

UNITED STATES OF AMERICA  
FEDERAL TRADE COMMISSION



In the Matter of

SCHERING-PLOUGH CORPORATION,  
a corporation,

UPsher-SMITH LABORATORIES, INC.,  
a corporation,

and

AMERICAN HOME PRODUCTS  
CORPORATION,  
a corporation.

Docket No. 9297

**PUBLIC VERSION**

**COMPLAINT COUNSEL'S OPPOSITION TO  
RESPONDENTS' JOINT MOTION TO EXCLUDE CERTAIN  
TESTIMONY OF TIMOTHY F. BRESNAHAN**

Timothy Bresnahan is an esteemed Professor of Economics at Stanford University, one of the preeminent universities in the world, and former Deputy Assistant Attorney General for Antitrust at the Department of Justice. Remarkably, Respondents claim that Professor Bresnahan is unqualified to assist the Court in determining whether the payment of \$60 million by Schering-Plough Corporation ("Schering") to Upsher-Smith Laboratories, Inc., ("Upsher") delayed competition between Schering and Upsher in violation of the antitrust laws. Professor Bresnahan is qualified to render an opinion in this antitrust case. His opinions are a product of reliable economic principles. His methods are consistent with those used by economists. The Court should therefore deny Respondents' Joint Motion *In Limine* to Exclude Certain Testimony of Timothy F. Bresnahan ("Motion").

Professor Bresnahan is an established industrial organization and empirical economist. He has published numerous articles about competition between monopolists and entrants, market power, and patent-intensive industries. He has been an editor of leading economic and industrial organization journals, including the leading economic journal and the official journal of the American Economic Association, *American Economic Review*, as well as the *Rand Journal of Economics*, *Journal of Industrial Economics*, and *Quarterly Journal of Economics*. He is an expert in the economics of patent settlement, litigation, and mediation.

Professor Bresnahan applies peer reviewed, published, and empirically validated economics which shows that generic entry threatens the branded drug monopolies, and that entrants and monopolists have the capability and incentive to delay that entry. Growing directly and naturally from this peer reviewed literature, Professor Bresnahan determines that if

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..... Upon a thorough review of the record, Professor Bresnahan concludes that all three conditions are satisfied. These conclusions are consistent with economic methods, are reliable, and therefore must be admitted under Commission Rule of Practice 3.43(b).

#### STATEMENT OF FACTS

Before this Court is the issue of whether Schering, the firm with monopoly power in the sale of K-Dur 20, a drug used by persons with high blood pressure, paid \$60 million to Upsher and at least \$15 million to AHP to delay bringing a generic equivalent to the market, resulting in higher drug prices. Complaint counsel offer the testimony of Professor Bresnahan to assist the Court in deciding this and many subsidiary issues.

Schering is the owner of a patent on K-Dur 20, its branded potassium chloride drug. The patent covers only the timing by which the K-Dur 20 capsule dissolves and releases potassium chloride into the body. Upsher and ESI had been developing their own generic versions of K-Dur 20. Generic entry into the K-Dur 20 market would have reduced Schering's profits substantially. Having learned of Upsher's and ESI's potential entry and realizing the threat it posed, Schering sued each company for patent infringement. On June 17, 1997, Schering and Upsher settled their patent dispute. Schering paid Upsher \$60 million for an Upsher commitment not to begin marketing its generic potassium chloride product (with and without allegedly infringing technology) for more than four years, until September 1, 2001. In addition, Upsher granted to Schering licenses to market six drugs, predominantly in Europe. The critical question in this case is whether Schering's \$60 million non-contingent payment to Upsher was a *bona fide* payment for a license to six drugs (particularly Upsher's niacin product) or an unlawful payment to delay Upsher from entering the market. Because the six drugs do not merit the \$60 million non-contingent payment, the agreement delayed generic entry and harmed consumers.

Schering and AHP settled their lawsuit in January 1998, with an agreement similar in several respects to the one Schering had entered into with Upsher-Smith. The agreement, which was finalized in June 1998, provided for payments from Schering to AHP of \$15 million, with \$5 million up-front and an additional \$10 million conditioned only on AHP's getting tentative FDA approval by June 1999. The agreement, like the one with Upsher-Smith, also set an entry date several years in the future: AHP agreed not to launch its generic K-Dur 20 product until 2004.

**A. Professor Bresnahan's Relevant Expertise**

Professor Bresnahan is highly qualified to assist the Court in answering these questions. He is an expert industrial organization economist. See Curriculum Vitae (Attachment 4) (citing 61 published articles). He was the chief economist at the Antitrust Division of the United States Department of Justice, and published articles of great importance to the field of antitrust economics, including competition between entrants and monopolists – the precise issue before this Court.<sup>1</sup> He also teaches antitrust concepts including cartel behavior. Deposition Transcript of Timothy F. Bresnahan, at 68/24-69/11 (Attachment 3).<sup>2</sup>

Moreover, Professor Bresnahan has specialized expertise that is particularly well-suited to this case. See Curriculum Vitae. He has published more than 11 articles over the last three years involving the structure of competition within, and innovation in, the computer industry, an industry in which patent settlements play an integral role. Professor Bresnahan is also an expert in the economic analysis of mediation, patent litigation and settlements.<sup>3</sup> Professor Bresnahan is therefore highly qualified to examine the patent settlement in this case. He has studied extensively the methods for valuing new product introduction, which is a key issue in this case.<sup>4</sup>

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<sup>1</sup> See Curriculum Vitae (citing *Entry into Monopoly Markets*, 57 Rev. of Econ. Studies 531 (1990)).

<sup>2</sup> We will cite to this testimony as “Bresnahan Tr.” We use “68/24-69/11” as a transcript citing convention that refers to page 68, line 24 through page 69, line 11.

<sup>3</sup> Bresnahan Tr. 215/9-215/13 .....

<sup>4</sup> See Curriculum Vitae (citing, among other articles, *The Economics of New Goods: An Introduction*, in *The Economics of New Goods* (Bresnahan and Gordon, eds.); and *The Economics of New Goods*, in *Proceedings of a Meeting of the Conference on Research in Income and Wealth*, (1997)). This field studies the profit from entering a market with a new and

He has also studied and published articles addressing competition between monopolists and new entrants. This highly applicable and extensive background makes Professor Bresnahan exceptionally well-suited to assist this Court by explaining when a settlement, like the Schering/Upsher and Schering/AHP settlement, harms competition. The Court should therefore accept and rely on the opinions of Professor Bresnahan.

**B. Professor Bresnahan's Well-Established Economic Principles and Methods**

In addition to his formidable and highly relevant expertise, Professor Bresnahan applies ..... Bresnahan Expert Report at 2 (Attachment 1) ("Report"). Economists identify generally accepted economic principles and apply those principles to the case at hand. Bresnahan Tr. 188/12-188/21. In this case, Professor Bresnahan uses established economic theory of the consumer effects of entry into monopoly markets and dispute resolutions. The monopolist-entrant literature concludes that "[i]n any market, firms have an incentive to coordinate their production and pricing activities to increase their collective and individual profits." Dennis M. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization* 121 (3<sup>rd</sup> ed. 2000) (Attachment 6). The dispute resolution literature shows that parties settle cases if each party subjectively believes at the time of settlement that it is better off settling than litigating.<sup>5</sup> Applying this tried and true economics, Professor Bresnahan concludes that consumers will suffer harm if all three of the following hold: .....

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differentiated product

<sup>5</sup> Richard A. Posner, *Economic Analysis of Law* 523-25 (3<sup>rd</sup> ed. 1986) (summarizing the economics and social welfare of dispute resolution using parties subjective beliefs at time of settlement) (Attachment 5); Robert D. Cooter and Daniel L. Rubinfeld, *Economic Analysis of Legal Disputes and Their Resolution*, 27 J. of Econ. Lit. 1067, 1075-77 (1989) (same) (Attachment 7).

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Based on a thorough review of the record, Professor Bresnahan concludes that these conditions hold in this case.<sup>6</sup> .....

..... Report at 32.

For the Upsher settlement, Professor Bresnahan uses two bodies of established economic theory to show that .....

Under revealed preference theory, economists measure the value a firm places on a product by observing the choice a firm makes when confronted with two opportunities of equal value.<sup>8</sup>

Professor Bresnahan concludes that, .....

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<sup>6</sup> Respondents do not challenge the reliability of Professor Bresnahan's conclusion that Schering has market power and that Upsher is a threat to that power.

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..... Report at 28.

The principle of the market test shows that other market participants were unwilling to pay anything close to a \$60 million non-contingent fee for Upsher's product. Upsher tried to offer a license to distribute its niacin product in Europe and sent out 49 solicitations. Forty-five of those companies responded with no interest, and no company offered any non-contingent payment for Upsher's product. An Upsher consultant did not believe that Upsher was going to get anything near \$60 million for the license. Based on this market evidence, Professor Bresnahan concluded that .....

..... Both the revealed preference test and the market participant test lead to the conclusion that the \$60 million non-contingent payment was not for Niacor-SR.

Professor Bresnahan also examined the direct evidence that the payment was for delay. He examined party negotiation documents, most of which showed that the \$60 million was a payment to delay Upsher's entry into the market. Based on the totality of the record and economic theory, Professor Bresnahan concluded that .....

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Professor Bresnahan places a range on how long the Schering/Upsher agreement harmed competition. He does so by considering two examples where the parties are at the extremes of

their bargaining power and expectations. In the most conservative case, Schering has little bargaining power and obtains the fewest years of monopoly profit that it would be willing to accept before litigating. In the alternative case, Schering has all the bargaining power and Upsler accepts the minimum payment that it would be willing to accept before litigating. Based on the application of the theory and the model, Professor Bresnahan estimates that harm to competition ranges from ..... Report at 34.

### ARGUMENT

This proceeding is governed by the Commission's Rules and the admissibility of expert testimony is governed by Commission Rule 3.43(b), 16 C.F.R. § 3.43(b). Under the Rule "[r]elevant, material, and reliable evidence *shall* be admitted. Irrelevant, immaterial, and unreliable evidence shall be excluded." *Id.* (emphasis added).<sup>9</sup> Respondents cite no case under Rule 3.43 and, instead, rely on the Federal Rules of Evidence.

Section 702 of the Federal Rules of Evidence provides that:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

The "rejection of expert testimony is the exception rather than the rule." Fed. R. Evid. 702 Advisory Committee Notes (citing *United States v. 14.38 Acres of Land Situated in Leflore*

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<sup>9</sup> Respondents do not challenge the relevancy or materiality of Professor Bresnahan's testimony.



*County, Mississippi*, 80 F.3d 1074, 1078 (5<sup>th</sup> Cir. 1996) (“the trial court’s role as gatekeeper is not intended to serve as a replacement for the adversary system.”)).

Rule 702, as amended in 2000, was motivated primarily by two Supreme Court cases. *Kumho Tire v. Carmichael*, 526 U.S. 137 (1999); *Daubert v. Merrel Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). These cases require courts to ensure that expert testimony is reliable. *Daubert* recommended using the following factors to determine the reliability of scientific evidence: (1) whether a theory or technique is testable; (2) whether it has been subjected to peer review and publication; (3) the known or potential error rate of a particular scientific technique; and (4) general acceptance in the scientific community. *Daubert*, 509 U.S. at 593-594. *Kumho* held that those factors were neither dispositive nor exhaustive, 526 U.S. at 151, 158.

Courts performing their *Daubert* gate keeping function in cases involving economic experts rarely, if ever, use all the *Daubert* factors. *E.g.*, *City of Tuscaloosa v. Harcrus Chemicals, Inc.*, 158 F.3d 548, 566 (11<sup>th</sup> Cir. 1998) (not applying the testable, peer review or error rate criteria to economic expert). Instead, courts examining the reliability of economic expert testimony consider whether the opinion is generally within the scope of his expertise and whether the methodology is reasonable and applied consistently with established protocols or in a manner that suggests the conclusions are reliable. *See id.*, at 565 (finding an economic expert’s testimony to be reliable concerning matters the expert is qualified to discuss and in which he uses a reliable methodology); *See also Voilas v. General Motors Corp.*, 73 F. Supp. 2d 452, 461 (D.N.J. 1999) (approving economic expert where “much of the following analysis will hinge on Dr. Tinari’s experience and qualifications”).

Courts do not reject the methodologies of economic experts unless the methods are so flawed that the opinions amount to no more than speculation or guesswork and are therefore unreliable. *E.g., In re: Aluminum Phosphide Antitrust Litigation*, 897 F. Supp. 1497, 1506 (D. Kan. 1995) ("Here, plaintiffs called [an economic expert] not to supply specialized knowledge, but to plug evidentiary holes in plaintiff's case, to speculate, and to surmise."). Even if the court suspects the expert's conclusion is incorrect, it may not exclude the expert testimony. *See Law v. NCAA*, 1998 U.S. Dist. LEXIS 6640, \*23 (D. Kan. Apr. 23, 1998) ("[T]he law is well established that the evidentiary requirement of reliability is lower than the merits standard of correctness.").

Respondents seek to exclude five aspects of Professor Bresnahan's testimony. Those five parts are: .....

..... The basis for the motion is that Professor Bresnahan is not qualified and does not use established economic theory or methods. These contentions are without merit.

**I. Professor Bresnahan is Qualified to Render an Opinion as to the Anticompetitive Effects of a Patent Settlement**

Professor Bresnahan is qualified to use established economic principles to develop a test to determine harm to competition, value of a new product, and estimate the delayed competition. *See Motion* at 5-6, 19-22, 24-25. Respondents claim that Professor Bresnahan must be a pharmaceutical patent licensing expert to render an opinion in this case. An expert is qualified if he or she has "specialized knowledge." Fed. R. Evid. 702. This element is interpreted liberally. *In re Paoli R.R. Yard PCB Litigation*, 35 F.3d 717, 741 (3d Cir. 1994). Professor Bresnahan is

an expert industrial organization professor, an empirical economist, and a former Deputy Assistant Attorney General for Antitrust at the Department of Justice. The uncontroverted evidence shows that he has vast expertise in patent-intensive industries. He has expertise in the economics of patent litigation and settlements and valuation of new products. All of Professor Bresnahan's experience and expertise is applicable across industries, including the pharmaceutical industry. Professor Bresnahan is eminently qualified to assist the Court in identifying harm to competition, the parties' incentives, and the value each Respondent placed on Upsher's niacin product.

Courts routinely admit economic experts without specific industry expertise where the expert's expertise is generally applicable across industries. *See e.g., Voilas v. General Motors Corporation*, 73 F. Supp. 2d 452, 457 (1999) (admitting economic expert testimony because specific expertise in the automotive industry was not necessary to make judgments of wage and benefit values); *Walker v. Yellow Freight Systems*, 1999 U.S. Dist. LEXIS 15012, \*20 (E.D. La. Sept. 24, 1999) (holding industry expert opinion reliable in case about freight industry where expert had no industry-specific experience); *Waldorf v. Shuta*, 142 F. 3d 601, 627 (3d. Cir. 1998) (finding general knowledge or practical experience of expert was sufficient to qualify him as an expert). Professor Bresnahan's experience crosses industries, including pharmaceuticals. For example, at the Justice Department, Professor Bresnahan addressed competitive activity in many industries. Thus, Professor Bresnahan is qualified to assist the Court in this matter.

The cases cited by Respondents only show that industry-specific expertise is required when testimony pertains to industry-specific conduct, not generally applicable business issues.<sup>10</sup> More particularly, those cases address industry standards of care. That is certainly not the case here. There is no pharmaceutical industry-specific issue in valuing a new drug. Moreover, the economic principles being applied are applicable to any industry. Thus, industry-specific expertise is unnecessary.<sup>11</sup>

The test criteria used by Professor Bresnahan are based on sufficient facts and data. Respondents claim that Professor Bresnahan was required to read specific pharmaceutical licenses before using general economic principles to identify his test criteria. Motion at 5-6. There is no plausible connection between reading a patent or patent license and identifying the conditions under which a patent settlement is anticompetitive. This argument merely boils down to a recasting of Respondents' argument that Professor Bresnahan has insufficient expertise. But his expertise is sufficient because he is familiar with patent-intensive industries, patent settlements, and the relevant economic theory. The cases to which Respondents cite emphasize

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<sup>10</sup> Motion at 19-22. *Ballard v. Buckley*, 60 F. Supp. 2d 1180, 1182 (D. Kan. 1999) (excluding expert because expertise was insufficient to opine about blasting industry standards); *Navarro v. Fuji Heavy Indus.* 925 F. Supp. 1323, 1329 (N.D. Ill. 1996) (excluding expert because expertise was insufficient to opine about suspension design); *Int'l Rectifier Securities Litig.*, 1997 US Dist. LEXIS 23966, at \*22 (C.D. Cal. April 2, 1997) (excluding expert because expertise was insufficient to opine about due diligence standards).

<sup>11</sup> If patent licensing valuation is required in this case, then all of Respondents' economic experts should be disqualified. If the Court is inclined to exclude any part of Professor Bresnahan's testimony based on his qualifications, Complaint Counsel respectfully seeks leave of Court to move to disqualify Respondents' economic experts on the same ground. We trust the Court would summarily grant any such motion.

this point. They address the applicability or sufficiency of the expert's expertise, not the "sufficiency" test of Rule 702.<sup>12</sup>

Attempting to sully Professor Bresnahan's reputation one more time, Respondents attack Professor Bresnahan for testifying outside his expertise. Respondents argue that Professor Bresnahan should opine as to the legal rule that this Court should apply. Motion at 8. In particular, Respondents request Professor Bresnahan to determine whether Schering's conduct is *per se* unlawful or governed by the rule of reason. Professor Bresnahan does not purport to be a legal scholar and is not rendering a legal opinion.<sup>13</sup> Bresnahan Tr. 24/19-25/5 (examining an economic question, not a legal question).<sup>14</sup> Second, the applicable rule of law can be argued by the attorneys and determined by the Court without an expert opinion.

For these reasons, we request the Court find Professor Bresnahan qualified to offer the opinions and assist the Court in this matter.

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<sup>12</sup> *McCulloch v. H.B. Fuller Co.*, 981 F.2d 656, 657 (2d Cir. 1992) (proffered expert's "training as an electrical and industrial engineer, along with his experience in the safety field, might qualify him to testify as to the need for a ventilation system, but that was not an issue in dispute."); *Wilson v. Woods*, 163 F.3d 935, 938 (5th Cir. 1999) (the witnesses accident construction expertise was insufficient to reliably render an opinion); *City of Hobbs v. Hartford Fire Ins. Co.*, 162 F.3d 576, 586-87 (10th Cir. 1998) (in a dispute about third party insurance claims in New Mexico, witness had no applicable expertise on New Mexico third party claims).

<sup>13</sup> At the Bresnahan deposition, complaint counsel objected to this line of questioning on precisely this ground.

<sup>14</sup> Respondents argue that Professor Bresnahan's refusal to render a legal opinion is an admission that his test criteria are unreliable. Professor Bresnahan stands squarely behind his report. Bresnahan Tr. 9/25-10/6 .....

## II. Professor Bresnahan's Economic Analysis is Based on Established Economic Theory And Consistent With Standard Economic Methods

### A. Courts do Not Apply The Hard Science Daubert Factors to Economic Experts

Respondents incorrectly argue that economic testimony must satisfy three of four *Daubert* factors: (1) peer review; (2) testability; and (3) error rate. Motion at 2-3. The Courts have held just the opposite. Peer review is not required to show the reliability of economic experts because "in some instances well-grounded but innovative theories will not have been published." *Law v. NCAA*, 1998 U.S. Dist. LEXIS 6640 at \*32 (D. Kan. April 23, 1998) (quoting *Daubert*, 509 U.S. at 593); see also *Voilas v. General Motors Corporation*, 73 F. Supp. 2d. 452, 462-63 (D. N. J. 1999) (accepting expert testimony without requiring publication). It is sufficient that testimony is the product of reliable methods and principles. Fed. R. Evid. 702 Advisory Notes.

Economists do not ordinarily have the opportunity to analyze multiple cases with similar facts making the "testable" prong inapplicable to economics. See *City of Tuscaloosa v. Harco Chemicals, Inc.*, 158 F.3d 548, 566 (11<sup>th</sup> Cir. 1998).<sup>15</sup> It is exceptional to find a set of circumstances where a plaintiff pays a defendant to settle a case. Further, Professor Bresnahan has familiarity with other settlements. If the Court were to apply Respondents' proposed rule of law, contrary to precedent, no economic testimony could ever be offered.

### B. Professor Bresnahan's Theory, Conclusions and the Range of Harm to Competition Are Based on Established Economics

Professor Bresnahan's analysis is a "product of reliable principles and methods." Fed.R. Evid. 702. Proper expert testimony "grow[s] naturally and directly out of research [he] has

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<sup>15</sup> This error rate criterion is also an inapplicable standard. Respondents do not cite cases to the contrary.

conducted independent of the litigation.” *Primavera Familienstiftung v. Askin*, 130 F.Supp.2d 450, 528 (S. D. N. Y. 2001).

Professor Bresnahan applied three criteria for evaluating the anticompetitive effect of a patent settlement from reliable and established economic principles.<sup>16</sup> The model is derived from established, published and peer reviewed literature on the economics of competition between a monopolist and entrant (a literature to which Professor Bresnahan is a substantial contributor). *Entry into Monopoly Markets*, 57 *Rev. of Econ. Studies* 531 (1990). Professor Bresnahan relies on established empirical results showing that entry reduces monopoly profits. See Report at 5 (citing Carlton and Perloff, *Modern Industrial Organization* at 538-539). The concept that a monopolist will pay to prevent entry is well known in the industrial organization literature. See *id* at 21. Professor Bresnahan also applies tried and true economic principles of dispute resolution. Posner, *Economic Analysis of Law* at 523-25 (summarizing the economics and social welfare of dispute resolution using parties subjective beliefs at time of settlement); Cooter and Rubinfeld, *Economic Analysis of Legal Disputes and Their Resolution*, 27 *J. of Econ. Lit.* at 1075-77 (same).<sup>17</sup> Professor Bresnahan explained that the work done in this case is so closely related to well-known economic theory that it would only make an ..... contribution and could not be published. Bresnahan Tr. 44/3 - 44/9. Moreover, other economists in the field, cited by Respondents, Motion 17-18, agree with Professor Bresnahan that Schering’s payment is

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<sup>16</sup> Respondents’ counsel, Mark Gidley, made up the term “Bresnahan Rule” and, in an effort to get Professor Bresnahan to accept this phraseology, which he did not, Gidley promised to use it only at the deposition. Br. Tr. at 23. The use of this term here and in any part of this litigation is misleading and inappropriate.

<sup>17</sup> Professor Bresnahan’s calculations of the amount of delay are taken directly from the model and they are as reliable as the model itself.

anticompetitive. Richard J. Gilbert, former chief economist at the Antitrust Division and Willard K. Tom, former Deputy Director of the Bureau of Competition, explain that if the FTC's allegations are correct, the Schering-Upsher agreement is an "anticompetitive arrangement[] to eliminate competition and to divide the monopoly profits of successful branded drugs."<sup>18,19</sup>

Further, Professor Bresnahan applies the theoretical results to the best available empirical evidence – the documentary record in this case. Based on all this information, Professor Bresnahan concludes that .....

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..... These techniques are entirely consistent with economic protocol. Professor Bresnahan applies accepted economic principles to a specific fact pattern and uses the data to determine if the facts fit the theory. Respondents have not cited to a single aspect of the technique that shows it to be inconsistent with established economic methods. Nor do they argue that the revealed preference or the market participant tests are inappropriate methods for an economist to apply in valuing an asset. Notably, Respondents do not attack Professor

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<sup>18</sup> Richard J. Gilbert and Willard K. Tom, *Is Innovation King at the Antitrust Agencies? The Intellectual Property Guidelines Five Years Later*, 69 Antitrust L.J. 43, 76 (2001) (Attachment 10). Respondents argument that Richard Gilbert disagrees with Professor Bresnahan is specious. Motion 17-18. Further, Respondents argue that their experts disagree with Professor Bresnahan. *Id.* This is hardly persuasive. Courts routinely admit expert testimony from both sides. The Court should welcome, not stifle, competing views.

<sup>19</sup> The cases cited by Respondents do not require the opinion to have been peer reviewed. Motion at 7. In *Blue Dane Simmental Corp v. Am. Simmental Ass'n*, the court found that the expert failed to properly apply the "before and after" economic model. 178 F.3d 1035, 1040-41 (8<sup>th</sup> Cir. 1999). *Independent Service Organizations*, 114 F.Supp.2d 1070, 1101 (D. Kan. 2000), did not address economic evidence.



Bresnahan's conclusion that .....

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In a last ditch effort to cast doubt on Professor Bresnahan's work, Respondents argue that he improperly relied on the testimony of a technical expert, Dr. Levy. Dr. Levy is a licensing expert and is offering an opinion about the value of the patent license and the relative merits of the niacin products of Upsher and Kos. Report at 27-28. Professor Bresnahan is permitted to rely on another expert. See *International Adhesive Coating Co., Inc. v. Bolton Emerson Intern., Inc.*, 851 F.2d 540, 544 (1<sup>st</sup> Cir. 1988) ("an expert is entitled to rely on facts and/or data which have not been admitted into evidence if the expert's reliance on those facts or data is reasonable. . . [R]easonableness is measured against the facts or data upon which experts in the particular field normally rely."). Respondents do not cite to any contrary authority. In *TK-7 Corp. v. Estate of Barbouti*, the court excluded expert testimony relying on other testimony that the court found to be unreliable. 993 F.2d 722,730-31 (10<sup>th</sup> Cir. 1993). See *In re: Polypropylene Carpet Antitrust Litigation*, 93 F. Supp. 2d 1348, 1357 (N.D. Ga. 2000) (where the court allowed the economist to rely on the conclusions of a statistician because the economist independently found the statistician's report to be reliable). The critical requirement is that the underlying data be reliable. Dr. Levy's work is reliable. First, this exact issue is the subject of a motion pending before the Court. Also, Professor Bresnahan independently evaluated Dr. Levy's work. Professor Bresnahan interviewed Dr. Levy and examined his report and the report of Respondents' expert Dr. Horovitz. Professor Bresnahan rejected the Horovitz conclusion

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<sup>20</sup> Nor do respondents challenge the validity of the third criterion Professor Bresnahan applies: that a payment to delay a potential competitor is anticompetitive.

because his approach was flawed. Bresnahan Tr. 177/23 - 178/2. In addition, Dr. Levy's conclusions are consistent with Professor Bresnahan's conclusions, which suggests reliability. Thus, Professor Bresnahan was entitled to rely on Dr. Levy.

In sum, Professor Bresnahan's work is reliable because it is the product of valid economics.

C. Professor Bresnahan's Model is Based on Well-Founded Assumptions

Respondents challenge Professor Bresnahan's reliability arguing that his model did not address adequately three assumptions: (1) using the parties expectations at the time of the settlement is an appropriate analytical method for determining competitive harm; (2) Schering is not risk averse; and (3) a de minimus payment would not harm competition. Motion at 12-13. Further, Respondents argue that the range of harm to competition is based on unfounded assumptions. Motion at 24.

1. The Assumptions in the Model are Accurate and Reasonable

Contrary to those assertions, Professor Bresnahan properly evaluates the effect of the reverse payment by comparing the Respondents' expectations to the actual settlement, his model addresses the hypothetical risk aversion of Schering, and the payment is so large that a de minimus evaluation was not worthwhile.

Professor Bresnahan does not merely assume that the parties' *ex ante* expectations is the proper analysis. He uses the approach established by the economic literature that addresses the welfare effects of litigation settlement. Cooper and Rubinfeld, *Economic Analysis of Legal Disputes and Their Resolution*, 27 J. of Econ. Lit., at 1075-77. To see the propriety of this

argument all the Court needs to do is follow the money. The persons in the best position to compare the expected result of the settlement are the persons actually involved. The business people at Schering decided to spend \$60 million on something. The record reflects only two possible justifications: either a payment for a valuable product, which it certainly was not, or a payment to delay entry. Thus, if the Court finds the value of Upsher's niacin product to be \$60 million, then the Court can infer that there was no bribe. However, if the patent licenses were not worth \$60 million, there was a bribe. For this reason, analyzing the Respondents' expectations at the time of the settlement is precisely what this Court should do. This is not only sound economics, but sound logic. Respondents state the issue quite nicely. "Ultimately, whether Schering-Plough paid Upsher-Smith for the delay turns on the parties' intent *when negotiating the licensing deal.*" Motion at 22 (emphasis supplied).

Professor Bresnahan's analysis incorporates the possibility of risk aversion.<sup>21</sup> First, if the parties' risk aversion allows them to settle without a payment, then a settlement with a payment will result in a later entry date than the settlement without a payment. Report at 19-20. Second, the criteria explicitly require that the payment be for delay (*Id.* at 22) and require an assessment of the justifications raised at the time of the settlement. ....

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<sup>21</sup> See Rebuttal Expert Report of Professor Timothy Bresnahan at 1 (Attachment 2) [hereinafter "Rebuttal Report"]; Posner, *Economic Analysis of Law*, at 525 ("If the parties differ in their risk preferences, the analysis is similar to that of a difference in the stakes."); Cooper and Rubinfeld, *Economic Analysis of Legal Disputes*, 27 J. of Econ. Lit., at 1076 ("[r]isk aversion thus increases ... the probability of settlement").

Further, there is nothing in the record showing that Professor Bresnahan should have considered Schering to be risk averse. Neither Dr. Willig nor Dr. Addanki, Schering's own economic experts, provides evidence that Schering was risk averse. Accordingly, even if the model does not address risk aversion, which it certainly does, it need not do so because Respondents fail to provide evidence that Schering was risk averse.

Professor Bresnahan was asked at his deposition about a de minimus test. That test, proposed by Respondents, is one where the net reverse payment to Upsher is so small that it could not be used to infer consumer harm. Professor Bresnahan considered, but rejected, studying in detail a de minimus test because the \$60 million payment was too substantial. Bresnahan Tr. 56/10- 56/17.

2. The Assumptions Underlying the Harm to Competition Are Valid

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..... Report at 34. He used established economics to reach this conclusion. His method used an arithmetic application of his findings, the type of simple, but elegant calculation that courts typically embrace. See *City of Tuscaloosa v. Harcos Chemicals, Inc.*, 158 F.3d 548, 566 (11<sup>th</sup> Cir. 1998) (holding that expert testimony using "simple arithmetic and algebraic" calculations to estimate damages was reliable). Professor Bresnahan's estimates are upper and lower bounds, Report at 32, and are a reliable method of assessing the extent of harm caused by the Schering/Upsher agreement.

Respondents argue that the calculations are based on unfounded assumptions. Motion at 24. One of the so-called unfounded assumptions (divided into two assumptions for dramatic effect) was that Professor Bresnahan relied on his own conclusion that the .....

..... This argument is the same challenge to Professor Bresnahan's conclusion dressed up in different clothes. Nothing to which Respondents cite suggests that an expert economist cannot rely on his own work. Further, economic experts will ordinarily base damage assessments on conclusions about the market structure and nature of the competitive restraint.

Another so-called unfounded assumption is precisely what Professor Bresnahan concluded. Because Professor Bresnahan determines that .....

.....

.....

.....

.....

Finally, Respondents argue that the estimates of Schering's lost profits are not based on sufficient investigation. But they are. Professor Bresnahan specifically cited to company records reflecting the company's valuation of monthly profits and costs of litigation. Report at 33. Respondents expect Professor Bresnahan to undertake an independent market study. That is not necessary when company documents are clear. Respondents fear that the Court will focus on the company documents that reflect what happened here.

Professor Bresnahan's damage estimates are not speculation. They are grounded in the substantial work done in this case. His damage estimates should therefore be accepted by the Court as reliable and helpful.

**D. Professor Bresnahan Is Not Invading the Purview of the Court**

Without finding a single flaw in his expertise or the application of established economics, Respondents weakly attack the way that Professor Bresnahan applies those principles. They

argue that Professor Bresnahan is inappropriately invading the role of the Court by finding facts and opining on the credibility of witnesses. Motion at 14, 17-18, 21. Professor Bresnahan is doing neither.

Professor Bresnahan assists the Court by providing sound economic theory that accounts for all of the material facts in this case. Economic theory explains why a generic entrant is a threat to a monopolist. Professor Bresnahan shows that Schering was concerned about protecting its monopoly profit from generic entry. Report at 29 n.51. Economic theory shows that a net payment to delay competition harms consumers. Upsher valued the litigation at between \$60 and \$70 million and Upsher believed, and told Schering, that the payment was to prevent competition. Report at 29-30. The economics of revealed preference and the principle of the market test show how to value a good or a service. Professor Bresnahan identifies evidence showing that it is unreasonable to believe that Schering was willing to make a \$60 million non-contingent payment for Upsher's niacin product. Report at 28; Rebuttal Report at 4-5.

A complete and coherent theory of the case will explain why Schering accepted the Niacor-SR license. Professor Bresnahan identifies evidence showing that Schering knew a \$60 million payment to delay entry was unlawful. Report at 30 n.57, 31 n.60. Applying established antitrust economics, Professor Bresnahan explains that the license serves as a cover to prevent detecting the \$60 million payment for delay. Finally, Professor Bresnahan cannot identify any economics of dispute settlement to explain why the allegedly injured party, Schering, is paying

the perpetrator, Upsher. Report at 30. Thus, Professor Bresnahan provides an economic framework with which the Court can view the evidence, and he has not improperly weighed it.<sup>22</sup>

At various times Respondents argue that an expert cannot act as an advocate or weigh evidence. Motion at 14, 18. Professor Bresnahan is doing neither. He is using his expertise to help the Court to determine the facts and weigh the evidence. Courts have held that experts are acting as advocates, not experts, when they render opinions without reviewing the record.<sup>23</sup> Further, experts cannot simply render an opinion as to the believability or credibility of a witness unless they have expertise on "witness credibility."<sup>24</sup> Of course, Professor Bresnahan is not attempting to testify about which witnesses he believes.<sup>25</sup>

Accordingly, Professor Bresnahan has applied established economic theories and methods and his assumptions are supported in the record. ....

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<sup>22</sup> Respondents argue that Professor Bresnahan's report is inconsistent with every fact witness. Motion at 13. That is not the case. His conclusions only differ with Respondents' defense theory.

<sup>23</sup> See *Dana Corp. v. American Standard, Inc.*, 866 F. Supp 1481, 1501 (D. Ind. 1994) (admitting expert's opinion based on a review of the deposition testimony that included application of expertise and excluding that portion that did not rely on expertise); *Salas v. Carpenter*, 980 F.2d 299, 305 (5<sup>th</sup> Cir., 1992) (rejecting conclusory and unsupported expert testimony, not well-supported opinions); *In re Airline Crash Disaster*, 795 F.2d 1230, 1234-36 (rejecting expert for failing to review the record, rather than reviewing the record).

<sup>24</sup> See *United States v. Whitted*, 11 F.3d 782, 785-86 (8<sup>th</sup> Cir. 1993) (excluding portion of physician testimony as to whether he believed the witness, admitting portion using expertise to explain why the witnesses testimony was consistent with medical science); *Goodwin v. MTD*, 232 F.3d 600, 609 (8<sup>th</sup> Cir. 2000) (excluding testimony of engineer that he did not believe a witness).

<sup>25</sup> For some reason, Respondents argue that Professor Bresnahan cannot testify as to the intent of Schering and then they explain that he is not doing so. Motion at 22. We fail to see the point of this argument.

.....  
.....  
**III. Professor Bresnahan's Assertion That .....  
..... is Consistent With Established Principles**

Professor Bresnahan examines the models of several of Respondents' experts and highlights several significant flaws, among them the failure to consider that the value of a patent is greater in the near term than in the future. In making that calculation, he considers the prospect of competing products entering the market and the time value of money. Rebuttal Report at 11. Granted, he has not read the patent, but how can reading a patent inform an opinion about its value? He is applying basic economic principles – the prospect of competition and the time value of money – considerations that most firms face every day. Bresnahan Tr. at 127/15-127/16 .....

.....

In a veiled attempt to save the integrity of their own experts, Respondents challenge Professor Bresnahan's credentials, once again, and the analysis he conducted. Motion at 23. Respondents' argument fails to recognize the analysis that Professor Bresnahan did conduct. He reviewed the models of Drs. Kerr and Addanki and examined their results. He found in both instances their conclusions were materially altered by changing an assumption about the value of the '743 patent over time. In general, economists find empirical work to be unreliable if small changes in the variables materially alter the results. Professor Bresnahan is simply pointing out that Respondents' models include assumptions that are inconsistent with business reality and altering those assumptions changes their results.

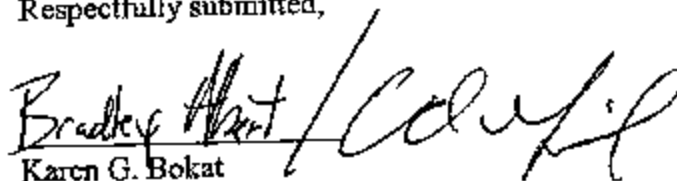


Professor Bresnahan's economic credentials more than qualify him to comment on the time value of money and the results of Respondents' experts.

**CONCLUSION**

.....  
.....  
..... Professor Bresnahan has the expertise to render his opinions. The opinions are based on accepted economic theory and reliable methodology. Professor Bresnahan's testimony is therefore reliable and must be admitted under Rule 3.43(b). For that reason, Respondents' Motion should be denied.

Respectfully submitted,

  
Karen G. Bokat  
Bradley S. Albert

Counsel Supporting the Complaint

Dated: January 22, 2002

## CERTIFICATE OF SERVICE

I hereby certify that this 22nd day of January, 2002, I caused a copy of the foregoing Public Version of Complaint Counsel's Opposition to Respondents' Joint Motion to Exclude Certain Testimony of Timothy F. Bresnahan to be served upon the following person by hand delivery:

Honorable D. Michael Chappell  
Administrative Law Judge  
Federal Trade Commission  
Room 104  
600 Pennsylvania Avenue, N.W.  
Washington, D.C. 20580

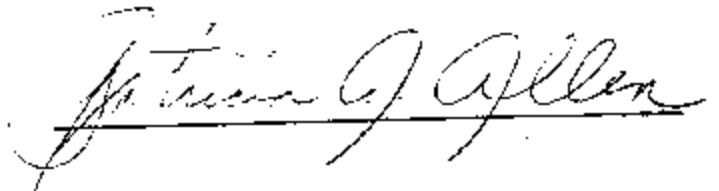
I caused one original and one copy to be served by hand delivery and one copy to be served by electronic mail upon the following person:

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*Patricia J. Allen*

# ATTACHMENT 1

UNITED STATES OF AMERICA  
BEFORE THE FEDERAL TRADE COMMISSION

In the Matter of

SCHERING-PLOUGH CORPORATION,  
a corporation

UPSHER-SMITH LABORATORIES, Inc.  
a corporation; and

AMERICAN HOME PRODUCTS  
CORPORATION,  
a corporation

Docket No. 9297

EXPERT REPORT OF  
PROFESSOR TIMOTHY BRESNAHAN

Restricted Confidential,  
Attorney's Eyes Only

The remaining pages of the expert report have been redacted.

# ATTACHMENT 2

UNITED STATES OF AMERICA  
BEFORE THE FEDERAL TRADE COMMISSION

In the Matter of

SCHERING-PLOUGH CORPORATION,  
a corporation

Docket No. 9297

UPSHER-SMITH LABORATORIES, Inc.  
a corporation; and

AMERICAN HOME PRODUCTS  
CORPORATION,  
a corporation

REBUTTAL EXPERT REPORT OF  
PROFESSOR TIMOTHY BRESNAHAN

The remaining pages of the expert report have been redacted.



# ATTACHMENT 3

**In The Matter Of:**

*SCHERING-PLOUGH CORP. & UPSHER-SMITH LABS  
MATTER NO. D0929*

---

*TIMOTHY BRESNAHAN  
Vol. 1, December 11, 2001*

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**In The Matter Of:**

*SCHERING-PLOUGH CORP. & UPSHER-SMITH LABS  
MATTER NO. D09297*

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*TIMOTHY BRESNAHAN  
Vol. 2, December 12, 2001*

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# ATTACHMENT 4

March 2001

## CURRICULUM VITAE

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Citizenship

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Marital Status

Married

Education

1970-75	Haverford College
1975	B.A. (Economics, German)
1975-79	Princeton University
1978	M.A., Economics
1980	Ph.D., Economics

Employment

1991-present	Professor of Economics, Stanford University
2000-present	Gordon and Betty Moore Seminar Fellow, SIEPR
1999-2000	Deputy Assistant Attorney General and Chief Economist, US DoJ Antitrust Division
1997-present	Senior Fellow, SIEPR. Co-Director, Employment and Growth Center
1994-1998	Associate Director, Co-Director, Director, Stanford Computer Industry Project, Co-Director, Director, in Information Technology in use module
1989-1996	Associate Director, Co-Director, Technology and Economic Growth Program
1993-1994	Visiting Professor, Instituto de Analisis Economico, CSIC
1986-1991	Associate Professor of Economics, Stanford University
1989-1990	Visiting Scholar, Hoover Institution, Stanford
1988-1989	Associate Chair, Department of Economics Stanford University
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## CURRICULUM VITAE

Timothy F. Bresnahan

### Publications

1. "Competition Cooperation, and Predation in Innovative Industries" forthcoming in Fighting Cartels. Proceedings of the 3<sup>RD</sup> Nordic Competition Policy Conference.
2. (with E. Brynjolfsson and L. M. Hitt) "Information Technology, Workplace Organization, and the Demand for Skilled Labor: Firm-level Evidence" forthcoming in Quarterly Journal of Economics.
3. (with S. Greenstein) "The Economic Contribution of Information Technology: Towards Comparative and User Studies" forthcoming in Journal of Evolutionary Economics.
4. (with S. Greenstein) "Technological Competition and the Structure of the Computer Industry" in Journal of Industrial Economics, March 1999, v. 47 n. 1, pp. 1-40.
5. "Computers and Growth" in The Puzzling Relations Between the Computer and the Economy, Greenan, L'Horty, and Mairesse, eds., MIT Press.
6. (with J. Richards) "Local and Global Competition in Information Technology" in Journal of the Japanese and International Economics, December 1999, v. 13 n. 4, pp. 336-71.
7. (with E. Brynjolfsson and L. M. Hitt) "Technology, Organization, and the Demand for Skilled Labor", The New Relationship: Human Capital in the American Corporation, M.M. Blair and T.A. Kochan, eds. Brookings Institution Press, 2000.
8. "Computing", in U.S. Industry in 2000: Studies in Competitive Performance, D. C. Mowery, ed. National Academy Press, 1999.
9. (with F. Malerba) "Industrial Dynamics and the Evolution of Firms' and Nations' Competitive Capabilities in the World Computer Industry", Sources of Industrial Leadership, D. Mowery and R. Nelson, eds. Cambridge University Press, 1999.
10. "The Changing Structure of Innovation in the Computer Industry", in D. Mowery et al., (eds.) America's Industrial Resurgence.
11. "New Modes of Competition and the Future Structure of the Computer Industry", Competition, Innovation, and the Microsoft Monopoly. Antitrust in the Digital Marketplace, The Progress and Freedom Foundation Volume, Kluwer Press, 1999.
12. (with Alfonso Gambardella) "The Division of Inventive Labor and the Extent of the Market" in General Purpose Technologies and Economic Growth, Elhanan Helpman, ed. 1998.

## CURRICULUM VITAE

Timothy F. Bresnahan

13. (with Scott Stern and Manuel Trajtenberg) "Market Segmentation, Transitory Market Power, and Rents from Innovation: Personal Computers in the late 1980's", RAND Journal of Economics, 1997.
14. (with Shane Greenstein) "Technical Progress in Computing and in the Uses of Computers" Brookings Papers on Economic Activity, Micro, 1997.
15. "Testing and Measurement in Competition Models" in Advances in Economics and Econometrics, Econometric Society Seventh World Congress, David Kreps and Ken Wallis, editors.
16. (with Robert E. Porter) "Papers in honor of Richard E. Quandt: An Introduction", RAND Journal of Economics, 1997.
17. "Testing and Measurement in Competition Models", La Lettre de l'AFSE, Conférence aux Journées AFSE, Juillet 1996, n°31.
18. (with Robert J. Gordon) "The Economics of New Goods: An Introduction" in Bresnahan and Gordon, eds., The Economics of New Goods.
19. (edited with Robert J. Gordon) The Economics of New Goods, proceedings of a meeting of the Conference on Research in Income and Wealth, University of Chicago Press, 1997.
20. (with Amy Bertin and Daniel Raff) "Aggregation, Localized Competition, and Plant-Level Increasing Returns: Blast Furnace Operations 1929-1935," Journal of Political Economy, April 1996, v. 104 n. 2, pp. 241-66.
21. (with Garth Saloner) "Large Firms' Demand for Computer Products and Services: Competing Market Models, Inertia, and Enabling Strategic Change," forthcoming in Colliding Worlds: The Merging of Computers, Telecommunications, and Consumer Electronics, David B. Yoffie (ed.), Harvard University Press, 1996.
22. (with Shane Greenstein) "The Competitive Crash in Large-Scale Commercial Computing," in Growth & Development: the Economics of the 21st Century, edited by Ralph Landau, Nathan Rosenberg, and Timothy Taylor, Stanford University Press, 1995.
23. (with Manuel Trajtenberg) "General Purpose Technologies: 'Engines of Growth?'," Journal of Econometrics, Special Issue, January 1995, v 65, n 1, pp. 83-108.
24. (with Peter C. Reiss) "Measuring the Importance of Sunk Costs," Annales D'Économie et de Statistique, No. 31, pp. 183-217, 1994.

## CURRICULUM VITAE

### Timothy F. Bresnahan

25. (with Valerie Ramey) "Segment Shifts and Capacity Utilization in the U.S. Automobile Industry," AER Papers & Proceedings, vol. 83(2), May 1993.
26. (with Jonathan Baker) "Empirical Methods of Identifying and Measuring Market Power," Antitrust Law Journal, Summer 1992.
27. (with Daniel Raff) "Intra-Industry Heterogeneity and the Great Depression: The American Motor Vehicle Industry, 1929-1935," Journal of Economic History, June, 1991.
28. Output Measurement in the Service Sectors edited with Zvi Griliches, Ernst Berndt and Marilyn Manser, (Chicago: University of Chicago Press), 1992.
29. (with Valerie Ramey) "Output Fluctuations at the Plant Level," Quarterly Journal of Economics, August 1994, v 109, n 3, pp. 593-624.
30. (with Paul Milgrom and Jonathan Paul) "The Real Output of the Stock Exchange," in Output Measurement in the Service Sectors edited with Zvi Griliches, Ernst Berndt and Marilyn Manser, (Chicago: University of Chicago Press), 1992.
31. (with Peter Reiss) "Entry and Competition in Concentrated Markets," Journal of Political Economy, vol. 95 (5), (October), pp. 977-1009, 1991.
32. (with Peter Reiss) "Econometric Models of Discrete Games," Journal of Econometrics, 48 (1991) 57-81.
33. (with Peter Reiss) "Entry into Monopoly Markets," Review of Economic Studies, vol. 57 (no. 4, October), pp. 531-553, 1990.
34. (with Arnit Chopra) "The Development of the Local Area Network Market as Determined by User Needs," Economics of Innovation and New Technology, vol. 1 (nos. 1-2), pp. 97-110, 1990.
35. (with W. Bruce Chew, Kim B. Clark) "Measurement, Coordination, and Learning in a Multiplant Network," in Measures for Manufacturing Excellence, Robert Kaplan, ed., (Boston: Harvard Business School Press), 1990.
36. (with Valerie Suslow) "Short-Run Supply with Capacity Constraints," Journal of Law and Economics, University of Chicago, vol. XXXII (October), pp. S11-S42, 1989.
37. (with Valerie Suslow) "Short-Run Pricing with Capacity Constraints," Annales d'Economie et de Statistique, vol. 15/16 (Juillet-Décembre), pp. 267-290, 1989.
38. "Empirical Methods for Industries with Market Power," chapter 17 in Handbook of Industrial

## CURRICULUM VITAE

### Timothy F. Bresnahan

- Organization, Volume II, Richard Schmalensee and Robert Willig, eds., (Amsterdam: Elsevier Science Publishers B.V.), 1989.
39. (with Jonathan Baker) "Estimating the Residual Demand Curve Facing a Single Firm." International Journal of Industrial Organization, vol. 6, pp. 283-300, 1988.
  40. (with Peter Reiss) "Do Entry Conditions Vary across Markets?" Brookings Papers on Economic Activity: Special Issue on Microeconomics, no. 3, Martin Bailey and Clifford Winston, eds., pp. 833-871, 1987.
  41. The Empirical Renaissance in Industrial Economics, Edited with Richard Schmalensee. New York: Basil Blackwell, 1987.
  42. (with Richard Schmalensee) "The Empirical Renaissance in Industrial Economics: An Overview," Journal of Industrial Economics, vol. XXXV (no. 4, June--special issue), pp. 371-378, 1987. Reprinted in The Empirical Renaissance in Industrial Economics, 1987.
  43. "Competition and Collusion in the American Automobile Market: The 1955 Price War," Journal of Industrial Economics, vol. XXXV (no. 4, June--special issue) pp. 457-482, 1987. Reprinted in The Empirical Renaissance in Industrial Economics, 1987.
  44. "Measuring the Spillovers from Technical Advance: Mainframe Computers in Financial Services," American Economic Review, vol. 76 (no. 4, September), pp. 742-755, 1986.
  45. (with Pablo Spiller) "Futures Market Backwardation under Risk Neutrality," Economic Inquiry, vol. XXIV (July), pp. 429-441, 1986. Publications (continued).
  46. (with Steven Salop) "Quantifying the Competitive Effects of Production Joint Ventures," International Journal of Industrial Organization, vol. 4, pp. 155-175, 1986.
  47. "The Demand for Advertising by Medium: Implications for Economies of Scale in Advertising," in Paula Ippolito, ed., Empirical Approaches to Consumer Protection Issues, (Washington, DC: Federal Trade Commission), 1986.
  48. The Transition to Competition in the Plain Paper Copier Industry, (Washington, DC: Federal Trade Commission), 1986.
  49. (with Dennis Yao) "The Nonpecuniary Costs of Automobile Emissions Controls," Rand Journal of Economics vol. 16 (no. 4, Winter), pp. 437-455, 1985.
  50. (with Peter Reiss) "Dealer and Manufacturer Margins," Rand Journal of Economics, vol. 16 (no. 2, Summer), 253-268, 1985.

## CURRICULUM VITAE

### Timothy F. Bresnahan

51. (with Jonathan Baker) "The Gains from Merger or Collusion in Product Differentiated Industries," Journal of Industrial Economics, vol. XXXIII (no. 4, June), pp. 427-444, 1985.
52. (with Valerie Suslow) "Inventories as an Asset: The Volatility of Copper Prices," International Economic Review, vol. 26 (no. 2, June), pp. 409-424, 1985.
53. "Post-Entry Competition in the Plain Paper Copier Market," American Economic Review, vol. 75 (no. 2, May), pp. 15-19, 1985.
54. "Existence of Consistent Conjectures: Reply," American Economic Review, vol. 73 (no. 3, June), pp. 457-458, 1983.
55. "Duopoly Models with Consistent Conjectures: Reply," American Economic Review, vol. 73 (no. 1, March), pp. 240-241, 1983.
56. "The Oligopoly Solution Concept is Identified," Economics Letters, vol. 10, pp. 87-92, 1982.
57. "Duopoly Models with Consistent Conjectures," American Economic Review, vol. 71 (no. 5, December), pp. 934-945, 1981.
58. (with Holland Hunter and Everett J. Rutan, III) "Modeling Structural Change Using Early Soviet Data," Journal of Development Economics, vol. 9, pp. 65-87, 1981.
59. "Prices, Quantities and Qualities in the American Auto Market," Proceedings of the American Statistical Association, Section on Statistical Education, pp. 18-23, 1981.
60. "Departures from Marginal-Cost Pricing in the American Automobile Industry: Estimates for 1977-1978," Journal of Econometrics vol. 17, pp. 201-227, 1981.
61. Three Essays on the American Automobile Oligopoly, Ph.D. Dissertation, Princeton University, 1980.

### Book and Related Reviews

1. Comments on "Valuation of New Goods Under Perfect and Imperfect Competition" by Jerry Hausman, his chapter in The Economics of New Goods. Available at <http://timb.stanford.edu/research/acc.pdf>

## CURRICULUM VITAE

### Timothy F. Bresnahan

2. Comments on "The Information-Integrated Channel: A Study of the U.S. Apparel Industry in Transition" by Hammond et al., Brookings Papers on Economic Activity, v 0, n 0, 0007-2303, pp. 232-36, 1995.
3. Comments on "Competition, Regulation, and Efficiency in Service Industries" by Martin N. Baily, in Brookings Papers on Economic Activity, no. 2, pp. 71-159, 1993.
4. Comments on "Productivity Dynamics in Manufacturing Plants," by Martin N. Baily et al., in Brookings Papers on Economic Activity, pp. 187-267, 1992.
5. Review Essay on Sunk Costs and Market Structure, by John Sutton, Summer 1992, RAND Journal of Economics.
6. Review of "The Measurement of Durable Goods Prices," by Robert J. Gordon, in Business History Review, (3) pp.355-357, 1991.
7. Discussion of "Organizing Industrial Organization: Reflections on the *Handbook of Industrial Organization*," by Franklin M. Fisher, Brookings Papers on Economic Activity, pp. 201-225, 1991.
8. Review of The Dynamics of Company Profits: An International Comparison, Dennis C. Mueller, ed., in Journal of Economic Literature, vol. XXIX (December 1991).
9. Review of Regulating the Automobile, Robert Crandall et al., in Rand Journal of Economics, vol. 17 (no. 4, Winter), 1986.
10. Review of Breaking up Bell. Essays on Industrial Organization and Regulation, David S. Evans, ed., in Information Economics and Policy, vol. 2, pp. 87-89, 1986.
11. Review of The Future of the Automobile: The Report of MIT's International Automobile Program, Alan Altschuler, et al., in Journal of Economic Literature, vol. XXIV (no. 1, March), pp. 128-129, 1986.
12. "Conjoint Analysis of Price Premiums for Hotel Amenities": Comment," Journal of Business, vol. 57 (no. 1, pt 2, January), pp. S133-S138, 1984.
13. Review of Competition in the Open Economy: a Model Applied to Canada, R. E. Caves, et al., in Journal of Economic Literature, vol. XIX (no. 3, September), pp. 1116-1117, 1981.

Working Papers and Work in Progress

## CURRICULUM VITAE

### Timothy F. Bresnahan

1. "The Apple-Cinnamon Cheerios War: Valuing New Goods, Identifying Market Power, and Economic Measurement" Available at <http://timb.stanford.edu/research/acc.pdf>
2. (with Thomas N. Hubbard) "The Commercialization of Information Technologies".
3. (with Paul David) "The Diffusion of Automatic Teller Machines Across U.S. Banks." in The Diffusion of New Technologies, Paul David and Giovanni Dosi, eds., (New York: Oxford University Press), forthcoming.
4. (with Daniel Raff) "Technological Heterogeneity, Adjustment Costs and the Dynamics of Plant-Shut-Down Behavior: The American Motor Vehicle in the Time of the Great Depression".
5. (with Franco Malerba) "Industrial Dynamics and the Evolution of Firms' and Nations' Competitive Capabilities in the World Computer Industry", Forthcoming in Nelson et al. (Eds.) New version available at <http://timb.stanford.edu/research/ccc7.pdf>
6. (with Shane Greenstein) "Technological Competition and the Structure of the Computer Industry," Center for Economic Policy Research Publication No. 315, September 1992. New version available as <http://timb.stanford/research/tc06.pdf>

### Editorial

#### Co-Editor, Associate Editor

RAND Journal of Economics (1984-1998)

#### Associate Editor

Journal of Industrial Economics (1992-1997)

Quarterly Journal of Economics (1986-1990)

Rand Journal of Economics (1985-1988)

American Economic Review (1984-1994)

#### Editor

(with Richard Schmalensee) Journal of Industrial Economics, Special Issue, June 1987.

(with John Vickers) Handbook of Industrial Organization, volume III.

(with Robert E. Porter) editor, RAND Journal of Economics, Special Issue in Honor of Richard E. Quandt.

#### Other Professional Activities

Stanford University Committee on Research

Member, AEA Honors and Awards Committee, 1996, 1997, 1998, 2000.

Member, Program Committee, AEA Annual Meeting, 1996, 1997.

## CURRICULUM VITAE

### Timothy F. Bresnahan

Marsh O'Neil Award Committee, 1995.  
Member, Program Committee, Econometric Society World Congress, 1995.  
Ph.D Placement Director, 1994 to 1995.  
Member, Appointments and Promotions Committee, School of Humanities and Sciences, 1994 to 1996. Member, Faculty Senate, 1994 to 1996.  
Steering Committee, Industrial Organization Program, National Bureau of Economic Research, 1990 to present.  
Research Associate, National Bureau of Economic Research, 1985 to present.  
Member, American Economics Association Advisory Committee to the Bureau of the Census, 1985 to 1990; Chair, 1988 to 1989.  
Project Leader, Project on Firm and Industry Dynamics, National Bureau of Economic Research, 1988 to 1990.  
Member, National Science Foundation, Economics Panel, December 1987 to December 1989.  
Member, Program Committee, Econometric Society Summer Meetings, 1987.  
Member, Program Committee, Econometric Society World Congress, 1985.  
Member, Program Committee, Econometric Society Winter Meetings, 1985.  
Economic Advisory Committee, ICPSR.  
Fellow, Econometric Society, 1990 to present.  
Frisch Medal Committee, Econometric Society.  
Dean's Award for Excellence in Teaching, Stanford University, 1992.  
American Economic Association Program Committee, 1995.

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## CURRICULUM VITAE

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# ATTACHMENT 5

HRD

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*ECONOMIC ANALYSIS OF LAW*

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*THIRD EDITION*

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. Emeritus

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### §21.4 An Economic Formula for Deciding Whether to Grant a Preliminary Injunction

The standard of proof in criminal cases is an example of weighting errors by their costs. Another example is the formula based on *Mathews* v. *Eldridge* for deciding whether someone has been denied due process of law. Still another is the following formula for deciding whether to grant or deny a preliminary injunction: grant it if but only if  $P(H_p) > (1 - P)H_d$ , where  $P$  is the probability that the plaintiff will prevail in the full trial on the merits (and therefore  $1 - P$  is the probability that the defendant will prevail),  $H_p$  is the irreparable harm that the plaintiff will suffer if a preliminary injunction is not granted to maintain the status quo pending the trial, and  $H_d$  is the irreparable harm the defendant will suffer if the preliminary injunction is granted.

The problem for the judge asked to grant a preliminary injunction is that he is being asked to rule in a hurry, on the basis of incomplete information. The risk of an error is high. The judge can minimize the expected error costs by comparing the weighted error costs (the two sides of the inequality) of the parties. An example will illustrate the nature of the comparison. Suppose that the plaintiff has a 60 percent chance of being proved right after a full trial. Then the risk of error in denying his motion for a preliminary injunction is 60 percent. Conversely the risk of error if the judge grants the injunction is 40 percent. But further suppose that if the injunction is denied, the plaintiff will suffer an irreparable harm (the only kind that we should be interested in in this setting — why?) of \$50, while if the injunction is granted the defendant will incur an irreparable harm of \$100. Then the expected cost of error is greater for the defendant than for the plaintiff (\$40 versus \$30) and the injunction should be denied. The courts in fact use an approach that is an approximation to the formula presented above.<sup>1</sup>

### §21.5 The Decision Whether to Settle or Go to Trial; Herein of Rules of Civil Procedure and the Evolution of Common Law Rules

That cases are ever litigated rather than settled might appear to violate the principle that when transaction costs are low, parties will voluntarily

<sup>1</sup> §21.4. See *Roland Machinery Co. v. Dresser Industries, Inc.*, 749 F.2d 380, 387-388 (7th Cir. 1984); John Leubsdorf, *The Standard for Preliminary Injunctions*, 91 Harv. L. Rev. 325 (1978). The formula can be rearranged in a way that may make it more

transact if a mutually beneficial transaction is possible. In fact the vast majority of legal disputes are settled without going to trial; one study found that only 2 percent of automobile accident claims are actually tried.<sup>1</sup> This is as economic theory would predict but we have still to explain the small fraction that go to trial.

As with any contract, a necessary condition for negotiations to succeed is that there be a price at which both parties would conclude that agreement would increase their welfare. Hence settlement negotiations will fail, and litigation ensue, only if the minimum price that the plaintiff is willing to accept in compromise of his claim is greater than the maximum price the defendant is willing to pay in satisfaction of that claim. For example, if the plaintiff won't settle for less than \$10,000 and the defendant won't settle for more than \$9,000, settlement negotiations will fail.

Although the existence of an area of overlap between the parties' minimum terms or reservation prices — a settlement range, as we shall call it — is a necessary condition for a settlement, it is not a sufficient condition. Settlement negotiations are a classic example of bilateral monopoly. The plaintiff can settle only with the defendant and the defendant only with the plaintiff, and each party is eager to engross as much as possible as the surplus that settlement will generate over litigation. Indeed, the larger the settlement range, the more the parties will stand to gain from hard bargaining and the likelier (it may seem) the parties are to end up litigating because they cannot agree how to divide the available surplus. But there are offsetting factors: A larger range will by definition contain more points that are mutually beneficial; and the larger the range, the less it will cost the parties to determine that a settlement is in the best interests of both.

Each party's best settlement offer will depend on how he expects to fare in litigation. Under the American system, where the winning party's litigation costs are not reimbursed by the loser, the plaintiff's net expected gain from litigating is the judgment if he wins discounted by his estimate of the probability that he will win, minus his litigation costs. The defendant's expected loss is the judgment if he loses discounted by his estimate of the probability of losing (or, stated otherwise, of the plaintiff's winning), plus his litigation costs. If the plaintiff's expected gain from litigating is \$10,000, he will not settle for less than \$10,000 (unless he is risk averse, a complication we postpone); and if the defendant expects to lose only \$9,000 if the case is litigated, he will not

intuitive for some readers:  $P/A - P > H_d/H_p$ . In words, the preliminary injunction should be granted if but only if the ratio of the plaintiff's to the defendant's chances of winning exceeds the ratio of the defendant's to the plaintiff's irreparable harm.

§21.3 1. See H. Laurence Ross, *Settled Out of Court: The Social Process of Insurance Claims Adjustments* 179, 216 (1970). See also Patricia Munch Danzon & Lee A. Tilkol, *Settlement Out of Court: The Disposition of Medical Malpractice Claims*, 12 J. Leg. Stud. 345, 365 (1983) (less than 10 percent litigated).

settle for more than \$9,000. Moreover, the best settlement offer will be adjusted upward by the plaintiff and downward by the defendant to reflect the costs of settlement. If those costs are, say, \$500 for each party, then the plaintiff's best offer will be \$10,500 and the defendant's \$8,500.

The condition for litigation to occur is summarized in inequality (1).  $J$  is the size of the judgment if the plaintiff wins,  $P_p$  is the probability of the plaintiff's winning as estimated by the plaintiff, and  $P_d$  is the defendant's estimate of that probability.  $C$  and  $S$  are the costs to each party of litigation and of settlement, respectively. This is a very simple model because it assumes that both parties are risk neutral and that the stakes in the case, the costs of litigation, and the costs of settlement are the same for both parties;<sup>2</sup> we shall relax some of these assumptions later.

The condition for litigation,

$$P_p J - C + S > P_d J + C - S \quad (1)$$

can be rewritten as

$$(P_p - P_d)J > 2(C - S) \quad (2)$$

If the parties agree on the probability that the plaintiff will win in the event of litigation, the left-hand side of (2) will be zero and the case will be settled, because litigation is more costly than settlement; *a fortiori* it will be settled if one party is more pessimistic than the other so that  $P_p - P_d$  is negative. In general, then, litigation will occur only if both parties are optimistic about the outcome of the litigation.

A numerical example may help fix the point. Suppose that  $J$  is \$10,000,  $C$  \$1,000,  $S$  \$100,  $P_p$  .9 and  $P_d$  .6. That is, the plaintiff thinks he has a 90 percent chance of winning \$10,000 but the defendant thinks plaintiff has only a 60 percent chance—a divergence of estimates reflecting uncertainty about the probable outcome. Plugging these values into inequality (2), we find that litigation will occur, because the left-hand side of (2) is \$3,000 and the right-hand side only \$1,800. In terms of inequality (1), the plaintiff's minimum settlement price is \$8,100 and the defendant's maximum offer only \$6,900, so there is no settlement that will make both parties consider themselves better off than if they litigate.

Inequality (2) brings out the important point that, other things being equal, the higher the stakes in a case the more likely the case is to be litigated (i.e., the more likely is the inequality to be satisfied). The intuitive explanation is that when the stakes are small the potential gains

2. It also assumes a dichotomous outcome from litigating (either some fixed  $J$  or nothing) and that the costs of litigating and of settling are exogenous (i.e., unaffected by other terms in the formula). The latter assumption is relaxed in §21.8 *infra*.

from litigating as perceived by the parties are also small and tend to be dominated by the higher costs of litigation relative to settlement. But two partially offsetting considerations are that (1) larger cases attract better lawyers, who will be more skillful at predicting the outcome of litigation, and thus of shrinking  $P_p - P_d$ ; (2) larger stakes increase risk by expanding the variance in possible outcomes of litigation. The riskier litigation is, the more will risk-averse parties want to settle.

Let us change some of the assumptions of the model. Suppose:

1. The stakes in the case are not the same to both parties — maybe the parties have different rates at which they discount a future to a present value, which will cause their  $J$ 's to diverge. The critical question is how they diverge. Inequality (1) implies that if the plaintiff's  $J$  is smaller than the defendant's, litigation is less likely than if they are the same size, while it is more likely if the defendant's  $J$  is smaller than the plaintiff's.

2. The parties are not risk neutral. If both are risk averse, the likelihood of litigation will be reduced (why?). If the parties differ in their risk preferences, the analysis is similar to that of a difference in the stakes.

3. The parties' costs of litigation and settlement really aren't fixed, but vary with the stakes — or more realistically still, they contain both a fixed and a variable component. There is a minimum expenditure on litigating or settling a case, represented by  $C$  and  $S$  in inequalities (1) and (2); and probably it is about the same for both parties in most cases. But beyond that, parties will spend more on litigation the more they have to gain — litigation is an investment as well as an expense. So probably the greater  $J$  is, the more each party will spend on the litigation, because every increment in  $p_p$  (for the plaintiff) or  $p_d$  (for the defendant) brought about by an additional expenditure on litigation will confer a larger expected gain the larger  $J$  is. Presumably, however, this variable component of the expenditure on litigation rises less rapidly than  $J$ ; for example, it might rise as the square root of  $J$ .

We could refine the model to incorporate this subtler version of the determinants of litigation expense, but the qualitative implications of the model would be unchanged. Later we shall consider the complications that are introduced if there is strategic behavior — that is, if each party, in deciding how much to spend on litigation, tries to take account of the other party's expenditures on litigation.

How do rules of procedure affect the settlement rate? We begin with pretrial discovery. A full exchange of the information in the possession of the parties is likely to facilitate settlement by enabling each party to form a more accurate, and generally therefore a more convergent, estimate of the likely outcome of the case; and pretrial discovery enables each party to compel his opponent to disclose relevant information in his possession. One may wonder why compulsion is necessary, since

# ATTACHMENT 6



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# Modern Industrial Organization

EDITION

**DENNIS W. CARLTON**

*University of Chicago*

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*University of California, Berkeley*

 **ADDISON-WESLEY**

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# Cartels: Oligopoly Joint Decision Making

CHAPTER

5

*People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices. It is impossible indeed to prevent such meetings, by any law which either could be executed, or would be consistent with liberty and justice. But though the law cannot hinder people of the same trade from sometimes assembling together, it ought to do nothing to facilitate such assemblies; much less to render them necessary.*

—Adam Smith

In any market, firms have an incentive to coordinate their production and pricing activities to increase their collective and individual profits by restricting market output and raising the market price. An association of firms that explicitly agrees to coordinate its activities is called a **cartel**. A cartel that includes all firms in a market is in effect a monopoly, and the member firms share the monopoly profits.

Cartels are more likely to occur when there are only a few firms: an oligopoly. This chapter concentrates on **cooperative oligopolies** in which a small number of firms (an oligopoly) coordinate their actions to maximize joint profits. Even without an explicit agreement, firms in a cooperative oligopoly may coordinate their actions to maximize joint profits. That is, each firm finds acting as though it were a member of a cartel to be in its self-interest. Thus, a study of cartels is also a study of cooperative oligopolies. In the next chapter, we examine *noncooperative oligopolies*, in which firms act as rivals.

Fortunately for consumers, although firms have an incentive to coordinate activities to restrict market output and raise prices, each member of the cartel has an incentive to “cheat” on the cartel agreement. Each cartel member wants to produce more output than is best for the cartel collectively. As a result, cartels tend to break apart even without government intervention.

When a cartel partially breaks apart so that some firms act independently or when not all firms in the market join the cartel in the first place, the cartel may act like a dominant firm facing a competitive fringe of nonmember firms. As discussed in Chapter 4, entry of new fringe firms into a market can destroy the market power of a dominant firm or a cartel. Thus, only cartels that do not fall apart through lack of cooperation and that exist in markets in which entry is difficult can maintain market power for substantial lengths of time.

Four key questions are examined in this chapter:

1. Why do cartels form?
2. What factors cause some cartels to last and others to break up, even without government intervention?
3. How harmful are cartels?
4. What have governments done about cartels?

## WHY CARTELS FORM

*United we stand, divided we fall.  
Union gives strength.*

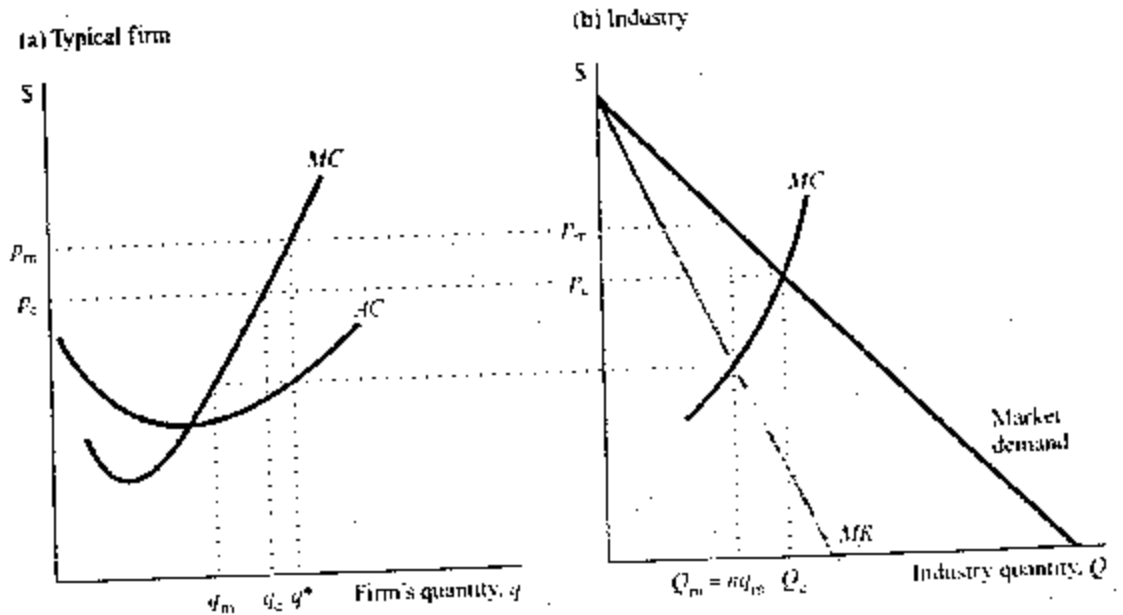
—Aesop

Why is Adam Smith correct that firms want to form cartels? The answer is that each individual firm wants to increase its own profit. But why should a firm's profit go up when the firms in a market form a cartel? After all, each competitive firm is maximizing its profit. How can the firms do better by forming a cartel if each is already maximizing its profit?

The answer involves a subtle argument. In a competitive market, each firm considers how much a reduction in its own output benefits it and ignores the gains to other firms, which benefit from a reduction in total market output to the extent that reduction raises the price. In contrast, a cartel takes into account the benefits to its members of the reduction in each firm's output. Thus, a competitive market (in which each firm ignores the collective gain from its output reduction) produces more output than a cartel.

To illustrate the nature of this collective gain, consider two polar cases. First, suppose that a market is made up of many identical, competitive firms, each of which is a price taker. In contrast, suppose that all the firms join together to form a cartel and act as a monopoly. Figure 5.1a shows a typical firm's marginal cost curve. The sum of the individual firms' marginal cost curves is the market supply curve, which is shown in Figure 5.1b (labeled  $MC$ ) along with the market demand curve. The competitive output,  $Q_c$ , is determined by the intersection of this supply curve with the market demand curve (Figure 5.1b), with each firm producing  $q_c$  units of output (Figure 5.1a) and the market price is  $p_c$ .

**FIGURE 5.1** Cartel



Why does it pay for the cartel to reduce output from the competitive level?<sup>1</sup> At the competitive output, the cartel's marginal cost is greater than its marginal revenue (Figure 5.1b), so it pays the cartel to reduce its output. Because the demand curve slopes downward, the marginal revenue curve lies below the demand curve, and marginal revenue is less than marginal cost at the competitive output  $Q_c$ . Thus, it pays for the cartel to reduce output from the competitive level—but by how much? It should lower output until its marginal revenue equals marginal cost, which guarantees that profits are maximized. The cartel increases its profits by lowering the aggregate cartel output to  $Q_m$  where  $MR$  equals  $MC$  (Figure 5.1b). The price rises to  $p_m$ . Because the cartel is made up of  $n$  identical firms, it requires each firm to reduce its output to  $q_m = Q_m/n$ . In this example, the identical firms share in the extra profits equally.

Why doesn't each competitive firm reduce its own output below the competitive level? At the competitive equilibrium, each competitive firm sets its marginal revenue equal to its marginal cost and has no incentive to further lower its output.<sup>2</sup> If it

<sup>1</sup>As with a monopoly, the cartel can restrict output and let the demand curve determine price or raise price and let the demand curve determine output. The two approaches are equivalent.  
<sup>2</sup>Because a price-taking competitive firm faces a horizontal demand curve, its marginal revenue curve is also horizontal and identical to the demand curve. Thus, the competitive firm's  $MR$  curve is horizontal at the competitive price  $p_c$  (where the market supply or  $MC$  curve hits the market demand curve in Figure 5.1b).

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were to reduce its output by one unit, it would lose profits because the marginal revenue on the last unit produced (the price) would exceed its marginal cost. Thus, each competitive firm is maximizing its profits at the competitive output.

The gain in collective activity comes from the very slight slope to the competitive firm's demand curve. Although economists often say that each competitive firm acts as though it faces a horizontal demand curve—that it cannot raise its price by lowering its output—that is not absolutely correct. The demand curve does have a slight slope: A competitive firm that stops producing might raise the market price by a small amount.<sup>3</sup> That small slope can be ignored when talking about a single firm, but it cannot properly be ignored when talking about all firms collectively.

If all firms cut back by, say, 10 percent, the market price definitely rises; however, if only one firm cuts back by 10 percent, the effect on price is so small that it is hardly measurable. Each competitive firm decides that it doesn't pay to reduce its output significantly because its gain is less than its cost. If it reduces its output by one unit, its gain is the trivial amount by which price rises times the units it produces, whereas its loss is the price it would have received for this last unit.

A competitive firm ignores the good it does other firms by reducing its output and increasing the market price; it places no value on the gains of other firms. This gain by others is an *externality*.<sup>4</sup> Working cooperatively, the cartel members gain from the output reductions of each firm. When all firms belong to the cartel, all the gains from reducing output and raising price go to the cartel, which divides the gains among its members. Here, the externality created by each firm in reducing its output has been internalized by the cartel. As a result, it pays the cartel to reduce total output below the competitive level, even though it would not pay any competitive firm to reduce its output individually.

## CREATING AND ENFORCING THE CARTEL

*Socrates: [Tell] me whether you think that a city, or an army, or a band of robbers or thieves, or any other company which pursue some unjust end in common, would be able to effect anything if they were unjust to one another?*

*Thrasymachus: Of course not. . . .*

*Socrates: [When] we say that any vigorous joint action is the work of unjust men, our language is not altogether accurate. If they had been thoroughly unjust, they could not have kept their hands off one another. Clearly they must have possessed justice of a sort, enough to keep them from exercising their injustice on each other at the same time as on their victims. For the thorough villains who are perfectly unjust, are also perfectly incapable of action.<sup>5</sup>*

<sup>3</sup>See the discussion in Chapter 3 of the elasticity of demand facing a single competitive firm and Equation 3.1.

<sup>4</sup>An externality is a good (or bad) that is not priced by the market.

<sup>5</sup>Based on Plato, *The Republic of Plato*, trans. A. D. Lindsay (New York: E. P. Dutton 1957), 37–8. The names of the speakers have been added and some material has been dropped.

Would you join a cartel if all the other firms in your market were forming one? Such behavior is usually illegal in the United States and many other capitalist countries, so, no doubt, you would refuse on moral and legal grounds. Suppose it was not a moral person like you who was being asked this question—suppose it was your slightly shady cousin. Would your cousin join an illegal cartel conspiracy?

Well, it depends. Your cousin's first thought is likely to be: "What's in it for me?" It should be obvious to him that it is in his best interest to let all the other firms in the market form a cartel that does not include his firm. Then the cartel would restrict output, driving up the price, while his firm could produce as much as it wanted. Of course, every other firm in the market makes the same calculation. Now suppose the other firms tell him that, unless his firm agrees, none of the others will join the cartel and restrict output. Your cousin now realizes that he can't have his cartel and produce as much output as he wants too. He can only obtain the higher price if his firm agrees to a reduction in output.

Your cousin then thinks: "What do I have to lose? If the cartel is caught by the government and convicted, my firm will have to pay a fine. But if the chance of being caught is small or the fine is low, it may be worth it to me." That is, if the expected loss from such a fine is low enough, your cousin joins the cartel.

But your cousin is always looking for an edge. Once he's joined the cartel, he says to himself: "Why shouldn't I cheat and produce more output than the cartel's agreement permits? After all, the cartel probably won't know who's producing the extra output." Of course, if all firms in the cartel think this way, the cartel will fall apart. The success of the cartel, then, turns on its ability to enforce its agreement.

Figure 5.1 illustrates why a firm has an incentive to cheat on the cartel's agreement. As explained above, the cartel members agree to restrict output to  $Q_m$ , which drives the price to  $p_m$ , the monopoly price. Figure 5.1a shows the cost curves of your cousin's firm, which is one of  $n$  identical firms in the market (and in the cartel). The cartel wants your cousin to produce  $q_m = Q_m/n$  output: the output corresponding to his firm's share of the cartel output. But at the cartel's price,  $p_m$ , your cousin's firm can maximize its profits by producing  $q^*$  units of output (where its marginal cost curve equals  $p_m$ ). Thus, although it is in the cartel's best interest for every firm to restrict output, it is in your cousin's best interest for every firm except his own to restrict output.

Cartels have little effect on prices if members do not cooperate. For example, in Kuala Lumpur, representatives of four pepper-producing countries decided that they would set a minimum price for black pepper. Even though the pepper cartel (Brazil, India, Indonesia, and Malaysia) produces more than 95 percent of the world's pepper and could raise the price, it has never been able to do so because its members keep undercutting the cartel's minimum price.<sup>4</sup>

<sup>4</sup>"Chaos in the Cartel: Pepper Producers Pick a Purchasers' Price," *San Francisco Chronicle*, August 8, 1983: 49.

# ATTACHMENT 7

## Economic Analysis of Legal Disputes and Their Resolution

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*The authors are professor of law and professor of law and economics, respectively, University of California, Berkeley. The latter acknowledges financial support from the National Science Foundation programs in economics and law and social science. A. Mitchell Polinsky, Steve Shovel, and an anonymous referee provided comments and guidance throughout the editorial process.*

### Introduction

Economic thought about law is old, but the economic analysis of law, which relies on formal models, is new.<sup>1</sup> A little over 30 years ago, economics was relegated by lawyers to the technical role of providing expert advice on a relatively narrow set of laws in such fields as antitrust and labor. There were no journals devoted to the economic analysis of law, it had no place in the first-year curriculum at American law schools, and few American law schools allocated a full-time faculty position to a pure economist.<sup>2</sup>

<sup>1</sup> One conventional date for marking the beginning of the new economic analysis of law is the publication of Ronald Coase's "The Problem of Social Cost" in 1960. Of course, law and economics at Chicago had begun substantially earlier (George Stigler 1963).

<sup>2</sup> We know of no study documenting the role of economists in law schools prior to 1960. Our impression is that economists were absent or peripheral in major law schools thirty years ago with the exception of Chicago and possibly Yale. Among the first to teach at law schools were Henry Simons (Chicago), Aaron Director (Chicago), Ronald Coase (Chicago), Walter Hamilton (Yale), Ward Bowman (Yale), Robert Lee Hale (Columbia), Wesley Mitchell (Columbia), John

From its modest beginnings in the 1960s, the economic analysis of law became an intellectual fad in the 1970s. The fad is over, but the continuing progress of the subject remains impressive. There are now four journals devoted to the economic analysis of law,<sup>3</sup> articles using this

Maurice Clark (Columbia), Edwin Seligman (Columbia), John R. Commons (Wisconsin), and Richard Musgrave (Harvard). The percentage of time these people spent teaching law and the centrality of their position within their law faculty varies greatly. We are grateful to Ed Kitch and Henry Hansmann for discussing these points.

Robert Ellickson (1986) has gathered some quantitative data on the extent of law and economics scholarship and influence since 1950. His data show that the economic analysis of law expanded rapidly in influence in the late 1960s and 1970s, but has not continued to expand in the 1980s. He attributes this loss of momentum to increased professionalization, which confines the subject to specialists with advanced economics degrees. He suggests that the subject's future vitality in law schools, as opposed to business schools, depends upon expanding the "rational actor model" to encompass insights from psychology and sociology.

<sup>3</sup> *International Review of Law and Economics*, *Journal of Law and Economics*, *Journal of Legal Studies*, and *Journal of Law, Economics, and Organization*. *Research in Law and Economics* publishes refereed articles in book form.



when the parties are symmetrically situated, it will not be when there are asymmetries. To illustrate, a defendant who wants to cultivate a reputation for tough bargaining will contest cases that he has little chance of winning. Conversely, a defendant who wants to avoid the publicity of a trial will settle cases that he has a high probability of winning.

### B. Settlement Versus Trial

The economic issues surrounding whether suits are settled or brought to trial have a long history in the law and economics literature. The early literature, including work by Landes (1971), John Gould (1973), Feener (1973), and William Baxter (1979), treated the private incentives of the parties, while Shavell (1982b) went further by distinguishing private from social incentives. Most of the more recent literature on the economics of settlements has moved toward a game-theoretic framework in which there are information asymmetries and a variety of sequences by which settlement offers are made by one or both parties. In this section we treat the parties' incentives, and then briefly survey the theoretical results concerning the effect of changes in policy instruments when the parties behave strategically.

1. *The Incentives of Plaintiffs and Defendants.* In some legal disputes there is scope for settlement, whereas in others trials may be inevitable. To distinguish between them, consider a civil dispute in which the parties have no future interest, so the bottom line is how much defendant pays plaintiff. The parties have expectations about the size of the transfer that would result from a trial and its cost. Plaintiff's expected gain from going to trial, net of trial costs, is given in equation (1) above, while defendant's expected loss, including trial costs, is given in equation (2) above. These expected gains and losses represent the subjective

threat values of the parties. Any change that strengthens one player's threat value should increase his gains from the bargain. For example, Hugh Gravelle (1988) shows that plaintiffs with smaller risk aversion will receive larger settlements in a model in which courts have imperfect information.

The sum of the subjective threat values equals the players' assessment of the game's noncooperative value:

$$\begin{aligned} \text{Noncooperative value} &= (T_p - c_{1p}) - (T_d - c_{1d}) \\ &= (T_p - T_d) - (c_{1p} - c_{1d}) \end{aligned}$$

If a trial can be avoided, the parties must still bear the transaction costs associated with settlement, which are denoted  $c_{2p}$  and  $c_{2d}$  for plaintiff and defendant, respectively. In a settlement, the net transfer necessarily equals zero. The cooperative value of the game thus equals the actual net transfer (zero) less the transactions costs incurred:

$$\text{Cooperative value} = -(c_{2p} + c_{2d})$$

The difference between the cooperative and noncooperative values of the game equals the surplus:

$$\text{Surplus} = (c_{1p} + c_{1d}) - (c_{2p} + c_{2d}) - (T_d - T_p) \quad (4)$$

The surplus from cooperation equals the sum of the term in braces, representing the difference in the costs of trial and settlement, and the term in brackets, representing the difference in subjective expectations about the damages awarded at trial.

Transaction costs are less when a case is settled rather than tried:

$$(c_{1p} + c_{1d}) - (c_{2p} + c_{2d}) > 0.$$

Indeed, trial costs are so much greater than settlement costs that many authors choose the simplifying assumption that settlement costs are nil, that is,  $c_{2p} = c_{2d} = 0$ . In this case, the surplus reduces

to the gap in the expectations of the parties concerning the value of trial:

$$\begin{aligned} \text{Surplus} &= (c_{12} - c_{11}) - (T_2 - T_1) \\ &= (T_2 - c_{12}) - (T_1 - c_{11}) \end{aligned}$$

For a risk-neutral plaintiff, the subjective value of the possible damage award at trial, denoted  $T_1$ , equals the money value of expected damages,  $D_1$ , times the subjective probability of their award, denoted  $p_{11}$ , that is,  $T_1 = p_{11}D_1$ . Similarly, for a risk-neutral defendant,  $T_2 = p_{22}D_2$ . When plaintiff and defendant have the same expectations about trial ( $p_{11} = p_{22}$  and  $D_1 = D_2$ ), they concur about its expected value, so that  $T_1 = T_2$ . If the parties are relatively pessimistic about the prospects at trial ( $p_{11} < p_{22}$  and  $D_1 < D_2$ ), plaintiff will expect to win less than defendant expects to lose, so that  $T_1 < T_2$ . If they are relatively optimistic about their own prospects at trial ( $p_{11} > p_{22}$  and  $D_1 > D_2$ ), plaintiff expects to win more than defendant expects to lose, so that  $T_1 > T_2$ .

If the surplus is negative, the disputants prefer a trial to any possible settlement, so trial is inevitable. If the surplus is positive, however, there is scope for settlement out of court. The frequency of settlements presumably increases with the magnitude of the surplus. There is more scope for settlement when litigation is costly ( $c_{11}$  and  $c_{12}$  are large), negotiations are inexpensive ( $c_{21}$  and  $c_{22}$  are small), and the disputants are pessimistic about trial outcomes ( $p_{11} < p_{22}$ ,  $D_1 < D_2$ ). As a result, any policy that increases litigation costs, lowers settlement costs, or makes disputants pessimistic about their trial prospects, will increase settlements.

Now consider the effect of risk aversion upon litigants with the same information about possible outcomes of trials. A trial represents a gamble, so the subjective value of trial to risk-averse disputants will diverge from its expected value. For ex-

ample, when the parties are both risk averse and they have the same expectations about trial, their subjective values of trial diverge.

$$T_1 < p_{11}D_1 = p_{22}D_2 < T_2$$

Risk aversion thus increases the surplus as given in equation (4), which presumably increases the probability of a settlement. Notice that risk aversion increases the surplus in the same way as pessimism—by increasing the difference between the subjective values of plaintiff's trial gains and defendant's trial losses.

2. *The Effects of Legal Rules.* Most models have assumed that settlement occurs automatically whenever the surplus in equation (4) is positive. This assumption has the effect of ruling out strategic behavior. Its main justification is pragmatic—predictions can be derived readily from nonstrategic bargaining models, whereas strategic models are often intractable. Given the fact that the term in braces  $\{(c_{11} + c_{12}) - (c_{21} + c_{22})\}$  is positive, and assuming nonstrategic bargaining, the trial/settlement split falls into two zones determined by the sign of the surplus, with one intermediate point:

$$\begin{aligned} [T_2 - T_1] &> -\{(c_{11} + c_{12}) - (c_{21} + c_{22})\} \\ &\Rightarrow \text{settlement} \\ [T_2 - T_1] &= -\{(c_{11} + c_{12}) - (c_{21} + c_{22})\} \\ &\Rightarrow \text{tipping point} \\ [T_2 - T_1] &< -\{(c_{11} + c_{12}) - (c_{21} + c_{22})\} \\ &\Rightarrow \text{trial.} \end{aligned}$$

These relationships help to generate a prediction about the effect of treble damages and punitive damages upon the frequency of trials. Consider how augmenting damages affects a case at the tipping point between settlement and trial. The fact that the term in braces is positive implies that  $[T_2 - T_1] < 0$  at the tipping point. Augmenting damages increases the absolute value of this negative

number, which tips the case into the trial zone, so there are more trials and fewer settlements. Augmenting damages in a nonstrategic bargaining model thus strengthens the tendency of optimism to cause trials.

This conclusion must be modified once account is taken of the resulting change in trial effort. Augmenting damages increases the stakes in the trial, which typically elicits more effort at trial by the parties, as explained above. With more effort, the term in braces  $\{(c_{12} - c_{11}) - (c_{22} - c_{21})\}$  increases in value. The resulting increase in the surplus from cooperation presumably makes settlement more likely.

Risk aversion also affects the comparison. Augmenting damages, by increasing the stakes in trial, makes trial more risky, which makes trial less attractive to risk-averse disputants. Risk-averse disputants at the tipping point under a regime of compensatory damages may be nudged into settlement by a change to a regime of augmented damages because trial has become too risky.

In sum, augmenting damages increases the stakes in trial, which has opposing effects upon the ability to settle out of court in a nonstrategic model. On one hand, more weight is given to the parties' optimism, which tends to increase the frequency of trials. On the other hand, trials become more costly and more risky, which tends to decrease their frequency.

Similarly, changing the legal rule for distributing trial costs has opposing effects upon the ability to settle out of court. Under the American rule each party pays his own costs, and under the British rule the loser pays all. With the American rule, the parties know with certainty that they will pay their costs, while under the British rule the plaintiff expects to bear trial costs,  $c_{12} + c_{22}$ , only if he loses, which occurs with probability

$(1 - p_{12})$ . The same is, of course, true for the defendant. Assuming risk neutrality, we can modify equation (4) to contrast the two rules:<sup>17</sup>

Surplus under U.S. and British trial cost distributions:

$$\text{U.S.} = \{(c_{12} + c_{22}) - (c_{11} - c_{11})\} + (p_{12}D_1 - p_{22}D_2) \quad (4')$$

$$\text{British} = \{(1 - p_{12} - p_{22})(c_{12} + c_{22}) - (c_{11} - c_{11})\} - (p_{12}D_1 - p_{22}D_2) \quad (4'')$$

Equation (4') reduces to (4'') when the parties have the same subjective beliefs about the probability of plaintiff's victory,  $p_{12} = p_{22}$ , but not otherwise.

Consider the effect of the change in rules on a case at the tipping point between settlement and trial under the American rule. The surplus is zero at the tipping point, so (4') = 0 by assumption. The term in braces in equation (4') is positive by assumption. Hence  $p_{12}D_1 > p_{22}D_2$ , which indicates that the parties are optimistic about trial. Assume that this optimism extends to expectations about the probability of plaintiff's victory, so that  $p_{12} > p_{22}$ .  $p_{12} > p_{22}$  implies (4') > (4''). This fact and the fact that (4') = 0 imply that (4'') < 0. Thus, a switch to the British rule causes the surplus at the tipping point to turn negative, resulting in more trials.

This conclusion must be modified when trial effort and risk aversion are considered. The switch in cost distribution rules from American to British increases the stakes at trial by including trial costs in the gamble. The effect of higher stakes upon trial effort and risk aversion has already been discussed—the effects of a switch in the distribution rule for trial costs parallels the effects of aug-

<sup>17</sup> Equation (4'') is derived as follows. The threat positions of defendant and plaintiff under the British rule are  $-(p_{12}D_1 + p_{22}(c_{12} + c_{22}))$  and  $p_{22}D_2 - \{(1 - p_{12})(c_{12} + c_{22})\}$ . The cooperative surplus, given by equation (4'), equals the cooperative value of the game,  $-c_{11} - c_{22}$ , minus the sum of the threat points.

# ATTACHMENT 8

# MICROECONOMICS WITH CALCULUS

SECOND EDITION

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5.6 THE REVEALED PREFERENCE APPROACH

An alternative way of developing preference theory is to observe consumer choices and see if any mathematical relationship can describe those choices. In this section, we argue that if observed choices are consistent in a particular way, we can represent those choices as if consumers have maximized utility functions that satisfy the six axioms, subject to the constraints imposed by their budgets. The approach of observing choices and then inferring properties of a consumer's preference from those choices is called revealed preference analysis.

**Revealed Preference** To develop the concept of revealed preference, we return to a consideration of pairs of consumption bundles. If one bundle  $(x^*, y^*)$  is chosen when another bundle  $(x', y')$  is available, we say that  $(x^*, y^*)$  is **revealed preferred** to  $(x', y')$ . Figure 5.9 illustrates revealed preference. Both  $(x^*, y^*)$  and  $(x', y')$  are on the budget line and, therefore, available, but  $(x^*, y^*)$  is chosen.

On the other hand, if  $(x', y')$  is not available when  $(x^*, y^*)$  is chosen, we cannot say that  $(x^*, y^*)$  is revealed preferred to  $(x', y')$ . Figure 5.10 compares two points, neither of which is revealed preferred to the other. The choice is  $(x_1^*, y_1^*)$  at income  $M_1$  and prices  $p_1^x$  and  $p_1^y$ , but it is outside the budget line (too expensive) at income  $M_2$  and prices  $p_2^x$  and  $p_2^y$ . The shaded area within the first budget line describes the choices that are feasible for the first budget but too expensive for the second. Similarly,  $(x_2^*, y_2^*)$  is the choice at income  $M_2$  and prices  $p_2^x$  and  $p_2^y$ , and it is too expensive at income  $M_1$  and prices  $p_1^x$  and  $p_1^y$ . The shaded area within the second budget line describes choices that are feasible for the second budget but too expensive for the first.

**Deriving Indifference Curves from Choices That Are Not Revealed Preferred to One Another** Suppose we now consider a series of choices on different budget lines where each choice is not revealed preferred to any other choice. In the limit, if we consider all

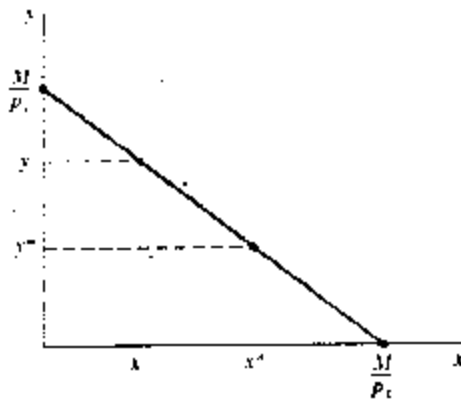


FIGURE 5.9 Revealed Preference

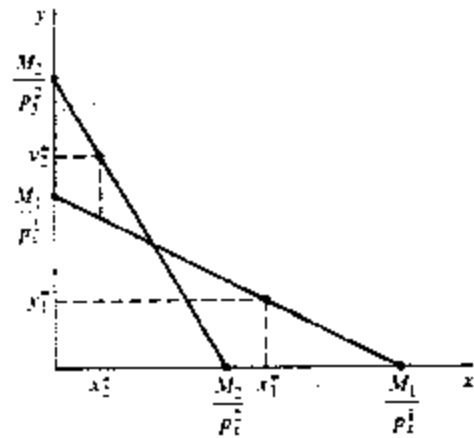


FIGURE 5.10 Choices That Are Not Revealed Preferred to One Another

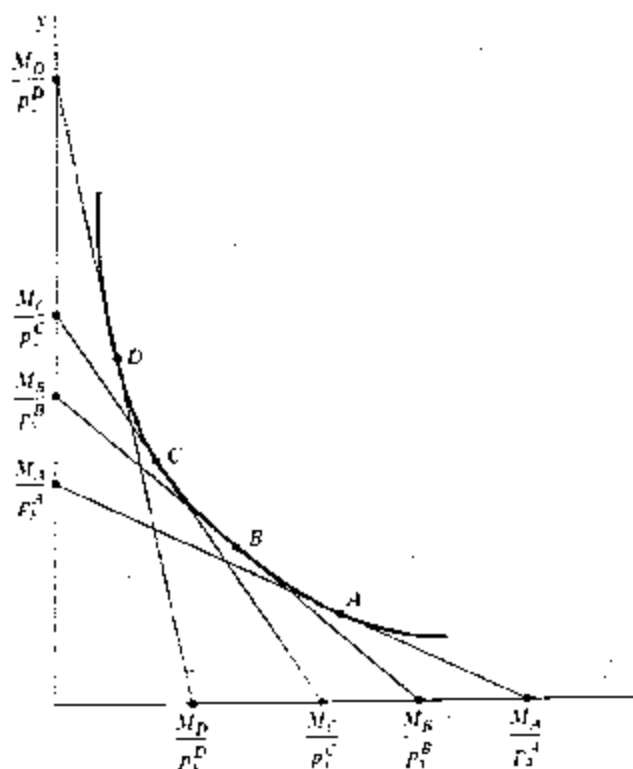


FIGURE 5.11 Choices That Are Not Revealed Preferred to One Another Forming an Indifference Curve Satisfying Diminishing Marginal Rates of Substitution

not  
necess.

possible budget lines. choices that are not revealed preferred to one another can be represented as points along an indifference curve that satisfies diminishing marginal rates of substitution. In Figure 5.11, point A is the choice for income  $M_A$  and prices  $p_x^A$  and  $p_y^A$ ; point B is the choice for income  $M_B$  and prices  $p_x^B$  and  $p_y^B$ ; point C is the choice for income  $M_C$  and prices  $p_x^C$  and  $p_y^C$ ; and point D is the choice for income  $M_D$  and prices  $p_x^D$  and  $p_y^D$ . Each is the choice along its own budget line, but is too expensive for every other budget. The shaded area below each budget line represents points feasible for that budget but too expensive for every other budget. In the limit, we could think of there being an infinite number of these points, each of which is not revealed preferred to any other point. If we connect these points with a smooth curve, we construct a function that could be thought of as an indifference curve satisfying diminishing marginal rates of substitution. The consumer has not stated indifference, so the title *indifference curve* is not quite appropriate, but the behavioral effect is the same: the consumer has not indicated a preference for one point over any of the others.<sup>3</sup>

<sup>3</sup>For a formal treatment of revealed preference, consult Hal R. Varian, *Microeconomic Analysis*, 3d edition (New York: Norton, 1992).

# ATTACHMENT 9



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# Microeconomics

Theory and Applications

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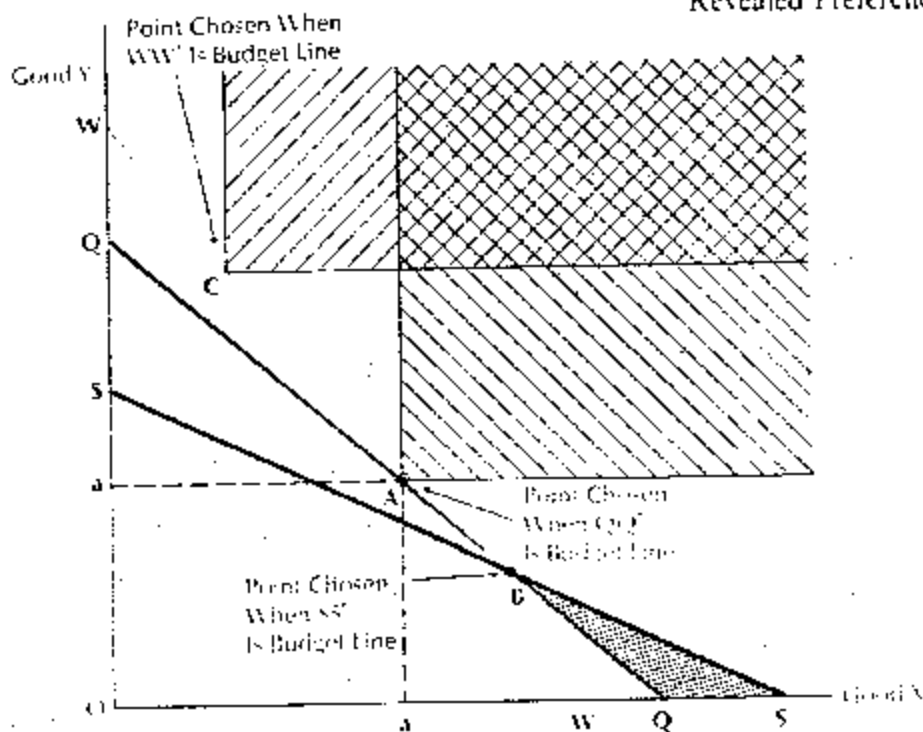
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The theory of revealed preference, a relatively new part of microeconomics, is an attempt to do just that. We assume that we can vary the consumer's money income and the prices he faces, these factors being changed in accord with the experiment. Then assuming that the consumer's tastes remain fixed during the course of the experiment, we see how he reacts to the various levels of money income and prices. The basic idea behind the formulation and interpretation of the experiments is as follows: The consumer may choose one market basket over a second market basket either because he prefers the first to the second or because the first is cheaper than the second. Thus, if we vary prices so that the first market basket is not cheaper than the second and if the first is still chosen over the second, we can be sure that the first market basket is preferred over the second.

Consider the case of two commodities, good X and good Y. Let A in Figure 2.12 represent the market basket (Oa of good X and Oa' of good Y) that the consumer purchases when his budget line is QQ'. From this it follows that every point (each representing a market basket) on or below QQ' is revealed to be inferior to A in the eyes of this consumer, since all of these points were available to the consumer and he chose A. Moreover, every point in the shaded area above and to the right of A is preferred to A because each such point represents a market basket with at least as much

Figure 2.12  
Revealed Preference.



of both commodities as  $A$ . Thus, since a commodity is defined so that more of it is preferred to less, each such point must be preferred to  $A$ . Therefore the indifference curve running through point  $A$  must lie in between the budget line and the shaded area.

To get a better idea of the location and shape of this indifference curve, consider any other point on  $QQ'$ —for example,  $B$ . This point is inferior to  $A$  but there is some budget line that will make the consumer purchase it. Suppose that this budget line is  $SS'$ . Then we can deduce that the blackened area is inferior to  $A$  in the eyes of the consumer, since it is inferior to  $B$ , and  $B$  is inferior to  $A$ . This procedure can be used to narrow the zone of ignorance—the zone where we are unsure whether the included points are inferior or superior to  $A$ —that is below and to the right of  $A$ . To narrow the zone of ignorance above and to the left of  $A$ , we adopt the following procedure. We establish a new budget line,  $WW'$ , which includes point  $A$ . Let  $C$  be the market basket the consumer chooses when he has the new money income and prices represented by this new budget line. Since  $C$  is no more expensive than  $A$  under these conditions,  $C$  is shown to be preferred to  $A$ . Moreover, all points above and to the right of  $C$  are also preferred to  $A$ , since they are preferred to  $C$ , and  $C$  is preferred to  $A$ .

If these procedures were repeated over and over again, one would eventually derive an indifference curve. Obviously, however, this would be a long and laborious process. The theory of revealed preference is more important as a means of demonstrating that indifference curves can, in principle, be derived in this way, than as a means of actually deriving indifference curves.<sup>10</sup>

## 12. Determinants of Consumer Tastes and Preferences

In previous sections of this chapter, we have discussed how the consumer's tastes can be represented and the way his tastes influence the market basket he chooses. But we have said nothing about the factors that determine his tastes. Clearly, his tastes can be changed by various forms of experience.

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<sup>10</sup>The theory of revealed preferences assumes the following: First, if a market basket is purchased when this market basket is more expensive than another market basket, it must also be purchased when it is no more expensive. This rules out snob effects, where preferences are affected by prices. Second, if one market basket is chosen over a second and a second is chosen over a third, the first must be chosen over the third. This is the assumption of transitivity. Third, given any market basket, it is assumed that there exists some budget line that will lead the consumer to buy it.

# ATTACHMENT 10



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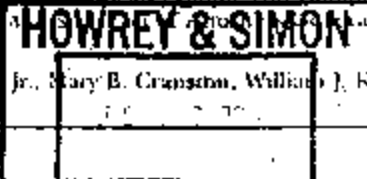
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# IS INNOVATION KING AT THE ANTITRUST AGENCIES? THE INTELLECTUAL PROPERTY GUIDELINES FIVE YEARS LATER

RICHARD J. GILBERT\*  
WILLARD K. TOM\*\*

## I. INTRODUCTION

The *Attensoft* antitrust case focused public attention on the role of antitrust enforcement in preserving the forces of innovation in high-technology markets. A May 15, 2000, *Business Week* article reported that "Innovation is King (at the antitrust agencies). Traditionally, regulators focused on whether companies artificially hiked prices or reduced output. Now, they're increasingly likely to look first at whether corporate behavior aids or impedes innovation."

In this article, we examine whether innovation has displaced short-term price effects as the focus of antitrust enforcement by the Department of Justice and the Federal Trade Commission and, to the extent that it has, whether enforcement actions are any different as a result. We also ask whether enforcement actions in the area of intellectual property and innovation have been consistent with the 1995 DOJ/FTC Antitrust Guidelines for the Licensing of Intellectual Property.<sup>1</sup> Finally, we consider whether recent enforcement actions identify key areas in which additional guidance from the agencies would be desirable. We address these questions first in merger cases and then in non-merger cases.

\* Department of Economics, University of California at Berkeley. Gilbert was Deputy Assistant Attorney General for Economics at the Antitrust Division and led a group that developed the Antitrust Guidelines for the Licensing of Intellectual Property.

\*\* Member of the District of Columbia Bar. Tom was Counselor to the Assistant Attorney General at the Antitrust Division and participated in the drafting of the IP Guidelines. The authors are grateful to Bilal Sayeed for expert research assistance, and to Joseph Farrell, Michael Katz, Mark Lemley, Rob Merges, Howard Morse, Daniel Rubinfeld, Carl Shapiro, and Debra Valentine for helpful discussions.

<sup>1</sup> U.S. Department of Justice and Federal Trade Commission, Antitrust Guidelines for the Licensing of Intellectual Property (1995), updated in 14 *Comp. Int. L. & Bus. Rev.* 6 (1995), 17, 132 (Hereinafter "IP Guidelines").

A generic manufacturer's 180-day exclusivity period expires. This could be much later than the earliest date at which a generic supplier could survive a preliminary injunction from the patentee.

The agreements between Abbott and Geneva over Hytrin and between Aventis and Andrx over Candizem (C) included the requirements that the generic company not relinquish or transfer its right to the 180-day exclusivity period—pending the outcome of the infringement suit—and not introduce a bioequivalent product even if that product did not infringe the branded drug's patent. The agreements between Schering-Plough and Upsher-Smith and between Schering-Plough and the FSI-Lederle division of American Home Products were final settlements of their infringement suits, and provided that Upsher-Smith and FSI-Lederle would not enter until a date certain. In return for these concessions, Abbott agreed to pay Geneva \$4.5 million per month from the date ofANDA approval until there was a district court judgment in the parties' patent infringement suit and, if Geneva won before the district court, to pay \$4.5 million per month into an escrow account until the final resolution of the litigation. The latter funds would be returned to Abbott if the district court judgment were reversed. Aventis agreed to pay Andrx \$10 million per quarter beginning with ANDA approval until the earlier of the entry of final judgment of the lawsuit or licensing by Aventis of a generic version of Candizem (C). In addition, the agreement specified that Aventis would pay Andrx an additional \$60 million per year for this period if Aventis should lose the patent suit. The Commission alleged that the payments to Geneva exceeded the profits it was likely to earn as a supplier of a generic form of Hytrin. According to the complaint, Schering-Plough agreed to pay Upsher-Smith and FSI-Lederle \$50 million and up to \$30 million, respectively. In part, these payments were ostensibly for licensing certain products to Schering-Plough, but the FTC alleged that the payments were unrelated to, and greatly exceeded, the value of those products, if any, to Schering-Plough.

Based on the allegations in the public record materials, these agreements appear to be anticompetitive arrangements to eliminate competition and to divide the monopoly profits of successful branded drugs. The FTC Guidelines recognize such hazards and these concerns were amplified in a speech by then-Assistant Attorney General Joel Klein.<sup>10</sup> However, these cases are not as simple as they may appear. Courts recognize the rights of parties to litigation to settle their differences privately,

and parties may have legitimate interests in a patent settlement that do not involve anticompetitive objectives. Parties have an incentive to negotiate a settlement if the total economic value that the parties could achieve in a settlement exceeds the total economic value they could achieve by proceeding with litigation. The settlement value can be higher because settling may avoid litigation costs or provide an opportunity for the parties to structure arrangements that add social value to the product at issue (such as coordinating the pricing and supply of complementary products). These are potentially procompetitive benefits from settling a patent dispute. Unfortunately, settlement of a patent dispute also involves the welfare of third parties (that is, consumers of patented drugs) who have an interest in the outcome of the litigation. Consequently, settlements can be privately profitable but socially undesirable because consumers who may be affected by the settlement are not present at the bargaining table.

The limits placed on the ability of a patentee to settle validity suits affects the protection afforded by the patent grant and should be considered in the context of patent policy more generally. Permitting a patentee to settle a dispute over the validity of the patent effectively extends the breadth of the patent grant. If the patent is indeed invalid, settlement allows the patentee to reap a reward even though it has failed to achieve a patentable innovation. On the other hand, prohibiting a settlement incurs the risk that a court may erroneously conclude that a patent is invalid.<sup>11</sup>

In response to the FTC's complaint, Aventis argued that its actions were a legitimate attempt to protect its patent against an infringing product. According to Aventis, the settlement "was an attempt by the litigants to fashion a negotiated preliminary injunction that would prevent [Aventis] from being harmed by the sale of an infringing product during the pendency of litigation and would also make Andrx whole for lost profits in the event that its product was ultimately determined not to infringe a valid [Aventis] patent." Aventis also claimed that the settlement was "carefully crafted so as not to remove the incentive from either party to seek and obtain a timely judicial resolution of the patent dispute . . . ."<sup>12</sup> If, in the absence of the agreement, a court would have awarded Aventis an injunction to prevent Andrx from marketing a

<sup>10</sup> To the extent that the judicial system would grant a preliminary injunction to prevent generic sales if the patent is likely to be valid, granting the patentee to settle with the generic challenger may fit in the direction of settling invalid patents. Note that similar arguments apply to suits where the issue is infringement rather than validity.

<sup>11</sup> Answer to the Complaint, Aventis Pharmaceutical v. FTC, 100 F.3d 1001, 1002 (CA-11, 1997) (Apr. 10, 2000).

<sup>12</sup> See, for example, *FTC v. Actavis*, 2003 WL 1001 (Apr. 10, 2003).

<sup>10</sup> Paul Klein, Counsel to Attorney General, Address Before the American Bar Association (May 2, 1997), available at <http://www.usdoj.gov/antitrust/speeches/>.

<sup>11</sup> See, for example, *FTC v. Actavis*, 2003 WL 1001 (Apr. 10, 2003).

<sup>12</sup> See, for example, *FTC v. Actavis*, 2003 WL 1001 (Apr. 10, 2003).