can profitably raise prices substantially above the competitive level).
[56] *See* United States v. E.I. du Pont de Nemours & Co., 351 U.S. 377, 391 (1956) ("the power to control prices or exclude competition"). *But see* Elliott Indus. v. BP Am. Prod. Co., 407 F.3d 1091, 1123-24 (10th Cir. 2005) (defining monopoly power as the power to control prices *and* to exclude competition).
[57] *See* United States v. Aluminum Co. of Am., 148 F.2d 416, 427-28 (2d Cir. 1945).
[58] *Id*. at 429.
[59] *Id*.
[60] *See* Microsoft Corp., 253 F.3d at 51 (holding that monopoly power may be inferred from a firm's possession of a dominant share of a relevant market that is protected by "entry barriers," such as certain regulatory requirements, that prevent new rivals from timely responding to an increase in price above the competitive level).
[61] *See* Pastore v. Bell Tel. Co. of Pa., 24 F.3d 508, 513 (3d Cir. 1994).
[62] *See* Byars v. Bluff City News Co., Inc., 609 F.2d 843, 853 (6th Cir. 1979) (holding that mere possession of monopoly power is not illegal).
[63] *See supra* note 52.
[64] *See generally* Aluminum Co. of Am., 148 F.2d 416 (holding that Alcoa could not use its excess capacity to deter competitors from entering the market for the purpose of maintaining a monopoly).
[65] *See* Microsoft Corp., 253 F.3d at 58.
[66] *Id*.

The completed offense of monopolization under Section 2 requires only a general intent to "do the act."[67] Such intent may be shown by the suspect firm's deliberate action to achieve monopoly status.[68]

Although Section 2 aims to stop monopolization, it is unrealistic to conclude that Section 2 requires all who possess monopoly power to "cut their engines and drift aimlessly with the ebb and flow of natural market forces."[69] Consequently, an affirmative defense to Section 2 violations has developed. A firm avoids liability for monopolization when the monopoly power has been "thrust upon" it due to (or as a direct result of) the firm's superior foresight and industry.[70] This is known as the "thrust upon" defense.

To recapitulate, the elements of a Section 2 violation are: monopoly power, the willful acquisition or maintenance of that power, and causal injury to competition. Monopoly power exists whenever prices can be raised above the competitive market levels.[71] Also, it may be demonstrated by a predominant share of the market, or a lesser market share combined with other relevant factors.[72] The test of willful maintenance or acquisition of monopoly power is whether the acts complained of unreasonably restrict competition.[73] And finally, liability is subject to the "thrust upon" defense.[74]

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[67] *See supra* note 53.
[68] *See id*. at 615; Aluminum Co. of Am., 148 F.2d 416.
[69] *See* Paschall v. Kansas City Star Co., 441 F. Supp. 349, 362 (W.D. Mo. 1977).
[70] *See supra* note 54.
[71] *See supra* note 51.
[72] *See supra* notes 58, 60, 61.
[73] *See supra* notes 63-66.
[74] *See supra* note 70.

## IV. Standard Economics and Section 2

In IT industries, the combinations of supply-side economies of scale, network effects, standardization, and lock-in strengthen a firm's grip on the market immensely.[75] A new market entrant must therefore overcome significant barriers to oust the incumbent leader. This raises concerns of illegal monopolization under Section 2.

Recall that there will be no liability under Section 2 for merely having a monopoly.[76] To be illegal, the monopoly must harm competition.[77] The issue then becomes whether consumers are adversely affected. While barriers of entry may be high in IT industries, several factors may moderate the negative effect on consumers, thus alleviating Section 2 concerns. First, the race to grow and win customers will likely involve offering lower prices to consumers.[78] Second, cost advantages of the incumbent firm may be overcome more easily in rapidly growing markets.[79] Third, producers of complementary products with an interest in lower prices can frequently exert significant pressure on the incumbent firm with the cost advantage to follow suit.[80]

Furthermore, Section 2 violations are subject to the "thrust-upon" defense. It may be that the incumbent firm achieved leadership position by way of legitimate competition. In such a case, the winning firm would avoid Section 2 liability.

Relative firm size, then, may not be the most important issue concerning Section 2 enforcement in IT industries. Rather, the abuse of market power by a dominant firm to maintain its leadership position is the salient factor in determining Section 2 violations. As discussed above, competitors (or prospective competitors) may take advantage of rapidly changing

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[75] *See* Hemphill & Vonortas, *supra* note 7, at 133.
[76] *See supra* note 62.
[77] *See supra* note 66.
[78] *See* Hemphill & Vonortas, *supra* note 7, at 133-134.
[79] *Id*.
[80] *Id*.

technology to unseat the leader.[81] Sensing this, the leading firm will be tempted to counter by stifling innovation to maintain its monopoly position, thus violating Section 2.[82]

## V. Conclusion

Standardization may lead to "winner-take-all" outcomes where the firm that establishes the industry standard emerges as market leader. And, because network effects create such high switching costs, the winning firm can easily maintain its new leadership position. This raises issues of illegal monopolization under Section 2 of the Sherman Act. These issues, however, turn on whether the standard winning monopolist injured competition, or whether the monopoly was acquired legally by virtue of superior foresight and industry of the winning firm. Several factors work to alleviate damage to competition, and it may be that the winning firm was thrust into the monopoly by way of legitimate competition. Thus, the only relevant issue becomes whether the winning firm has abused its power to maintain the monopoly.[83]

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[81] *Id*.
[82] *Id*.
[83] In my following article, *United States Versus Microsoft: A Case Study*, 3 OKLA. J.L. & TECH. 35 (2007), I will explain how the court in United States v. Microsoft Corp., 253 F.3d 34 (D.C. Cir. 2001) dealt with this issue.