SYMPOSIUM ON ANTITRUST AND INTELLECTUAL PROPERTY: FEDERAL ANTITRUST AGENCIES AND PUBLIC POLICY TOWARD ANTITRUST AND INTELLECTUAL PROPERTY

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INTRODUCTION

The relationship between the exclusive rights of intellectual property owners and monopoly power has generated a longstanding debate. In England, the 1624 Statute of Monopolies prohibited monopolies, but granted an exemption for "patent monopolies," which were nevertheless closely monitored and strictly construed. The United States chose to abandon English precedent and created the world's first modern patent system. U.S. Federal and State courts shaped industrial policy in the antebellum period and celebrated intellectual property rights as "some of the dearest and most valuable rights which society acknowledges, and the Constitution itself means to favor."[1] Numerous decisions addressed the issue of the appropriate boundaries of property rights in patents, and attempted to balance those rights with a perceived need to promote competition and economic growth. More than forty years before the passage of the Sherman Act, the courts proposed that "the rights of inventive genius, and the valuable property produced by it, all persons in the exercise of this spirit will be willing to vindicate and uphold . . . but those rights on the other hand, should be maintained in a manner not harsh to other inventors, nor unaccommodating to the growing wants of the community."[2]

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1 *Ex Parte* Wood and Brundage, 22 U.S. 603, 608 (1824).

2 Woodworth v. Edwards, 30 F. Cas. 567 (C.C.D. Me. 1847) (No. 18,014). *See also* Kendall v. Winsor, 62 U.S. 322, 329 (21 How. 322, 329) (1859) ("Whilst the remuneration of genius and useful ingenuity is a duty incumbent upon the public, the rights and welfare of the community must be fairly dealt with and effectually guarded.")

Judicial oversight of industrial policy was based on what Morton Horwitz termed "instrumentalism," or the use of legal decisions to promote economic growth.[3] Early American common law includes an impressive stock of market-oriented decisions that still inform public policy today. These decisions made important contributions to the technological and economic progress that ultimately led to the emergence of the United States as the pre-eminent industrial nation by the end of the nineteenth century. However, there was widespread concern that market expansion favored the rise of giant corporations whose owners wielded significant power. Some have suggested that populist support for legislation to restrain these monopolies resulted in the passage of the Sherman Act in 1890, and later the Federal Trade Commission Act and Clayton Act of 1914.

Today diverse influences shape United States industrial policy. These influences include federal and state courts, private litigation, various regulatory agencies, and the federal antitrust agencies. A voluminous literature addresses institutional features of the Federal Trade Commission (FTC) and the Antitrust Division of the Department of Justice (DOJ). Economists and lawyers have scrutinized the case history associated with policies toward business. Several reports have assessed the antitrust agencies in terms of their organizational structure, administrative efficiency, and allocation of resources. Others have debated the wisdom of dual antitrust enforcement. This paper examines the relationship between antitrust litigation and intellectual property, and compares the enforcement of antitrust regulations by the FTC and the Antitrust Division of the DOJ.

Legal analysts tend to focus on intensive studies of a few cases that are instructive in some specific dimension. Recently, for instance, their attention has been directed to antitrust cases that involve the intellectual property rights of large dominant corporations such as Microsoft and Intel. Such studies are informative and useful, if only because of the size of these firms and their role in the economy. But, in the absence of a precedent-setting landmark decision, it is not clear that these cases further the understanding of antitrust policies. Such case studies are usefully complemented by more systematic empirical assessment of larger samples of cases that allow us to detect central tendencies. Consequently, this paper presents an analysis of federal antitrust policy toward intellectual property based on results from a comprehensive data set of antitrust cases.

These patterns should prove useful in reviewing the policies of federal antitrust agencies. Broadly defined, policies include statements of

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[3] MORTON HOROWITZ, THE TRANSFORMATION OF AMERICAN LAW, 1780-1860, at 1-30 (1977).

objectives (such as the Merger Guidelines), decision-making processes, the allocation of resources, and outcomes. This paper examines outcomes, which provide insight into bureaucratic performance and objectives, in the form of complaints filed against firms. The first part of the paper outlines general patterns in antitrust enforcement by the FTC and the Antitrust Division of the DOJ since 1970. It then describes a sample of cases brought against manufacturing firms, and compares the attributes of these "antitrust firms" to firms in the same industry which had not been investigated. The results from comparison of the two samples form the basis for an assessment of the factors that influence the likelihood that firms will be charged with antitrust violations. These issues are discussed more generally in terms of several cases related to markets for innovation, research joint ventures, and global competition. Based on these findings, I compare the performance of the FTC and DOJ and evaluate dual antitrust enforcement as a basis for competition policy in the 21st century.

I. AGGREGATE PATTERNS IN FTC AND DOJ ENFORCEMENT ACTIVITY

The major antitrust statutes—the Sherman Act, Federal Trade Commission Act, Clayton Act, and the Hart-Scott-Rodino Act—have the basic objective of regulating business and controlling firms which engage in anticompetitive practices, in order to promote social welfare.[4] Federal antitrust agencies have been criticized for failing to achieve this objective. A large number of observers would likely agree with Harold Demsetz, who found that he could "muster only one cheer" for antitrust policies in the century after the passage of the Sherman Act.[5]

Since its founding in 1915, the Federal Trade Commission has attracted attention that ranges from mild tolerance to acidic disapproval.[6] The criticism include the allegation that the FTC promotes the interests of thwarted competitors rather than those of consumers; that it tends to attend to trivial cases involving small unimportant firms; and that the agency lacks a coherent vision and fails to contribute to doctrinal advances in antitrust.[7] Critics have tended to be more lenient toward the

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[4] Sherman Act, 15 U.S.C. §§ 1-7 (1993); Clayton Act, 15 U.S.C. §§ 12-27 (1993); Hart-Scott Rodino Act, 15 U.S.C. §§1311-1314 (1993); Federal Trade Commission Act, 15 U.S.C. §§ 41-58 (1993).

[5] Harold Demsetz, *How Many Cheers for Antitrust's 100 Years?*, 30 ECON. INQUIRY 207, 216 (1992).

[6] *See* THOMAS MCCRAW, PROPHETS OF REGULATION 81 (1984) ("The FTC has been a singularly unsuccessful agency during most of the seventy-odd years since its creation.")

[7] *See* Richard Posner, *The Federal Trade Commission*, 37 U. CHI. L. REV. 47, 83 (1969) ("The Trade Commission has acquired a constituency of business groups that includes numerous associations of retail dealers, food brokers, wholesale grocers, auto-parts jobbers, and

Antitrust Division, which has concentrated its efforts on the uncontroversial task of prosecuting price fixing violations. According to Posner, "it is the Division, not the Commission, that has had the greater and on the whole healthier influence on the evolution of antitrust policy."[8] Regardless of the accuracy of these statements when they were made, it is unclear whether they relate to current antitrust policies.

Decisions by institutions, whether private or public, are not exogenous; rather, decision-making is the product of individuals and units responding to objective factors, including critical comments by outside observers. Indeed, it may be argued that the Federal Trade Commission in 1999 no longer fits its 1969 profile because of those comments and an (implicit or explicit) instinct of self-preservation. To explore the factors that influence the litigation behavior of federal antitrust agencies one might specify the maximization of an objective function subject to statutory and budgetary constraints. At a minimum, antitrust policies may be described in terms of the nature of the complaints filed, the types of firms charged, and the impact of these policies on social welfare. This paper examines general patterns in antitrust charges filed, whether significant differences exist between the FTC and DOJ in terms of the charges they bring, and the characteristics of firms involved, including their ownership of intellectual property. The question of the contribution of antitrust decisions to social welfare is difficult, if not impossible, to answer satisfactorily. Instead, I consider a more narrow dimension, by discussing whether antitrust activity has influenced firms' behavior in filing cooperative research and development agreements.

Thirty years ago, Richard Posner reviewed the effectiveness of antitrust enforcement, and drew attention to the need for agencies to provide consistent statistics that could be used for scholarly studies as well as for rational policymaking.[9] Today, the DOJ and the FTC still do not report antitrust statistics in a form that can be of use for systematic economic analysis. Instead, these data must be retrieved from the CCH Trade Regulation Reports. The Reports typically include several entries relating to one action, some of them listed across several years. The FTC reports summaries of cases in the "FTC Docket of Complaints" of The Trade Regulation Reports. The dockets are not very informative, containing the name of the firm, frequently the good produced, and the charges. I

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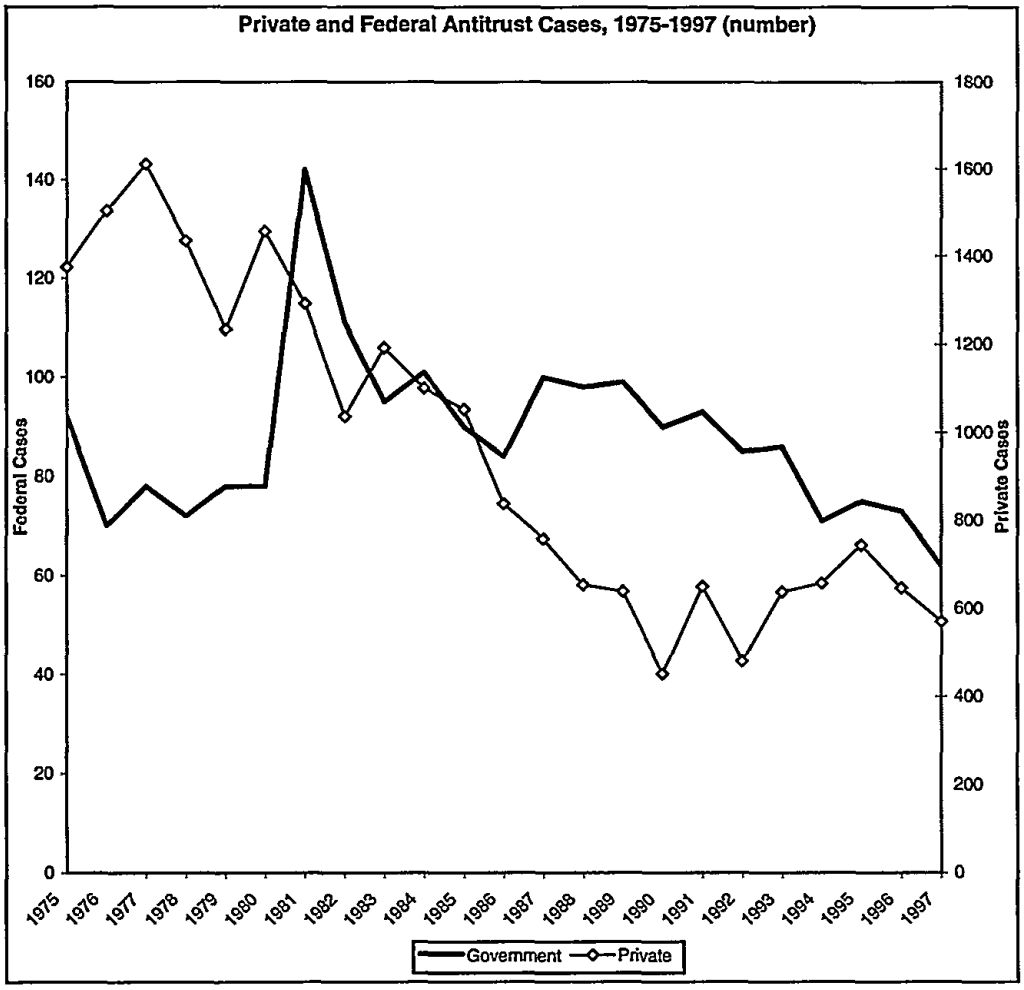
others. It promotes their interests, as we have seen, with little regard for the larger social interest in competition and efficiency."); EDWARD F. COX ET AL., THE NADER REPORT ON THE FEDERAL TRADE COMMISSION 45 (1969) ("Fearful of big corporations, declining in activity, ineffective in enforcement, the FTC basically allocates its dwindling energies to the prosecution of the most trivial cases.")

[8] Posner, *supra* note 7, at 51.

[9] *See* Richard Posner, *A Statistical Study of Antitrust Enforcement*, 13 J.L. & ECON. 365 (1970).

Figure 1



concatenated these FTC complaints to obtain a list of distinct actions for each firm. Similarly, I compiled the aggregate DOJ information by individual action from 1970 through 1998, categorizing the cases by four-digit SIC code, and noting the issue, outcome and year of decision when that could be traced. Once the sample was assembled, I obtained further information about individual cases from the TRADE library of Lexis/Nexis. The resulting data set can track broad changes in federal antitrust litigation and policy over time and industry, although the focus of this paper is primarily on the relationship between patenting and antitrust litigation.

Figure 1 shows all antitrust cases, both federal and private, filed in U.S. district courts between 1975 and 1997. Both series reveal a precipitous drop in total district court filings, but the share of government lawsuits increased somewhat after 1985, partly because of more stringent requirements that the courts imposed on private litigants. I chose to focus on federal government litigation in this study because the rationale for private antitrust litigation is likely to be more difficult to disentangle and interpret. Moreover, private actions may be related to government

charges, as in cases where private plaintiffs use federal complaints as a signal to free-ride on federal investigation expenditures and to try to obtain damages or injunctive relief from alleged harm that the federal defendant may have caused competitors.[10]

Figure 1 also addresses the subject of whether variation in the number of antitrust cases is related to political administrations. Richard Posner concluded from an examination of antitrust charges brought between 1890 and 1970 that the identity of the party in power did not affect the quantity or quality of antitrust activity.[11] The time series of cases since that period appears to confirm that in recent years the quantity of firms charged with antitrust violations does not vary significantly across different political administrations. However, some researchers have produced evidence that Congress influences FTC policies, while others contend that "politics plays an important role in antitrust enforcement even when economic welfare is a more dominant concern."[12] The evidence also leaves open the question of whether the tenets of a particular political administration have influenced the nature and quality of recent antitrust complaints.

Between 1970 and 1993 the DOJ filed some 1293 charges.[13] The majority of cases related to allegations of bid-rigging in the construction industry, with numerous defendants listed in each charge. In keeping with its stated mission, the DOJ's second priority is the prosecution of price-related restraints of trade. Almost one half (47 percent) of all non-bidrigging charges deal with pricing issues, especially the per se illegal criminal price-fixing cases which tend to be charged and summarily decided in the same year. Given the almost universal disapproval of price-fixing among economists, regardless of political persuasion, it is hardly surprising that the DOJ has for the most part avoided the controversies that surround the FTC. In contrast, during this period the FTC filed some 1673 consent decrees.[14] These cases predominantly involve false

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[10] *See* Thomas E. Kauper and Edward Snyder, *Private Antitrust Cases that Follow on Government Cases, in* PRIVATE ANTITRUST LITIGATION 329-370 (Lawrence White ed., 1988).

[11] *See* Posner, *supra* note 9 at 413.

[12] Malcolm B. Coate et al., *Bureaucracy and Politics in FTC Merger Challenges*, 33 J.L. & ECON. 463, 482 n.43 (1990). *See also* Barry Weingast & Mark J. Moran, *Bureaucratic Discretion or Congressional Control? Regulatory Policymaking by the Federal Trade Commission*, 91 J. POL. ECON. 765 (1983).

[13] These data are drawn from tables presented in B. Zorina Khan, *Calculus of Enforcement: Legal and Economic Issues in Antitrust and Innovation, in* ADVANCES IN THE STUDY OF ENTREPRENEURSHIP, INNOVATION AND ECONOMIC GROWTH (Gary D. Libecap ed.,1999).

[14] Consent decrees were first used in 1906 to record antitrust settlements. A consent decree is an adjudicated agreement negotiated by the federal authorities and the defendant in civil antitrust lawsuits. The decree must be accepted by the courts to be in "the public interest" and is as legally binding as a judgment after a formal lawsuit. The agreement typically carries no presumption of guilt on the part of the defendant. The majority of federal antitrust cases are terminated by a consent decree rather than a judgement from a formal trial in court.

advertising and deceptive business practices, many of which generate questionable economic benefit relative to the costs incurred.[15] The more economically based FTC investigations are directed towards mergers, pricing and restraint of trade actions. In fiscal 1998 both agencies were involved in record numbers of merger-related enforcement. The FTC challenged 33 mergers, and issued 23 consent decrees, whereas the DOJ challenged 51 proposed acquisitions and obtained 11 consent decrees.[16]

Over the years, the viability of the FTC has been debated on the grounds that the work of the two agencies is largely duplicative. Agency employees contend that this allegation is unfounded and point out that the FTC and DOJ allocate caseloads through a process of mutual consultation and consent in order to engage in a division of labor by industry.[17] The aggregate data support the division of labor hypothesis, since the DOJ's cases focus on construction, the service sector, food, chemicals and the petroleum industries. The FTC historically charged firms in textiles and financing (such as credit collection companies). However, the agency has recently increased litigation against firms in software, computers, and high technology, and has sponsored hearings on innovation-based competition.[18] At the same time, the argument can be made that differentiation is equally inefficient if, when their jurisdictions overlap, the two agencies tend to interpret their statutory mandates in an inconsistent and unpredictable manner.

Despite the confused and controversial history of federal antitrust enforcement in this country, some detect "a need for international antitrust standards to help (or to force) developing countries to establish enforcement mechanisms" and single out intellectual property because "by their nature, intellectual property rights raise antitrust concerns."[19] The Department of Justice has noticeably directed its attention towards inter-

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15 For an amusing and instructive example, *see* United States v. Laissez Faire, Inc., 99 Civ. 1624 (E.D.N.Y. 1999). The charge alleged that Laissez Faire "failed to possess, prior to sale, a reasonable basis for all care information disclosed to purchasers on the care label, in violation of Section 423.6(c) of the Care Labeling Rule. . .one of the care procedures that was recommended on the care label resulted in dye bleeding or color loss."

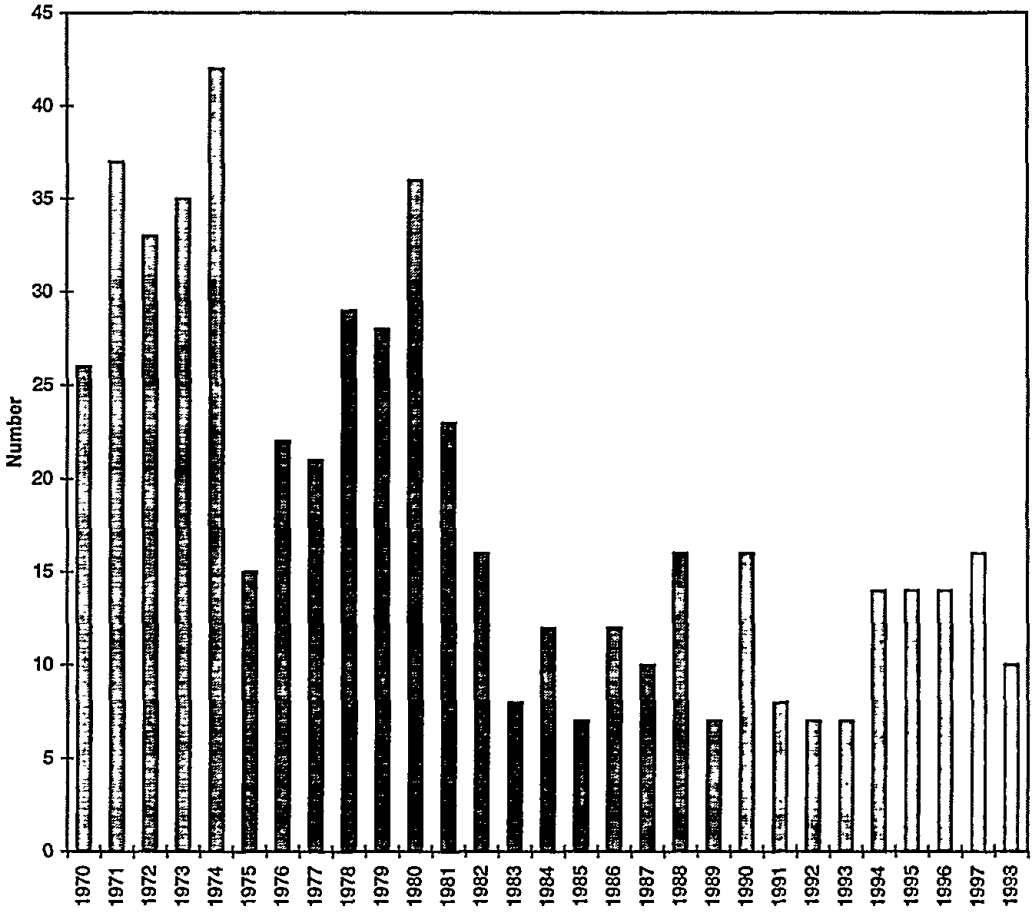
16 *See* FTC and DOJ *Annual Report to Congress, Fiscal Year 1998*; (visited March 20, 2000) <http://www.ftc.gov/bc/hsr/98annrpt/hsr98annual.htm>.

17 Personal interviews conducted at the FTC and DOJ, Washington, DC, on October 19 and 20, 1998. Likewise, the ABA report noted that "the United States has shared, not dual, antitrust enforcement," *Report of the American Bar Association Section of Antitrust Law: Special Committee to Study the Role of the Federal Trade* Commission, 19 in 58 ANTITRUST L. J., 53-178 (1989).

18 For information on the FTC Global and Innovation Based Competition Hearings for 1995, *see* Susan DeSanti, Selected Themes from the FTC's Hearings on Global and Innovation Based Competition, Address at the 1996 Antitrust Conference on Antitrust Issues in Today's Economy (March 7, 1996) (transcript available at < *www.ftcgov/speeches/other/speech37.htm*>) (visited March 20, 2000).

19 Richard H. Marshall, *Patents, Antitrust, and the WTO/GATT: Using Trips as a Vehicle for Antitrust Harmonization*, 28 LAW & POL'Y INT'L. BUS. 1165, 1165 (1997).

Figure 2:
Manufacturing Firms involved in Federal Antitrust Cases, 1970-1998



national antitrust enforcement. The fraction of the DOJ's antitrust cases that involved global issues increased from below 5 percent to more than 30 percent in recent years.[20] The Department of Justice initiated several investigations involving international firms such as Pilkington PLC. In *U.S. v. MCI Communications Corp*,[21] the DOJ modified a joint venture agreement between MCI and British Telecomm, in an effort to ensure that the venture did not gain an unfair advantage relative to competitors. In addition, the DOJ has directed considerable resources to prosecute criminal violations by international cartels involved in the food additives, industrial cleaners, and food preservation markets. This effort resulted in a remarkable increase in revenues from criminal prosecutions. UCAR International, an American firm, was convicted of participation in an international cartel to fix prices in the graphite electrodes market and charged $110 million, the largest fine ever imposed against a firm for

[20] See Joel I. Klein, The Importance of Antitrust Enforcement in the New Economy, Address before the New York State Bar Association (Jan. 29, 1998) (transcript available at <www. usdoj.gov/atr/public/speeches>) (visited March 21, 2000).

[21] No. 941317 (TFH) (D.D.C, filed June 10, 1994). *See* Department of Justice materials (visited March 20, 2000) <http://www.usdoj.gov/atr/cases/mci0000.htm>.

antitrust violations. In its 1997 fiscal year the Division obtained $207 million from criminal prosecutions (five times higher than the highest amount previously obtained), followed by an increase to almost $270 million in the next year. During these two years, approximately $440 million was derived from fines paid by defendants in international cartel cases.[22]

Figure 2 shows the distribution over time of a sample of all trade restraint cases filed by the FTC and DOJ between 1970 and the present.[23] This antitrust sample totals 547 cases brought against approximately 500 manufacturing companies, and excludes "noneconomic" antitrust torts such as deceptive advertising and misleading trade practices. Thus, the analysis of the manufacturing sample allows us to narrow the focus on cases that are more likely to involve patent issues. The antitrust roster tended overwhelmingly to include well-known, high profile corporations such as General Electric, Dow Chemicals, Raytheon, Ciba Geigy, Eli Lilly, Monsanto and Borland. The correspondence in the identity of antitrust firms with a list of firms that are household names suggests the possibility that antitrust authorities are pursuing a "big bang" policy, where limited resources are allocated towards the prosecution of cases that are most likely to generate attention. Such a policy could be justified in terms of its likely deterrence effect, but may be questioned on the grounds that it provides incentives for target firms to overinvest in liability avoidance. However, this hypothesis is best examined through candid interviews with agency officials, since the results reported below do not provide relevant evidence regarding its validity.

In order to control for industry-specific factors, I matched the antitrust sample to firms within the same industry that had not been charged with antitrust violations. By comparing the characteristics of firms that had been investigated to those of the matched firms that had escaped antitrust scrutiny, we can specify the attributes that influence the likelihood that a firm will be charged. These results yield insights into the decision-making process that informs antitrust enforcement. In particular, the analysis reveals how antitrust agencies interpret the relationship between intellectual property and antitrust laws, and whether their practice differs from stated objectives and guidelines.

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22 "The Division now has more than 30 ongoing grand juries—approximately one-third of our criminal investigations—looking into suspected international cartel activity." Douglas Melamed, Address before Fordham Corporate Law Institute, New York (October 22, 1998) (transcript available at <http://www.usdoj.gov/atr/public/speeches/2043.htm>) (visited March 20, 2000).

23 When there were multiple defendants, the sample selected only the first name mentioned in the list of defendants for each charge. The control sample was inspected to ensure that it did not include any of these other defendants in the case.

II. PATENTS AND ANTITRUST LITIGATION

The "Schumpeterian hypothesis" is typically characterized as proposing a positive relationship between firm size, industry concentration, and innovation.[24] In the antitrust dimension, this model implies that innovative enterprises may attract antitrust attention because they are more likely to be dominant or large relative to the industry. The concentration of patenting in large corporations has long been noted and designated the "monopolization of patent monopolies."[25] Fritz Machlup felt that patent policies by large firms assured them of "almost unlimited monopoly power."[26] These statements are based on the view that patents serve to create and preserve market power through barriers to entry, especially since patenting around the invention and patent litigation by potential entrants can be costly and risky strategies. Acs and Audretsch tested a modification of the usual Schumpeterian model and found that large firms tended to have a innovative advantage in capital intensive, concentrated, and advertising intensive industries, whereas smaller firms had a comparative advantage in very innovative industries and in more competitive markets.[27]

Some contend that such research findings highlight the need to strengthen antitrust laws to deal with large patent portfolios. For instance, it has been suggested that antitrust laws should inhibit firms from accumulating large stocks of patents through policies such as a progressive tax.[28] Others have supported the introduction of requirements such as compulsory patent licensing or working the patent, under the guise of antitrust policy, although historically both the courts and the makers of U.S. patent policies have resisted imposing restrictions on the rights of the owners of intellectual property.[29]

Clearly, if firms with more extensive patent portfolios experience a greater likelihood of antitrust scrutiny, it holds serious implications for the future of the patent system. Significantly, sanctions under the patent law are far less stringent than those of antitrust: patentees who are charged under antitrust law may face treble damages, forced divestitures and compulsory licensing, compared to the simple invalidation of the

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24 For an empirical approach to Schumpeter's model, *see* F.M. SCHERER, INNOVATION & GROWTH: SCHUMPETERIAN PERSPECTIVES (1984).

25 *See* CLAIR WILCOX, PUBLIC POLICIES TOWARD BUSINESS, 172 (1966).

26 FRITZ MACHLUP, THE POLITICAL ECONOMY OF MONOPOLY 284 (1952).

27 *See* Zoltan J. Acs and David B. Audretsch, *Innovation and Market Structure*, 69 REV. ECON. & STAT 567, 567 (1987).

28 *See* CARL KAYSEN & DONALD F. TURNER, ANTITRUST POLICY 176 (1959).

29 *See Dawson Chemical Co. v. Rohm & Haas*, 448 U.S. 176, 215 (1980) ("[T]he long-settled view that the essence of a patent grant is the right to exclude others from profiting by the patented invention."); *United Shoe Mach. Corp. v. O'Donnell Rubber Products*, 84 F. 2d. 383, 386 (1936): ("[I]t has long been settled that . . . it is the privilege of any owner of property to use or not use it without question of motive.").

patent grant under patent laws. Thus, if firms perceive that higher patenting is associated with a higher likelihood of antitrust charges, a rational response would be to reduce the propensity to patent, and to attempt to appropriate returns outside of the patent system. It should be noted that this study is not intended to prescribe whether optimal policy should be directed towards strengthening antitrust enforcement or towards furthering the rights of patent holders. However, legal rules are unlikely to be wealth-maximizing if they create inconsistent incentives, so the results bear implications for both federal industrial and intellectual property policies.

Elsewhere, I reported the results from an empirical assessment of antitrust litigation initiated by the FTC and the DOJ between 1970 and 1998 against firms in the manufacturing sector.[30] This section summarizes the results regarding the patent-antitrust issue, which were obtained from an examination of more than 500 defendants in antitrust cases, and a control sample of firms in the same industry that were not charged with antitrust. It should be noted that the underlying concern is not so much to ascertain whether there is an inherent or actual patent-antitrust conflict. Rather, this study recasts the debate by considering whether innovative firms that engage in high levels of patenting or research and development antitrust are more likely to be engaged in federal antitrust litigation. It also discusses whether antitrust policy has influenced firm behavior, by considering patterns of filing of joint ventures in research and development, under the National Cooperative Research and Production Act which provides limited relief from antitrust sanctions.

In order to examine the relationship between patenting and antitrust, it is useful to first of all consider the types of firms that engage in patenting. Since there is high variance in the annual numbers of patents issued to a firm, I use instead the accumulated stock of patents assigned to the firm in the five years up to and including the year of the antitrust charge.[31] These included patent holdings by firms such as General Electric (4378 patents between 1977 and 1981), Westinghouse (1923 between

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[30] These empirical results are reported in Khan, *supra* note 13, at 12. *See also* B. Zorina Khan, Legal Monopoly: Patents and Federal Antitrust Litigation among Manufacturing Firms, 1970-1998, (1999)(NBER Working Paper No. 7068, available at <http://papers.nber.org/papers/W7068>) (visited March 20, 2000).

[31] Patents are clearly imperfect indicators of both inventive activity and innovation because of well known defects such as the fact that many inventions are not patented, variation in the propensity to patent over time and across industries, fluctuations in the proportion of applications that are granted, and the high fraction of patents that are useless. However, many interesting and important findings have been associated with the analysis of patent data, including a strong relationship between patenting and productivity. *See* Zvi Griliches, *Patent Statistics as Economic Indicators, A Survey*, 28 J. ECON. LIT. 1661-1707 (Dec. 1990) (providing a comprehensive discussion of the utility of patent statistics in the study of technological and economic change).

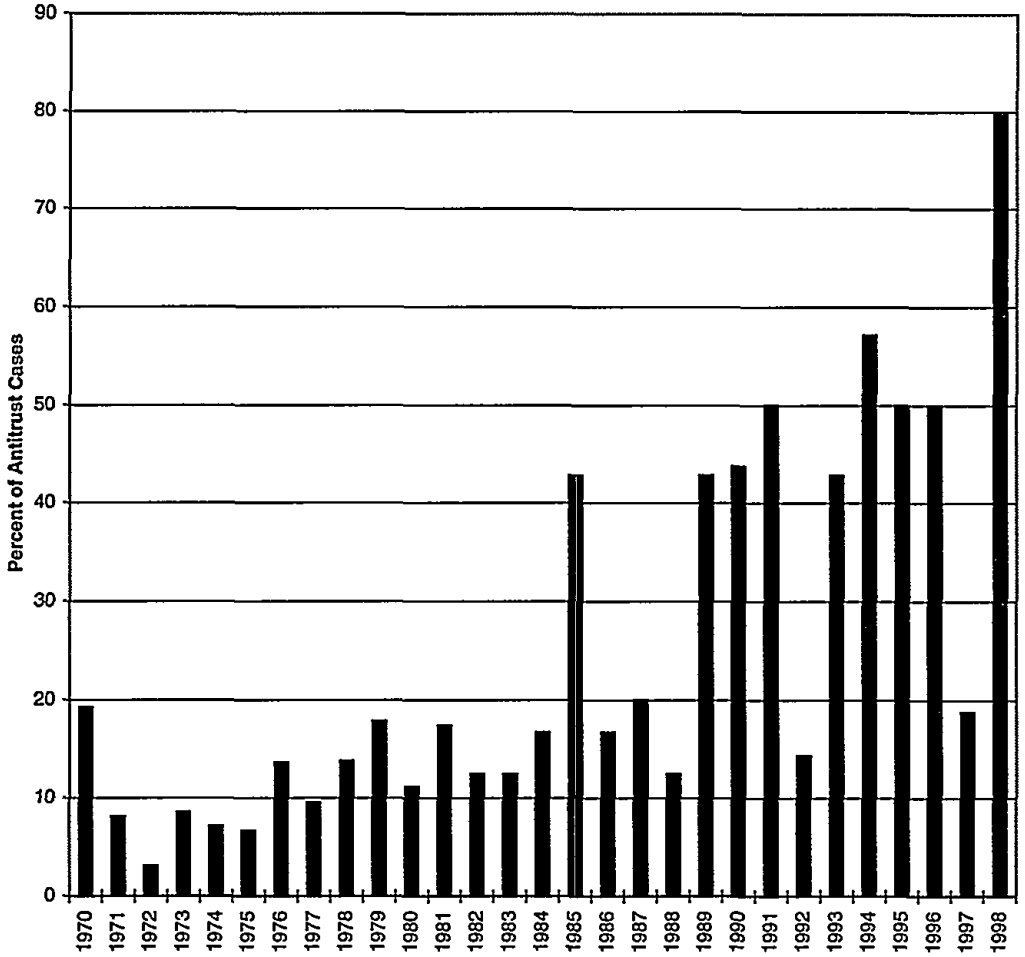
1981 and 1985), Dow Chemical (1894 between 1983 and 1987), and Alliant Techsystems (82 patents, 1990 through 1994). The simple statistics are consistent with the "Schumpeterian hypothesis," for they indicate that patenting varies positively with firm size in the antitrust sample as well as the control sample. Patenting by antitrust firms is significantly higher across all size categories, both in terms of levels and relative to total assets and sales. However, antitrust firms tend to be much larger than the control sample. This reflects the significance of large size (and hence of market share) in motivating antitrust lawsuits: in some concentrated industries (such as automobiles and rubber tires) it was difficult to find any firms which had existed in the same period and had not been charged with antitrust violations after 1950.[32]

The smaller antitrust firms have a greater patenting intensity relative to total assets and to research and development than the larger antitrust firms. Both large and medium antitrust firms tend to have higher R&D and advertising expenditures relative to total assets and sales compared to the control sample, whereas smaller firms in both samples were more similar in these dimensions. Medium and small firms also reported similar physical capital intensity across samples, but the antitrust firms are characterized by higher levels of intangible assets relative to total assets, have higher sales growth, and greater profitability. The control firms tended to have lower excess market valuations (ratios of market value of the firm to total assets), which may be interpreted as a crude measure indicating lower market power. The record of higher intellectual property litigation for antitrust firms is somewhat ambiguous, since it may reflect higher valued patents, or greater competitiveness in defending or enforcing the firm's intellectual property.

The growing contribution of high technology industries to the economy raises the possibility that the significance of patent/antitrust issues has increased since 1970. Indeed, over this period there was an increase in the percent of firms charged with antitrust violations in the chemical, pharmaceutical, computer and machinery, and professional and scientific equipment industries—industries which are generally regarded as more technologically innovative. Figure 3 shows the fraction of antitrust cases that involved intellectual property either as a primary issue in the case (for example, allegations of patent-related fraud in standard-setting brought against Dell Computer), or as a factor in the consent decree (such as compulsory licensing, or the divestiture of intangible assets). It is clear that the proportion of cases that involved intellectual property issues has increased markedly in the 1990s. When this finding is com-

[32] In order to indicate how sensitive the results are to differences in size, the analysis allowed coefficients to vary across firm size. I also tested the robustness of the results by redoing the analysis after eliminating from the data set the top 100 firms in terms of size.

Figure 3
Patent Issues in Antitrust Cases



bined with the strong decline over time in the number of manufacturing cases, it confirms suspicions that intellectual property has featured in a rapidly growing proportion of cases in recent years. However, we need to control for other factors that might influence antitrust litigation, such as profitability, advertising, and size of the firm. Therefore, I used the firm level data set to estimate the factors that influenced the probability that a corporation would be involved in antitrust litigation. The major hypothesis tested was that firms with higher patenting profiles were more likely to experience antitrust litigation after controlling for other factors that might influence antitrust scrutiny.[33]

Official reports by the federal antitrust agencies correctly point out that firms have rarely been charged directly with antitrust violations

[33] The results were obtained using logit regressions that were estimated first across all firms, then by size of firm. The dependent variable is a binary variable, which has a value of 0 if the firm had not been involved in an antitrust case since 1950 or 1 if the firm had been charged by federal agencies between 1970 and the present. Coefficients are interpreted as the effect of a one unit change in the independent variable on the log of the odds of antitrust litigation.

based on patent issues. At the same time, a number of landmark restraint of trade lawsuits that involved technological innovators were being brought in these years.[34] I used information on R&D and patent stocks to investigate the relationship between innovation and antitrust. Interestingly, research and development expenditures do not affect the likelihood of an antitrust action being brought against the firm, which suggests that innovative inputs are not as important as outputs such as patents, perhaps because the impact on market share of engaging in R&D is negligible or not discernible.[35]

The results for patent assets are strikingly different. Antitrust ruling regarding patent stocks is quite clear: "Mere accumulation of patents, no matter how many, is not in and of itself illegal,"[36] United Shoe was found guilty because of its questionable business practices, not because of its extensive patent holdings. In the absence of anticompetitive behavior, we should therefore find no relationship between patent stocks and the likelihood of antitrust charges. However, the patent stock coefficient is consistently positive and significant, and is likewise not sensitive to outliers, nor to variations in the sample size or time period. When we control for firm size the magnitude of the patent coefficient falls noticeably, but the variable remains statistically significant across all alternative specifications.[37] This suggests that firms with larger patent stocks are more likely to be charged with antitrust violations, holding other factors constant.

The analysis also attempts to account for the influence of intangible assets and of market power. Capital intensity and accounting measures of intangible assets were not influential. Advertising expenditures, a standard proxy for product differentiation and higher market power, are positively related to the likelihood of antitrust charges. Firms with faster

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34 Kenneth J. Burchfiel, *Patent Misuse and Antitrust Reform: Blessed be the Tie?* 4 HARVARD J. LAW & TECH. 1 (1991) points out that "Significant departures from existing antitrust criteria have been required both in the definition of substitutes and the relevant product market for patented technology," *id.* at 100, and "A common misconception has been that a patent or copyright, a high market share, or a unique product that competitors are not able to offer suffices to demonstrate market power." *Id.* at 30 n.147. The DOJ Antitrust Guide stated that patent pools require "particular scrutiny under the antitrust laws," (cited in U.S. v. Motor Vehicle Manuf. Assoc. of USA, No. 69-75-JWC, 1982 U.S. Dist. LEXIS 17850, at *1 (C.D.Cal Oct. 28,1982).

35 Although it might seem plausible to use a direct measure of market share, these data are likely to be of limited use; the data would require information on the share of the firm's sales in the antitrust market, but most firms operate in several markets and separate data are not available for the firm's sales in each market.

36 United States v. United Shoe Machinery Corp., 110 F. Supp. 295 (D. Mass. 1953).

37 This result might vary depending on interactions between patenting and firm size, but inclusion of interaction terms reduces the reliability of the estimates because of collinearity. Intellectual property litigation was also significantly associated with higher antitrust litigation, but was excluded from the reported equations because litigation was collinear with the patent stock.

growth in sales are also more likely to be the subject of antitrust investigations. Rapid sales growth and excess market value may signal the presence of market power through innovation or in the form of rents to firm-specific assets. The results indicate that firms with higher sales growth and excess market values are more likely to be involved in antitrust. The probability is also greater for smaller firms with faster sales growth or more valuable intangible assets. If it is indeed true that innovative or successful enterprises face a higher likelihood of antitrust litigation, one might expect that such firms would respond by changing the rate and direction of their inventive activity. This is a difficult issue to determine empirically, but some evidence is available in the area of R&D alliances, an area where innovative businesses seem to perceive and even overestimate the likelihood of charges or convictions under antitrust laws.

III. COOPERATIVE R&D AND ANTITRUST

The National Cooperative Research Act (1984) and the National Cooperative Research and Production Act (NCRPA, 1993) were approved because policy makers were concerned about the role of antitrust in the declining competitiveness of American technology relative to foreign firms that seemed to benefit from research consortia.[38] Commentators opined that technological innovation would be enhanced if collaboration in R&D endeavors were freed from the inhibition of possible antitrust liabilities, and pointed to longstanding Japanese and Euro-

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38 *See* S. REP. NO. 98-427 (1984). The National Cooperative Research Act of 1984, Pub. L. No. 98-462, 98 Stat. 1815 (cited in 15 U.S.C. 4301), related to research and development joint ventures. It was later extended to include production joint ventures, National Cooperative Production Amendments of 1993, pub. L. No. 103-42, 107 Stat. 117 (1993):

> § 2 COOPERATIVE RESEARCH AND PRODUCTION: CONGRESSIONAL STATEMENT OF FINDINGS AND PURPOSE
>
> (a) FINDINGS – The Congress finds that -
>
> (1) technological innovation and its profitable commercialization are critical components of the ability of the United States to raise the living standards of Americans and to compete in world markets.
>
> (2) cooperative arrangements among nonaffiliated businesses in the private sector are often essential for successful technological innovation; and procompetitive cooperative innovation arrangements, and so clarification serves a useful purpose in helping to promote such arrangements; and (3) the antitrust laws have been mistakenly perceived to inhibit procompetitive cooperataive innovation arrangements, and so clarification serves a useful purpose in helping to promote such arrangements.
>
> (b) Purpose - It is the purpose of this Act . . . to promote innovation, facilitate trade, and strengthen the competitiveness of the United States in world markets by clarifying the applicability of the rule of reason standard and establishing a procedure under which businesses may notify the Department of Justice and Federal Trade Commission of their cooperative ventures and thereby qualify for a single-damages limitation on civil antitrust liability."

15 U.S.C. 4301 (1994).

pean laws which grant such joint ventures antitrust exemptions. Thus, the NCRPA was "designed to promote research and development, encourage innovation, stimulate trade, and *make necessary and appropriate modifications in the operation of the antitrust laws.*"[39]

The acts clarified the antitrust implications of R&D joint ventures, and offered relief from costs and fees in unsuccessful antitrust actions. They also recommended the application of the rule of reason to all joint ventures, although the incremental benefit of such a provision is arguably minimal relative to existing policy. Further, joint ventures that filed a notification with the antitrust agencies were sheltered from the recovery of treble damages in private and state antitrust lawsuits, because the statute limited liability in such cases to single damages. These modifications were apparently motivated by the "overdrawn yet real perception in the business community that the antitrust laws generally discourage all collaborative activity."[40]

A total of 609 joint ventures were filed with the DOJ between 1985 and 1996. Of these, 124 joint R&D ventures were formed between 1985 and 1988, and some 200 ventures registered between 1988 and 1993. Approximately 250 cooperative R&D associations registered under the 1993 statute between June 1993 and 1996. The most recent report for 1996 to 1997 indicates that 63 new R&D joint ventures registered over the period, while 55 existing ventures updated the status of their membership or activities. Thus the NCRPA has been associated with rapid growth in the formation of research consortia and/or the propensity to register these associations formally to obtain lower private antitrust damages. The responsiveness of innovative firms to a statute that in effect only offers protection from treble damages seems to suggest an extremely high perceived probability of charges and conviction incident on participation in joint ventures. The number of filings with the DOJ is therefore consistent with the idea that businesses perceive some degree of conflict between antitrust and innovation. In order to examine this

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[39] Department of Justice, Antitrust Division, 49 FR 50121, December 26 1984 (emphasis added). The NCRA of 1984 made two primary provisions:

> The first is a simple codification of the consensus view found in existing law that properly structured joint ventures will be judged under a rule of reason standard . . under the antitrust law. . [Second] parties to a joint venture may disclose the nature of the venture to the antitrust enforcement agencies and thereby receive reduced damage exposure from civil suits based on the activities disclosed. Compliance with the reporting procedures would not result in a "certification" that the venture is legal under the antitrust laws; thus, even with disclosure, a venture later shown to be anticompetitive could still be challenged through the traditional dual system of private and public enforcement and be subject to single damages.

Committee on the Judiciary, 102 H. Rept. 972, 102d. Congress, October 1992, at 7.

[40] *See* Report of the Committee on the Judiciary, House Rept. 102-972, 102d. Congress, October 1992, at 7.

hypothesis more closely, I selected a sample of some 151 firms, comprising 10 percent of the membership in ventures that registered with the DOJ in five randomly selected years.

European joint ventures tend to be concentrated in the high technology areas of chemicals, biotechnology, information technology and new materials technology. In this country, the Computer and Business Equipment Manufacturers Association had been a strong advocate for the passage of the NCRPA legislation. It is therefore not surprising that the sample of joint ventures is dominated by the large number of firms that participated in research alliances related to the computer industry (both hardware and software). The majority of these 151 NCRPA firms were American corporations from the Midwest region (in consortia largely related to automotive research) and the West, although the DOJ reports participation by representatives from over 30 foreign countries. A number of joint ventures included partnerships between universities and corporations, such as the 1996 "Blue Band II Consortium" to develop semiconductor laser diodes, which included among its members Hewlett Packard, Xerox Palo Alto Research Center, SDL Inc, Boston University, MIT, and the Universities of New Mexico, Texas, and Utah.

It is undoubtedly true that firms collaborate in research for a number of reasons besides antitrust considerations. For instance, they may benefit from complementarities in knowledge and other inputs, from economies of scale, the internalization of spillovers, risk sharing and access to other markets. However, these are reasons for engaging in shared endeavors rather than for registration with the federal antitrust agencies. It is possible to gain some insight into the link between antitrust enforcement and the tendency to register joint R&D activities by considering the antitrust history of member firms. I therefore analyzed the federal antitrust records of the random sample of member firms that filed under the NCRPA. Almost one third of the sample had been charged with antitrust violations by either the DOJ or the FTC. Hence, the perception by innovative businesses that collaborations would likely attract antitrust scrutiny may not be greatly "overdrawn" given their past experience.

IV. BACK TO THE FUTURE: INNOVATIONS IN FEDERAL ANTITRUST ENFORCEMENT

The implicit model of administrative behavior in this paper proposes that one of the critical ways in which antitrust agencies influence social welfare is through the types of cases that they bring. I used information on the firm-specific attributes underlying case selection to obtain information on the objectives of antitrust enforcement. The premise was that, subject to budgetary constraints and the statutory mandates that inform antitrust policy, the agencies allocate resources in a manner that

reveals the preferences of administrators. It was argued that systematic analysis can also allow us to assess the extent to which dual enforcement is associated with consistent choices across agencies, and whether policies diverge in relation to identifiable characteristics of firms such as their ownership of intellectual property.

An important aspect of the question of dual enforcement is whether the Department of Justice and the Federal Trade Commission differ in terms of their strategies. We can use multivariate regression analysis to estimate the factors that distinguish the characteristics of firms that were charged by the FTC relative to the DOJ.[41] Overall, the model was able to correctly predict which agency would bring the charge for 67 percent of the cases. Firms in the two categories (complaints filed by the DOJ and by the FTC) did not differ greatly in terms of most of the variables that were tested. It was impossible to predict at the margin whether the charge would be brought by the FTC or DOJ based on research and development histories, time, advertising intensity, or sales growth. However, the idea that the Federal Trade Commission focuses its resources on cases involving trivial small firms seems to be an inaccurate description of antitrust activity in the manufacturing sector since 1970. Indeed, over this period, relative to the DOJ the FTC was significantly *more* likely to charge larger firms. The Federal Trade Commission was also more likely to bring cases against firms with higher stocks of intangible assets in the form of an excess of market value over the replacement cost of tangible assets—arguably, just those enterprises that are more innovative.

Over a half of all manufacturing cases in the past three decades were filed during the 1970s. Some fifty six percent of total cases were brought by the FTC, which has accounted for a larger fraction of federal antitrust activity in the 1980s and 1990s, relative to the DOJ. In the 1990s, the FTC has been responsible for almost twice the number of DOJ complaints against manufacturing firms. One fifth of all challenges by the two agencies were directed towards allegations of price related violations such as price fixing and resale price maintenance, but the importance of pricing violations has fallen markedly. Instead, the vast majority of federal antitrust cases in the manufacturing sector deals with mergers and acquisitions. More than three quarters of all manufacturing charges between 1990 to 1998 have involved challenges to mergers.

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[41] The dependent variable in the regressions was a categorical variable that assumed the value of 0 if the charge was brought by the FTC, and 1 if by the DOJ. The independent variables included patents owned by firms, time, research and development expenditures (current and lagged), advertising expenditures, sales growth, total assets, various interaction effects, and industry dummies.

Previous criticisms of the FTC's lack of innovativeness in generating new doctrines appear to be no longer valid. To the contrary, there is some support for an alternative hypothesis: that the FTC has responded to its critics by changing the rate and direction of its enforcement activity. Richard Posner, basing his arguments on cases before 1970, contended that "the FTC role in the enforcement of the merger law has been secondary."[42] In the 1990s we observe a qualitative shift in the orientation of the Federal Trade Commission, which is supported by the statistical results. After controlling for the influence of other variables, the regressions indicate that the FTC was significantly more likely than the DOJ to challenge recent mergers. Indeed, in every decade since 1970 the FTC has brought more merger cases than the DOJ, in a period when merger activity has been increasing in relative and absolute importance. It has even been suggested that the "Commission is unusually open to, if not actively seeking, new uses and applications of vertical merger theory."[43]

Figure 3 indicated a marked increase in the number of cases that involve intellectual property issues. Multivariate regressions indicate that the FTC was significantly more likely in the 1990s to bring charges against firms with larger patent stocks, when compared to the DOJ and to its own past performance. Indeed, the majority of intellectual property-antitrust cases in recent years has been brought by the FTC. According to the Director of the FTC's Bureau of Competition:

> the forward looking emphasis of high tech industries requires an equally forward looking antitrust policy. Frequently, the focus of competition in these industries is not over price but innovation of next generation products. Competition in innovation markets must be protected even where merging parties are not current competitors, and the Commission has brought a number of cases in the past few years in order to protect the innovation process.[44]

These findings suggest that the FTC is differentiating itself from the DOJ by challenging firms in markets that exhibit rapid innovation. This difference across agencies raises new concerns about the intersection of intellectual property issues and antitrust policy.

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[42] Posner, *supra* note 7, at 50.

[43] Commissioner Mary L. Azcuenaga, Remarks on Antitrust and Intellectual Property in the Year 2000, La Quinta, CA, (January 24, 1996) (transcript available at <http://www.ftc.gov/speeches/azcuenaga/intelp.htl>) (visited March 20, 2000).

[44] William J. Baer, Report from the Bureau of Competition, Address before the American Bar Foundation, Washington, DC, (April 15, 1999).

A 1957 report to the Committee on the Judiciary found "no basic incompatibility or irreconcilable conflict between the patent laws and the antitrust laws," because both have the objective of promoting competition and enhancing social utility.[45] In 1995 the Department of Justice and the Federal Trade Commission jointly issued *Guidelines for the Licensing of Intellectual Property*. According to the *Guidelines*, "the intellectual property laws and the antitrust laws share the common purpose of promoting innovation and enhancing consumer welfare."[46] Proponents of the "no conflict" view specify distinctions between the justifiable exercise of patent power and unjustifiable misuse that is subject to antitrust action; countercite other cases upholding patent rights in the context of antitrust charges; or else point to the lack of supporting evidence.[47] Ward Bowman likewise refuted the notion of a conflict on conceptual grounds, arguing that the objective of both policies is to increase social welfare by providing consumers with the most goods at the lowest cost.[48]

After more than a century of experience, it is somewhat disingenuous of the antitrust agencies to still promote the politically acceptable view that a trade-off between innovation and competition does not exist.[49] Not coincidentally perhaps, the *Guidelines for the Licensing of Intellectual Property* have generally not been relevant to the majority of cases filed by the FTC or DOJ. According to Joel Klein, cross-licenses comprise a minimal fraction of the 3000 or so Hart-Scott-Rodino filings, and such licensing practices "have remained largely off our [the DOJ's]

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45 Staff Report to Subcommittee No. 5 of the House Committee on the Judiciary, 84th Congress 2d Session (1957), cited in Neil B. Siegel, *Patent Monopoly and Sherman Act Monopolization*, 49 J. PATENT OFF. SOC. 68 (1967).

46 See the DOJ and FTC *Antitrust Guidelines for the Licensing of Intellectual Property*, reprinted in 4 Trade Reg. Rep. (CCH) P 13,132. The basic declarations of the Guidelines are: the antitrust agencies will consider intellectual property to be the same as other forms of property; it will not be presumed that such property creates market power of the sort deprecated by antitrust laws; and they will ratify licensing agreements that generate economic benefits and further consumer welfare.

47 For the "optimists' view," see Willard K. Tom and Joshua A. Newberg, *Antitrust and Intellectual Property: From Separate Spheres to Unified Field*, 66 ANTITRUST L. J. 167 (1997). A recent decision, *Atari Games Corp. v. Nintendo of America*, 897 F. 2d 1572, 1576 (1990), reflects this view: "the aims and objectives of patent and antitrust laws may seem, at first glance, wholly at odds. However, the two bodies of law are actually complementary, as both are aimed at encouraging innovation, industry and competition," (cited in Tom and Newberg, *supra*, at 88 n.34). Similarly, "there [is no] evidence to support the view that U.S. antitrust policy stifles innovation by U.S. firms," Shapiro and Willig, in *On the Antitrust Treatment of Production Joint Ventures*, 4 J. ECON. PERSPECTIVES 113, 124 (1990).

48 *See* W. BOWMAN, PATENT AND ANTITRUST LAW 3 (1973).

49 By the middle of the 19th century, the courts recognized that all economic activities involve trade-offs, including the relationship between innovation and consumer welfare. It is not coincidental that this period saw a rapid increase in cases at equity which, according to Justice Joseph Story, required courts to address "the mixed question of public policy and private convenience." *See* B. Zorina Khan, *Property Rights and Patent Litigation in Early Nineteenth Century America*, 55 J. ECON. HIS. 58-97 (1995).

screen."[50] Similarly, very few antitrust cases involve complaints where there is clearly a correspondence between the protection of competition and the promotion of innovation. The proposal of a lack of conflict between these two objectives is valid for conduct such as patent fraud or predatory behavior by patentees that featured in fewer than a dozen manufacturing cases over the past thirty years.

For instance, in *Pfizer v. FTC*,[51] it was found that Pfizer and American Cyanamid had deceived the Patent Office and used the patent property to engage in monopolization of the tetracycline market. Similarly, the FTC challenged a 1998 merger between Summit Technologies and VISX because of patent misuse and patent fraud, and proposed that a key VISX patent should be overturned.[52] Plaintiffs in antitrust disputes can also bring charges based on "predatory innovation" that has the objective of eliminating competition.[53] However, such cases involve clearly unacceptable practices associated with patent ownership, and do not bear on questions such as whether technological innovators may legitimately gain market power associated with patent ownership, and thus increase the likelihood that complaints against them are filed under antitrust laws. Even within the seemingly "bright lines" of patent fraud and predatory behavior, antitrust authorities have brought charges that some might question on the grounds of economic efficiency.[54]

Recent administrative decisions illustrate that the "new antitrust" doctrines toward intellectual property may lack utility. The consent decrees suggest several factors that may possibly inform federal antitrust enforcement policies towards firms in the area of intellectual property: first, dominant firms may be held to higher standards than less successful competitors. Second, it signals a tendency to derive strategies from suspect economic models (such as the allegation that firms will leverage their monopoly power to control adjacent markets) and outdated folk theorems (such as the QWERTY myth of path dependence and inefficient

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50 Joel Klein, Cross-Licensing and Antitrust Law, Address before the American Intellectual Property Law Association, San Antonio Texas, (May 2, 1997).

51 394 U.S. 920 (1969),

52 *Summit Technology, Inc.*, Dkt. No. 9286, 1998 FTC Lexis 29 (March, 1998).

53 Predatory innovation can include price fixing, prohibitive clauses in licenses, unreasonable royalty terms, restricting competitors, and tying arrangements; there is some question as to whether it includes stockpiling patents that were purchased from others outside the firm in order to deter competitors. Janusz Ordover & Robert Willig, *An Economic Definition of Predation: Pricing and Product Innovation*, 91 YALE L.J. 8 (1981), argue that "even genuine innovations- new products that in some ways are superior to existing products in the eyes of both engineers and consumers - are in some circumstances anticompetitive."

54 Since others in this Symposium will analyze the most prominent antitrust case in recent years, the case against Microsoft, I do not intend to duplicate their efforts, except to suggest that this case arguably has little to inform us about either antitrust law or economics, and a great deal to tell us about the decision-making process of the antitrust administration.

lock-in mechanisms.)[55] Third, the antitrust agencies are reversing long-standing practices that allow intellectual property owners the right to determine how best to exploit their property, and to exclude other firms from profiting from their efforts.[56] Recent cases likewise suggest that, disguised by the rhetoric of enlightened policy towards intellectual property, the federal antitrust agencies are retreating from a trust in the market mechanism to their historic and somewhat misplaced confidence in the ability of administrators to outperform the market.

A growing fraction of cases involve firms jointly charged with antitrust violations that are linked to patent based market power and to concerns about "innovation markets."[57] Current policies are reminiscent of decisions from the 1960s, when the courts construed the Federal Trade Commission Act as authorizing the FTC to restrain firms from violating the implied intent of the antitrust statutes, even when the alleged violation had not yet occurred.[58] In practice, the goal of "protecting innovation markets" is a carte blanche that permits antitrust officials to make arbitrary rulings that are unrelated to economic theories or to market efficiency. This is most clearly shown in the prominent role that patents and R&D have played in recent mergers under § 7 of the Clayton Act, administered by the FTC. The FTC challenged the proposed Roche and Genentech merger in 1990 and required Roche to license its patents on therapeutics for growth hormone deficiency to third parties. Similarly, in 1994 the FTC was troubled by the research implications of a merger between Sensormatic Electronics and the Knogo Corporation, both of which produce electronic surveillance source labels to protect against shoplifting.[59] The two firms planned to grant each other royalty free cross-licenses and to share trade secrets. The FTC claimed that the agreement would lessen competition in a market that was unlikely to

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55 *See* David Balto and Robert Pitofsky, Assistant Commissioner and Commissioner respectively, *Antitrust and High-Tech Industries: The New Challenge*, ANTITRUST BULLETIN, Sept. 22, 1998, at 583.

56 *See* Crown Die and Tool Co. v. Nye Tool and Mach. Works, 261 U.S. 24 (1923). *See also* Dawson Chemical Co. v. Rohm & Haas, 448 U.S. 176 (1980), which refers to the "long-settled view that the essence of the patent grant is the right to exclude others from profiting by the patented invention."

57 For example, see *In re* Imperial Chemical Indus. 116 FTC 1381 (1993), *In re* Cooper Indus., 116 FTC 1243 (1993), *In re* Monsanto Corp., No. C-3457, 1993 FTC Lexis 214, at *1 (Sept. 1, 1993). "An innovation market consists of the research and development directed to particular new or improved goods or processes, and the close substitutes for that research and development," according to Richard J. Gilbert, The 1995 Antitrust Guidelines for the Licensing of Intellectual Property, Remarks before the ABA Section of Antitrust Law, Washington, D.C. (April 6, 1995).

58 *See* FTC v. Sperry & Hutchinson, 405 U.S. 233 (1972); FTC v. Brown Shoe, 384 US 316 (1966). *See also* FTC v. Motion Picture Advertising Services Co., 344 U.S. 392 (1953).

59 *See In re* Sensormatic Electronics Corp., No. 941-0126, 1994 FTC Lexis 274, at *1 (Nov. 2, 1994).

attract entry "because of patent protection for important technology and the time required to develop the requisite technical skills to compete."[60] Moreover, the merger would serve to "increase the likelihood that firms in the relevant market will restrict output of research and development both in the near future and in the long term."[61] The consent decree prohibited Sensormatic from acquiring patents belonging to Knogo, and imposed a ten year ban on Sensormatic's purchasing similar patents. The Sensormatic case treated patented technologies as products, without considering the increase in net social welfare that might accrue if firms formed joint ventures for the purpose of sharing knowledge and expertise, and avoiding duplicative efforts.

To students of the economics of technology, the innovation market model (quite apart from doubts about the ability of a legalistic bureaucracy to forecast, anticipate, and "protect" that market) is a curious concept. Even in product markets, where the output is well-defined, the good is traded, and prices exist, controversy surrounds the appropriate scope of the market for antitrust purposes. It is all the more difficult to define an "innovation market," hard to gauge its extent, and impossible to predict its future course, much less estimate its impact on consumer welfare. Research and development is an input whose output is the outcome of a probabilistic process. According to Zvi Griliches, "much of the product of research and development is entirely unmeasured and much of the rest is mismeasured."[62] Significant lags may exist between R&D expenditures and subsequent results when or if they materialize, and still more lags accompany the innovation process. Information is a public good, and each step of the process may be affected and altered by spillovers from other areas of the economy.

Nevertheless, undeterred by the lack of any formal analysis to support these decisions, consent decrees in such cases have tended to seriously infringe on the intellectual property rights of firms charged. The Constitutional clause grants to inventors the "exclusive rights" to their discoveries, but numerous administrative decisions by the antitrust agencies summarily corrode those rights without judicial review. Many decrees require a combination of technology divestitures, compulsory licensing, and even the forced sharing of trade secrets to ensure that competitors are able to acquire the capability to effectively use the technology.[63] In *Wright Medical Technology*, the FTC ordered the firm to

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60 *Id.* at *4.

61 *Id.* at *5.

62 ZVI GRILICHES, R&D AND PRODUCTIVITY: THE ECONOMETRIC EVIDENCE, 24 (1998).

63 *See In re* Imperial Chemical Indus., 116 FTC 1381 (1993) ("ICI shall provide to the acquirer . . . at no cost. . . such rights to technology, know-how, and technical assistance regarding PMMA and acrylic sheet process and applications technology as may be necessary for the acquirer of the properties to be divested to utilize the properties to be divested.") See

transfer patents, trade secrets and business know-how related to orthopedic finger implants to the Mayo Foundation.[64] The agency further stipulated that the latter should be able to sublicense these assets in perpetuity, and that Wright Medical was then required to provide technical assistance to the Mayo sublicensee (a future competitor of Wright). It is difficult to discern how these decisions can do otherwise than weaken the incentives for firms to engage in inventive activity. These disincentive effects have been noted by an FTC Commissioner who dissented in the consent decree with Dell Computer.[65] The FTC alleged in this case that Dell as a patent holder had abused the standard-setting process. A Dell employee had participated in the industry standard-setting ballot, without knowing that Dell owned a patent on the 481 computer bus, which the company subsequently argued was being infringed by the adopted protocol. As part of the consent order, Dell was enjoined from enforcing its patent. Commissioner Azcuenaga dissented from the order because there was no evidence of intentional fraud nor of improper gains or usage of market power. She warned that "the threat that voting on a standard might result in loss of a company's intellectual property rights may dissuade some firms from participating in the standards-setting process in the first place."[66] In general, analysts and policymakers who propose remedies such as compulsory licensing demonstrate a failure to understand the full implications of the economic model of induced innovation, a model that was implicitly supported by the framers of the United States Constitution.

The appropriate balance between regulation through commissions, relative to common law litigation over business torts, is not a new question.[67] As Joseph Schumpeter noted, "rational regulation . . . turns out to be an extremely delicate problem which not every government agency, particularly when in full cry against business, can be trusted to solve."[68]

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also recent cases involving General Motors, Boston Scientific, Ciba Geigy et al., Upjohn Co., and Baxter International. A 1995 FTC consent decree related to remedies for alleged abuses in standard setting by Dell in relation to its 481 patent, without any discussion of Dell's market power. *See In re* Dell Computer Corp., 121 FTC 616 (1996). The consent order prohibited Dell from enforcing its 481 patent for the remainder of its term. *See id.* Hoechst's merger with Marion Merrell Dow was only permitted with the proviso that the firm waived the right to enforce certain of its patents, divested part of its intellectual property, and licensed others. *See In re* Hoechst AG, No. 3629, 1996 FTC LEXIS 370, at *1 (Aug. 5, 1996). Courts have generally supported reasonable royalty fees in such cases, but some monopolization suits do require defendants to issue royalty free licenses. Moreover, defendants in some consent decrees have accepted royalty-free licensing stipulations.

64 *See* Wright Medical Tech., 119 FTC 344 (1995.)

65 *See In re* Dell Computer Corp., 121 FTC 616 (1996).

66 Commissioner Mary L. Azcuenaga, *supra* note 43.

67 *See* William Kovacic, *Downsizing Antitrust: is it Time to End Dual Federal Enforcement?*, 41 ANTITRUST BULLETIN 505 (1996).

68 JOSEPH SCHUMPETER, CAPITALISM, SOCIALISM AND DEMOCRACY 91 (3rd ed. 1950).

Some observers have expressed concern about judicial usurpation of the FTC's authority, "because the courts have tended to reverse FTC decisions."[69] However, the majority of antitrust decisions are settled by consent decree, rather than by judicial oversight. In view of the corrosive effect of recent consent decrees on the ability of firms to appropriate returns from their investments in inventive activity, it would likely increase social welfare for the courts to review antitrust decrees regarding patents and intellectual property more extensively.[70] The right of patent and copyright holders to exclude others from using or profiting from their discoveries is secured by the United States Constitution, and should not be dismissed or infringed at the whims of administrators. It may be argued that unlitigated consent decrees involving remedies for concentration in "innovation markets" in effect deny economic due process to the owners of intellectual property.

V. CONCLUSION

The American judiciary in the nineteenth century deprecated monopoly, but celebrated the grant of property rights in patents.[71] Judges did not recognize patents as monopolies, arguing that patentees added to social welfare through innovations which had never existed before, whereas monopolists secured to themselves rights that already belong to the public.[72] The passage of the Sherman Act in 1890 was associated with a populist emphasis on the need to protect the public from corporate monopolies, including those based on patent protection. Numerous lawsuits, articles and books since then have debated whether antitrust policies, which are designed to suppress monopolization, are antithetical to

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69 Jeffrey H. Liebling, *Judicial Usurpation of the FTC's Authority: a Return to the Rule of Reason*, 30 J. MARSHALL L. REV. 283 (1996).

70 The supporters of the FTC wanted a more predictable source of regulation than the supposedly ad hoc litigation process. "Thus the business man will have certain knowledge of the law and will be able to conduct his business easily in conformity therewith." cited in THOMAS MCCRAW, PROPHETS OF REGULATION 116 (1984). *See also* Sherman Act debates, U.S. Senate, 51st Congress, 1st sess., March 21, 1890; Congressional Record, xxi, 2461.

71 *See* Khan, *supra* note 49.

72 Courts have stated:

> Patentees are not monopolists . . . A monopolist is one who, by the exercise of the sovereign power, takes from the public that which belongs to it, and gives to the grantee and his assigns an exclusive use. On this ground monopolies are justly odious . . . Under the patent law this can never be done. No exclusive right can be granted for anything which the patentee has not invented or discovered. If he claim anything which was before known, his patent is void, so that the law repudiates a monopoly. The right of the patentee rests entirely on his invention or discovery of that which is useful, and which was not known before. And the law gives him the exclusive use of the thing invented or discovered, for a few years, as a compensation for 'his ingenuity, labor, and expense in producing it.' This, then, in no sense partakes of the character of a monopoly.

Allen v. Hunter, 6 McLean 303 (1855), cited in Khan, *supra* note 49, at 75.

policies that grant exclusive property rights in inventions. Researchers who support the hypothesis of a conflict typically describe antitrust lawsuits and identify the large number which seem to hinge on patent issues or to involve corporations regarded as technological leaders. The roster ranges from landmark cases in the early decades of the 20th century, such as those against American Tobacco, John Deere & Co., American Can and International Harvester, through to the numerous cases since 1970 against prominent innovators such as IBM, Xerox, Eastman Kodak and, most recently, Intel and Microsoft.[73] Some of the studies in this vein claim that antitrust officials have evinced "almost unbroken hostility towards patents."[74] Others warn of the possibility of obtaining static (antitrust) gains at the expense of dynamic (technological) efficiency.[75]

Industrial policy in the United States is shaped by a number of factors, including federal and state statutes, the courts, private litigation, and activities by the federal antitrust agencies. This paper focused on the enforcement of antitrust regulations by the Department of Justice and the Federal Trade Commission, and was motivated by the marked lack of empirical attention paid to the issue of patenting in relation to antitrust actions brought by federal government agencies. In the debate over the future of institutional oversight of competition policies in this country, few would predict any dramatic changes in the current organization of antitrust enforcement. Thus, the efforts of researchers should perhaps be directed less towards nirvana-like proposals for the optimal structure of antitrust, and more towards the mundane but necessary task of collecting, collating, and analyzing relevant data. For instance, it would be useful to conduct a study that attempted to assess and contrast the consequences of innovation policies by the FTC and DOJ. I conducted interviews with officials at both agencies whose comments implied that the FTC is more likely to bring a charge at the instigation of market rivals (it was argued that private firms can at times act as surrogate Attorneys General), whereas the DOJ selects cases that are likely to be economically important and precedent setting. The antitrust agencies are advised to allow greater access to internal records and to promote more extensive cooperation with external reviewers to investigate such matters. For, rational

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[73] *See* United States v. International Harvester Co., 274 U.S. 693 (1927); United States v. American Can Co., 256 U.S. 706 (1921); United States v. United States Steel Corp., 251 U.S. 417 (1920), United States v. United Shoe Mach. Co., 247 U.S. 32 (1918). *See also* BOWMAN, *supra* note 48, at 120-256. More recent cases include the high-profile *U.S. v Microsoft*, No. 98-1233, 2000 U.S. Dist. LEXIS 4014, at *1 (D.D.C. Apr. 3, 2000), *U.S. v. Intel*, 3 F. Supp. 2d 1255 (N.D. Ala. 1998), *vacated* 195 F.3d 1346 (Fed. Cir. 1999).

[74] Charles F. Rule, *Patent-Antitrust Policy: Looking Back and Ahead*, 59 ANTITRUST L. J 729 (1991).

[75] *See* William J. Baumol and Janusz A. Ordover, *Antitrust: Source of Dynamic and Static Inefficiencies*? in Thomas M. JORDE & DAVID J. TEECE, ANTITRUST, INNOVATION AND COMPETITIVENESS 82-97 (1992).

policies as well as a deeper understanding of the topic are unlikely to be promoted without systematic analysis.

This article employs an original data set to investigate the nature of antitrust decision-making in the past three decades. I outlined patterns of aggregate antitrust activity, which indicated a fall in both private and government antitrust litigation, but an increase in the relative importance of government actions. A rough estimate of the frequency of patent/antitrust interactions suggested an increase since 1970, which could be due to the greater economic importance of technology intensive industries, or to greater government scrutiny of innovative firms. It seemed plausible that firm-specific effects would explain a greater part of the variation in antitrust charges than industry effects, so my sample was constructed to examine within-industry variation.

The major finding of the empirical analysis is that patent stocks are associated with higher likelihood of antitrust charges for medium and larger firms. Smaller firms with faster sales growth, possibly an index of greater success, are also likely to sustain greater antitrust litigation. The preliminary findings I report on a project on research joint ventures may also explain the previous reluctance of firms to engage in research alliances because of fears of antitrust charges. The results are consistent with the hypothesis that innovative, successful enterprises are more likely to garner antitrust attention, especially since the FTC acquired the conviction that their mission included protection of competition in the "market for innovation." However, the results do not fully control for other elements of firm strategy that might be correlated with patenting behavior and sales growth. For instance, the evidence on intellectual property litigation could be taken as an indication that innovative firms might be more aggressive in their pursuit of market share. Such firms might also have a greater tendency to engage in anti-competitive behavior.

Critical reviews and queries about their efficiency and effectiveness have been directed to antitrust administrators for more than a century. Antitrust policy has been conducted in an environment that lacks even basic statistical information regarding the quantity and nature of antitrust enforcement. I argued that this risks the continuance of institutional myopia. When this myopic vision is turned towards rapidly changing technology markets, regulation by commission risks being inappropriate or even detrimental to industrial and technological progress. The Constitutional clause grants to inventors the "exclusive rights" to their discoveries, but numerous administrative decisions by the antitrust agencies cases have tended to seriously infringe on the intellectual property rights of firms charged. Many decrees in recent years have required a combination of technology divestitures, compulsory licensing, and even the

forced sharing of trade secrets to ensure that competitors are able to acquire the capability to effectively use the technology. These remedies deny intellectual property holders economic due process and demonstrate a failure to understand the full implications of the economic model of induced innovation, a model that was implicitly supported by the framers of the United States Constitution. In short, it is clear that the 200 year old question of the balance between intellectual property and antitrust is far from moribund; indeed, as we approach the 21st century it seems very much alive.