

American Law institute - American Bar Association Continuing Legal Education
ALI-ABA Course of Study
January 26, 1995

Anti/Intellectual Property Claims in High Technology Markets
Cosponsored by California Continuing Education of the Bar

*1 LEGAL ATTRIBUTES ON HIGH TECHNOLOGY MARKETS:
THE OUTCOME DETERMINATIVE
ROLE OF MARKET DEFINITION

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*3 1. Background

A. Market Definition:

To determine the effect of a corporation's conduct on a market, one must define the relevant market, examine the corporation's position in the market, and then analyze the market power of the corporation in the market. See Thompson v. Metropolitan Multi-List, Inc., 934 F.2d 1566, 1572 (11th Cir. 1991). "The ultimate consideration in such a determination is whether the defendants control the price and competition in the market for such part of trade or commerce as they are charged with monopolizing." United States v. E.I. Du Pont De Nemours and Company, 351 U.S. 377, 380, 76 S.Ct. 994, 100 L.Ed. 1264 (1956).

1. The Relevant Market:

The relevant market is demarcated by geographical boundaries, known as the relevant geographic market, and by product boundaries, known as the relevant product market. See Thompson, 934 F.2d at 1572. While defining both markets of competition is a crucial first step in market analysis, it is the definition of the relevant product market, which tends to generate

the most controversy. As will be discussed below, this is particularly true in cases involving high technology.

2. Outcome Determinative Role of Market Definition a. Impact on Market Power Analysis

If the market is defined broadly to include many competitors, the corporation will appear to have little market power to control prices and competition within the market. Conversely, if the market is defined narrowly to include very few competitors, the corporation will tend to have greater market power. Because market power is essential to many antitrust causes of action, defining the market frequently becomes the battleground on which cases are won or lost.

b. Market Definition Impacts Damages Analysis

The relevant market not only demarcates the boundaries of competition for purposes of analyzing market power but also creates limits to its financial potential. Thus, a narrowly defined market will not only have fewer competitors than a broadly defined market but *4 will also have fewer consumers. See Eastman Kodak Company v. Image Technical Services, Inc., 504 U.S. 451, 112 S.Ct. 2072, 119 L.Ed.2d 265 (1992) (market for Kodak brand services consisted of inducers of Kodak brand equipment). While narrowing the size of the market will tend to increase a corporation's market power, it will tend to have the opposite effect on damages.

c. Market Definition Impacts Corporate Policy

Finally, market definition will influence corporate policy. If the market is defined broadly, a corporation may attempt to institute policies which are more restrictive than could be instituted in a narrowly defined market. On the other hand, if the market is defined too narrowly, a corporation will have less freedom in its policies than warranted.

B. One Market or Several Submarkets

Defining the market in essence can be a two fold task. One must not only attempt to discern the limits of the relevant market but must also determine whether there are, in fact, several relevant product submarkets at issue. If there are submarkets at issue, tying concerns may be raised. Moreover, if submarket exists, a corporation will have to adhere to a stricter standard of conduct in the submarket than in the broad market.

1. Equipment Market Only?

In Kodak, supra, the issue of submarkets played a central role in the Court's market analysis. There, independent service organizations brought monopoly and tying claims against Kodak, the manufacturer of photocopier and micrographics equipment, alleging that Kodak had monopolized the service submarket for its own equipment and tied the sale of crucial parts to the sale of service. Kodak argued that there was no tie because there was only one market, the

market for equipment. Kodak also argued that no monopoly existed because Kodak faced stiff competition in the broad equipment market, vitiating any market power in the parts or service submarkets. In a landmark decision, the Supreme Court ultimately found genuine issues of material fact as to whether these submarkets did, as a matter of commercial reality, exist. Because product submarkets could exist, the plaintiffs could support their theory of tying and monopoly.

*5 2. Parts Market Only?

In *Allen-Myland, Inc. v. IBM*, ___ F.3d ___, Case No. 93-1586 (3rd Cir. 1994), IBM faced a similar issue of multiple submarkets. There, the plaintiff complained of IBM's net pricing strategy in which IBM charged a single price for both computer upgrades and the services needed to install the upgrade. The plaintiffs had been in the business of installing upgrades for older IBM equipment, but when the new policy took effect, the plaintiffs were foreclosed from upgrading IBM's new computers. The plaintiffs then alleged that IBM had unlawfully tied the sale of upgrades to the services needed to install the upgrade. IBM claimed that there was only one market at issue. Because services constituted only a small element of the revenue generated in the upgrade of computers, IBM argued that the market was for parts only. IBM was essentially selling and customers were simply buying one product: IBM upgrade parts. Nonetheless, the Court of Appeals held that the upgrade itself and the installation service needed to upgrade the computer could constitute separate markets for purposes of a tie. The Supreme Court has recently denied certification of IBM's appeal.

Hence, one must not only define the relevant product market but must also determine whether multiple submarkets exist within the broader relevant product market. These submarkets may, in fact, constitute relevant product markets for antitrust purposes, which could lead to unexpected liability.

II. Defining the High Technology Market: Legal Standards

Any analysis of market definition must first explore the legal standards for demarcating areas of competition. While some may criticize these judicial standards, they nonetheless are the "law of the land." By themselves, however, these standards provide only a road map to market definition inasmuch as they are broadly defined. "[the legal] guidelines offer no precise formula for judgment, and they necessitate rather than avoid, careful consideration based on the entire record." *United States v. Continental Can*. 378 U.S. 441. 449.84 S.Ct. 1738. 12 L.Ed.2d 953 (1964).

A. Du Pont's Cross-elasticity of Demand Analysis

The Supreme Court in *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377 (1956) set the stage for an economic analysis of relevant product markets. In this celebrated case concerning the competition in the flexible wrapping market, the Supreme Court articulated a test that focused on consumer sensitivity to price changes.

*6 In du Pont, the Supreme Court looked to the cross-elasticity of demand between the commodities at issue. duPont 351 U.S. at 380-381. “If a slight decrease in the price of cellophane causes a considerable number of customers of other flexible wrappings to switch to cellophane, it would be an indication that a high cross-elasticity of demand exists between them; that the products compete in the same market.” du Pont. 351 U.S. at 400.

In the du Pont case, the Supreme Court examined the substitutability of cellophane with other flexible wrapping materials such as glassine and aluminum foil. Although there were significant price differences among the various flexible wrapping materials, the Supreme Court nonetheless found them all to be within the same market because customers of wrapping material were highly sensitive to price and would readily substitute one wrapping material for another.

B. Brown Shoe*s Practical Indicia Examination

Only six years after the du Pont decision, the Supreme Court enunciated a more penetrating market analysis of the relevant product market than the level of inquiry found in du Pont. In Brown Shoe Co. v. United States. 370 U.S. 294, 8 L.Ed.2d 510. 82 S.Ct. 1502 (1962), the Supreme Court recognized smaller areas of competition not easily identified by the principles of du Pont, but which, nevertheless, could constitute relevant product markets for antitrust purposes. The outer boundaries of a product market are determined by the reasonable interchangeability of use or the cross-elasticity of demand between the products itself and substitutes for it. However, within this broad market, well-defined submarkets may exist which, in themselves, constitute product markets for antitrust purposes.

Brown Shoe. 370 U.S. at 325 (emphasis added). These submarkets could be demarcated by examining what the Supreme Court called “practical indicia.”

The practical indicia were identified as follows:

1. Industry or public recognition of the submarkets as a separate economic entity

Recognition by the industry or public of a market itself constitutes some proof of a relevant product market. See Photovest Corp. v. Fotomat Corp. 606 F.2d 704 (7th Cir. 1979) (industry and customer recognition of drive-thru processing as a separate and distinct market from other forms of *7 photoprocessing constituted some evidence of a submarket for drive-thru processing); see also C.E. Services, Inc. v. Control Data Corp. 759 F.2d 1241 (5th Cir. 1985) (third party service for IBM computers recognized by customers and third party services to be a distinct market from IBM brand service of its computers).

2. The product*s peculiar characteristics and uses

If the product has a distinct use from other potential substitutes, then it may be distinguished from these substitutes. See Columbia Metal Culvert Co. v. Aluminum &

Chemical Corp. 579 F.2d 20(3rd Cir. 1979) (aluminum culverts were distinguished from steel and concrete culverts because aluminum culverts had some uses for which steel and concrete culverts could not substitute).

3. Unique production facilities

The method of production may also influence market definition. If the products are produced in the different production facilities or in a different manner, a court may view the products to be in different markets. See Brown Shoe, supra, (evidence that men*s, women*s, and children*s shoes were manufactured in separate plants provided some proof that each occupied separate markets).

4. Distinct customers

If the products have distinguishable groups of consumers, the court may view the products separately even though there maybe a group of customers they share. See SuperTurf, Inc. v. Monsanto Co.. 660 F.2d 1275 (8th Cir. 1981) (even though a group of customers existed which would find either artificial turf or grass to be acceptable, the existence of a distinct set of customers who only found artificial turf acceptable precluded finding that products were in the same market).

5. Distinct prices

When the differences in prices between products are substantial, this price gap may demonstrate that the products are in different markets. See C.E. Services, supra, (price differences of 20% to 25% constituted evidence of separate markets); see also International Boxing Club of New York, Inc. v. United States. 358 U.S. 242. 79 S.Ct. 245 (1959) (higher ticket prices helped to distinguish championship boxing from other boxing contests). Cf. du Pont, supra, (although cellophane was twice the price of glassine, the Supreme Court found the two products occupied the same market).

*8 6. Sensitivity to price changes

This analysis appears indistinguishable from the du Pont analysis of cross-elasticity. Again, the issue is how sensitive consumers are to price changes for the product in question.

7. Specialized vendors

Who sells the product will also assist in distinguishing the product markets. See Photovest, supra, (drive-thru kiosks were specialized vendors of photoprocessing distinct from other sellers of photoprocessing services).

These practical indicia need not all be satisfied in order to find the existence of a submarket. They are factors, not criteria. See International Tel. & Tel. Corp. v General Tel. & Elec. Corp. 518 F.2d 913.932(9th Cir. 1975).

In essence, the Brown Shoe analysis seeks to add a deeper level of analysis to the du Pont cross-elasticity of demand examination. “It merely adds new factors to that test so as to more precisely define the market affected by the defendant’s actions.” White and White. Inc. v. American Hosp. Supply Corp. 723 F.2d 495. 500 (6th Cir. 1983). Although Brown Shoe was a Clayton merger’s case, many federal courts have adopted Brown Shoe’s market analysis for monopoly cases. See C.E. Services. Inc. v. Control Data Cow.. 759 F.2d 1241 (5th Cir. 1985); see also SuperTurf. Inc. v. Monsanto Co., 660 F.2d 1275 (8th Cir. 1981); see also Photovest Corp. v. Fotomat Corp., 606 F.2d 704 (7th Cir. 1979).

C. Department of Justice Guidelines Approach

The Department of Justice’s Merger Guidelines provide another tool for delineating the relevant product market. Like the du Pont analysis, these guidelines focus on consumer responsiveness to price changes. The Guidelines in their present form have been adopted by the Department of Justice and the Federal Trade Commission, jointly. They state the following:

...the Agency will begin with each product (narrowly defined) produced or sold by each merging firm and ask what would happen if a hypothetical monopolist of that product imposed at least a “small but significant and nontransitory” increase in price, but the terms of sale of all other products remained constant. If, in response to the price increase, the reduction in sales of the product would be large enough that a hypothetical *9 monopolist would not find it profitable to impose such an increase in price, then the Agency will add to the product group the product that is the next-best substitute for the merging firm’s product.

DOJ/FTC Merger Guidelines, §1.11(1992). The “small but significant and nontransitory price increase” is defined as a price increase of five percent lasting for the foreseeable future. DOJ/FTC Merger Guidelines § 1.11(1992).

There are, however, relatively few federal cases which have adopted these guidelines. See Ansell Inc. v. Schmid Laboratories. Inc., 757 F. Supp. 467 (D. N.J. 1991) (employing Department of Justice Guidelines); and Allis Chalmers Manf. Co. v. White Consolidated Industries. Inc., 414 F.2d 506 (3rd Cir. 1969) (1968 Justice Department Guidelines had some weight).

D. Kodak’s Single Brand and Submarket Analysis

In the Supreme Court’s most recent pronouncement on market definition, the Supreme Court again examined the topic of submarkets first raised in Brown Shoe. Rather than rely on the practical indicia inquiry of Brown Shoe, however, the Supreme Court relied on the cross-elasticity of demand analysis of du Pont. See Kodak. 112 S.Ct. at 2082. As in du Pont and the

DOJ/FTC Merger Guidelines, the focus of market definition was on consumer responsiveness. “The relevant market for antitrust purposes is determined by the choices available to [consumers].” Kodak. 112 S.Ct. at 2090.

Specifically, the court focused on the degree to which markets were cross-elastic. It is the degree of switching which is important to the analysis. See Eastman Kodak Company v. Image Technical Services, Inc., 504 U.S. 451. 112 S.Ct. 2072. 2083. 119 L.Ed.2d 265 (1992). In other words, when faced with a price change, how many consumers will switch products.

1. Switching and Information Costs

In this fine tune analysis, the Supreme Court recognized the impact that “economic reality” could have on the interplay between markets. Kodak. 112 S.Ct. at 2082. In Kodak, supra, this economic reality presented itself in the form of switching and information costs to the consumer. Both information and switching costs can create a less than responsive connection between markets. Kodak. 112 S.Ct at 2085.

*10 a. Switching costs

Switching costs are economic indicators of the difficulty of “switching” to alternatives in a market. Markets which are characterized by high switching costs are markets where consumers have difficulty in changing to alternative products in the event of market abuse. Markets with low switching costs are those markets where consumers may easily change to substitutes. When a consumer has spent a substantial investment in a product, it may be difficult for the consumer to “switch” to a substitute product because he will lose his substantial investment in the first product purchased.

b. Information costs

Information costs are economic indicators of the difficulty in determining what the economic impact of the proposed action will be. Markets characterized by high information costs are markets where consumers must expend much of their resources in determining the availability of substitutes. Markets characterized by low information costs are those markets where consumers readily have information necessary to make a decision. Switching costs are the economic costs encountered by the consumer in substituting products. Information costs are economic costs of knowing how much the switch will cost.

2. Separate Product Submarkets

By examining the cross-elasticity of demand in light of “economic reality,” the Supreme Court found that submarkets could exist in the aftermarket for equipment that could constitute product markets for antitrust purposes. Analysis of relevant product markets should examine not only the market for the equipment but also markets for parts and repair of the

equipment. This in-market analysis allowed the plaintiff to pursue a claim of a tie between the parts (tying good) and repair markets (tied good).

3. Single Brand Market

The Supreme Court's refined approach to the cross-elasticity of demand analysis of du Pont also allowed the Supreme Court to hold that even in a single brand submarket, a company could have market power. Kodak. 112 S.Ct. at 2090. Again, Kodak *11 found that this determination could only be made through a factual examination of the "commercial realities" faced by consumers. Kodak. 112 S.Ct, at 2090.

Du Pont and Brown Shoe provide courts with guidance on defining the relevant product market. While du Pont furnishes a method of broadly examining the relevant product market, Brown Shoe provides courts with a more precise tool to define the contours of the market. In essence, Brown Shoe gives courts a stronger lens to focus upon market definition than du Pont. Courts have also relied on the Department of Justice Merger Guidelines as an advisory aid to delineate the relevant product market although few courts have adopted them wholeheartedly. In Kodak, the Supreme Court reaffirmed both the viability of submarkets as relevant product markets for antitrust purposes of Brown Shoe and the cross-elasticity market analysis of du Pont. More importantly, the Supreme Court in Kodak informed market definition analysis by recognizing the importance of examining "economic reality."

III. Defining the High Technology Market: Practical Concerns

In defining the relevant product market, one must look to not only the legal standards but also to the market information available. The type of information employed will vary with its purpose. If the information employed will vary with its purpose. If the information will be used to support a party's market definition, it will have to stand up to evidentiary concerns such as hearsay, relevance, and privilege. See J. McDavid and E. Schmidt, *Antitrust Evidence Handbook* (1991). Many of these evidentiary problems may be bypassed by using an expert witness to introduce evidence to the court. According to the Federal Rules of Evidence, an expert witness may rely on facts and data not admissible in court. Fed. R. Evid. 703. In addition, because market analysis must be credible, it should be rigorously developed. Typically, this will involve an expert's market analysis examining the sales figures, prices, profits, costs of products at issue and the industry itself. The analysis itself can be quite expensive.

Needless to say, if the information will be used to support a corporate policy decision, evidentiary issues will not come into play. Moreover, it will be difficult to justify the expense of an expert's market analysis. Accordingly, other sources of market information will have to be utilized. One alternative is to examine analogous markets. While not directly on point, even this information would be admissible in court to support market definition. See Kodak, supra, (holding that the high technology service market constituted evidence of a market for Kodak photocopier and micrographics service).

*12 IV. Attributes of High Technology Markets

Because market definition has such a tremendous impact on antitrust analysis, it is critical to define the market properly in the first instance. Unfortunately, in high tech markets, defining the relevant product market may itself be a very indefinite activity, leading to many unexpected results. For the most part, high technology markets are unsettled. Not only does the technology itself change as corporations introduce innovations and improvements on existing technology, but the market itself may change as the product develops within the market.

A. Uncertainty of High Tech Market:

1. Innovations and Invention

While there has not been a great scientific breakthrough since the invention of the microprocessor, applications of the computer “chip” have reached such differing industries as the automotive and communication industries.

With each new application develops a new product market. Accordingly, the issue arises as to whether a new relevant product market has developed. Moreover, these varying products may have the same components, may be an upgrade of a previous product, or may even be used for the some of the same purposes. This serves to blur the distinction between the products and consequently relevant product markets.

In *Allen-Myland*, the Court of Appeals excluded from the relevant product market of IBM mainframe computers software and peripheral upgrades. While there were some evidence to show that a software and/or peripheral upgrade could forestall the purchase of a new IBM mainframe, the Court of Appeals concluded that there was insufficient evidence to conclude that they were adequate substitutes. Nevertheless, the Court of Appeals included smaller capacity computers in the market as reasonable substitutes for IBM mainframes.

2. Market Development follows Product Development

After the innovation or invention is introduced, the aftermarkets for the product develop. Peripheral equipment markets, technical support, service markets, and other submarkets develop in the wake of the initial invention. Again, the issue is whether these submarkets are relevant product markets for antitrust purposes. See *Kodak*, *supra*, (finding services and parts submarkets of Kodak photocopiers and micrographic equipment could constitute relevant product markets for antitrust purposes).

*13 B. Uniqueness of Goods

An invention by nature is unique. Indeed, a patent or copyright is a testament to the uniqueness of the product itself. Uniqueness, however, is often associated with market power.

Patents... furnish the most familiar type of classic monopoly. As the producers of a standardized product bring about significant differentiations of quality, designed, or packaging in the product that permit differences of use, competition becomes to a greater or less degree incomplete and the producer's power over price and competition greater over his article and its use, according to the differentiation he is able to create and maintain.

du Pont. 351 U.S. at 391.

Accordingly, high technology markets are often characterized by the potential for manipulation of market power. In Kodak, the Supreme Court found that a genuine issue of material fact existed as to whether Kodak was unlawfully using its control over unique repair parts to force customers to purchase its brand of service. The Court also found that because Kodak parts and service were unique, they could constitute relevant product markets for antitrust purposes.

C. High Switching and Information Costs

Determining the effect of these costs is important to market definition because they will influence what consumers determine to be adequate substitutes for the product in question. As stated above, these economic costs will accordingly influence market definition.

1. Research and Development

High technology markets are characterized by large research and development costs. These costs are frequently past on to consumers in the form of high prices. As the price of the product increases, the likelihood of the consumer switching to another product in the event of market abuse decreases. Accordingly, high tech products will typically have associated with them a high switching cost.

2. Consumer Ignorance

New technology must be taught. For example, consumers of a new word processing program must be trained on the application and operation of the program. The more complicated the new technology, the greater the training required to teach its use. Once learned, however, consumers will have a *14 natural reluctance to switch to other substitutes because they will have to retrain themselves on the substitute product. in essence, this leads to higher switching costs.

Ignorance may also lead to higher information costs. The more complicated the product, the more difficult it will be to compare substitute products. The consumer may simply fail to even recognize all of the substitute products available in the market. For example, a consumer may have trouble determining whether a software upgrade is an adequate substitute for a new computer.

As demonstrated in Kodak, high information and switching costs prevent the adequate functioning of the market. In such a market, consumers will not substitute as freely as they should in theory. Hence, in high tech markets characterized by high switching and information costs, there is a greater chance for market abuse.

D. Control of Product Design and Product Marketing

Corporations have ultimate control over the design of the product. Accordingly, they have an impact on the aftermarkets for the product. For example, Nintendo developed a computer chip which served as a lock to their video game system. A video game cartridge without this patented chip could not work on a Nintendo video game system. This product design precluded third party game developers from selling games without Nintendo's license, allowing Nintendo to control the program aftermarket for its game system. See Atari Games Corp. v. Nintendo of America. 975 F.2d 832 (Fed. Cir. 1992).

In Allen-Myland, supra, a change in the product design of IBM's mainframe computer allowed the installation of computer upgrades with less labor. Consequently, the largest cost of upgrading the computer became the cost of the part itself. This product design innovation had a negative impact on independent service organizations installing upgrades for IBM mainframes. The Court of Appeals did not label this action to be anticompetitive, although it did find that the associated pricing policy of IBM could constitute a tie between installation service and the upgrade part.

*15 V. Conclusion

Defining the high technology market in antitrust cases may be problematic in light of the uncertainty of the market, the inherent market power of unique goods, the switching and information costs involved, and the ability of the corporation to actual define the market to a degree through the design of the product. All of these factors must be considered in understanding the relevant product market. Improper definition of the market may lead to situations where a corporation believes it is able to engage in restrictive action when in actuality it is not. Situations may also arise where the corporation is acting too cautiously in a highly competitive market. Because there are several market definition tests to consider and many different factors to examine, one should always "resolve antitrust claims on a case-by-case basis" with a focus on the particular facts of the case. See Kodak. supra. at 2082.