

COMMENT

BEAR MARKET LITIGATION: SHOWING THE RELATIONSHIP BETWEEN PATENT LITIGATION AND A DOWN ECONOMY

IMAN LORDGOOEI*

The granting [of] patents “inflames cupidity,” excites fraud, stimulates men to run after schemes that may enable them to levy a tax on the public, begets disputes and quarrels betwixt inventors, provokes endless lawsuits The principle of the law from which such consequences flow cannot be just.

- The Economist, 1851

1. INTRODUCTION

Through the course of the industrial revolution in the early twentieth century and the dawn of the information age in the late twentieth century, intellectual property (“IP”) rights have been championed as a driver of personal and national economic wealth creation.¹ The basis for correlating IP rights with wealth creation

* J.D. Candidate, 2007, University of Pennsylvania School of Law; B.S. Electrical Engineering, 2004, Drexel University. I wish to thank Elnaz Farnam for her invaluable suggestions throughout my work on this Comment, as well as the Editorial Board of the University of Pennsylvania Journal of International Economic Law for all their hard work in preparing this Comment for publication.

¹ See generally KAMIL IDRIS, INTELLECTUAL PROPERTY: A POWER TOOL FOR ECONOMIC GROWTH 17 (2002) (citing intellectual property as a tool for economic development and wealth creation); cf. Jason O. Watson, *A History of the United States Patent Office*, Apr. 17, 2001, available at <http://www.historical-markers.org/usptohistory.cgi> (providing a history of patent rights leading to the creation of the U.S. Patent & Trademark Office).

follows from the belief that: (1) IP rights encourage technological innovation;² and (2) such technological innovation encourages increased productivity and wealth creation.³

Accordingly, the public value of IP has led to the development of varying property rights granted by the governments of the world as a way to increase national wealth and protect domestic industries by granting short-term "monopolies" or, more precisely, rights to exclude. Though there has been some push to harmonize IP rights across various jurisdictions of the world,⁴ international differences still remain in the administration of IP and, in particular, patent rights. These international differences generate varying levels of patent activity across jurisdictions, which in turn contribute to a divergence in both corporate IP strategy and economic impact within jurisdictions. For example, a patent in the United States has arguably greater value than it does in Europe, thereby encouraging an increased use of patent litigation as a way for U.S. companies to recoup economic losses during a downturn in the economy or their market sector.

1.1. *The Public Value of Patent Activity*

There are several factors to consider in determining the value of increased patent activity for a nation. These factors include: (1) whether the increased patent activity induces technological advancements that lead to the creation of national economic wealth;⁵ (2) the point at which patent thickets serve as a hindrance to tech-

² See, e.g., U.S. CONST. art. I, § 8 (recognizing the correlation between IP rights and innovation by giving Congress the power to "promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries").

³ See, e.g., *The New "New" Economy*, ECONOMIST, Sep. 13, 2003, at 61–64 (noting a correlation between "impressive" increases in American productivity with the development of new information technologies); IDRIS, *supra* note 1, at 24 (discussing intellectual property as a tool for economic development and wealth creation).

⁴ For the purposes of this comment, the United States and the European Union ("EU") are the relevant jurisdictions. See, e.g., Michael D. Kaminski, *Patent Harmonization*, MOD. DRUG DISCOVERY, Jan. 2001, at 36–37, available at <http://pubs.acs.org/subscribe/journals/mdd/v04/i01/html/patents.html> (describing patent harmonization efforts).

⁵ Capital and labor market efficiencies are arguably high enough in today's economy that real economic growth and concomitant wealth creation will primarily only come from the development and adoption of new technologies. See, e.g., *The New "New" Economy*, *supra* note 3, at 61 (citing new information technologies as the source of economic growth in the United States).

nological advancement;⁶ and (3) the extent to which corporate research and development (“R&D”) is affected by IP rights as opposed to market demand and/or regular advancements in science.⁷

Two phenomena may be observed. First, an increase in economic strength of an industry or nation may be observed as arising from increased innovation, where some threshold level of patent filings or litigation is not exceeded (i.e., too much patent activity may create “patent thickets,” arguably hindering innovation).⁸ Given the presumption that increased patent activity results in more innovation, then increased patent activity may also result in an economically stronger industry, so long as the patents are not being misused.⁹ Similarly, a nation’s economic strength should grow with increased patent activity; otherwise, the national policy justification for promoting strong IP rights is irrational.¹⁰ The second phenomenon is that an economic downturn in an industry under certain conditions (e.g., where the downturn is not due to certain exogenous factors such as terrorism, pandemic, etc.), would presumably lead to an increased demand for innovation and thus precipitate increased patent activity, whether in filings or litigation (but particularly litigation).¹¹

⁶ See, e.g., George Leopold, *Patent Litigation Crimps Standards-Setting Efforts*, ELECTRONIC ENGINEERING TIMES, July 23, 2001, at 22 (citing increased patent litigation as a cause of greater difficulty in operating technology standardization groups).

⁷ By “regular advancements in science,” I am referring to the advancements generated by government and publicly funded research.

⁸ See, e.g., *Patently Absurd?*, ECONOMIST, June 23, 2001, at 41 (describing the “Tragedy of the Anti-Commons,” where many property owners have to grant permission before a resource may be used, as a hindrance to continued innovation).

⁹ *Id.*

¹⁰ Or unwise, at least, considering that individual firms and industries may lobby heavily for stronger intellectual property rights that are in their best interests but not necessarily in the nation’s best interests.

¹¹ It can cost anywhere from eight to fifteen thousand dollars and two to five years to obtain a single patent; even then, a patent portfolio has no inherent value by itself. Rather, value is derived from licensing and litigation, and returns are not reaped immediately. See, e.g., Pierce Atwood: Attorneys at Law, *Overview of Patents and the Patent Process* (2003), available at http://www.pierceatwood.com/Articles/63_Patentprocessoverview.pdf (citing the costs of procuring a patent in the United States). On the other hand, litigating a patent can cost millions of dollars, but the returns are high and relatively immediate—even though a patent trial may take years until resolution. One would expect, nevertheless, that litigation would trump procurement in bad economic times, since the potential returns on litigation appear more immediate and will presumably keep shareholders at bay dur-

Some scholars have questioned the veracity of whether IP rights encourage technological innovation or if they actually hinder it.¹² Studies indicate, however, that IP rights do encourage technological innovation.¹³

Accordingly, nations are incentivized not only to protect their domestic industry and economy, but also to position themselves at the forefront of technology by providing strong IP rights to attract corporate investment in domestic R&D.¹⁴

This strengthening of IP rights has arguably led to the increased procurement and litigation of patents, particularly in the United States.¹⁵ While some argue that this increase in patent activity is a hindrance to the creation of new technologies,¹⁶ and thus economic wealth, Schumpeterian theorists will nevertheless claim that the micro-monopolies of patents are necessary for the advancement of innovation and should consequently be protected by increased litigation.¹⁷

ing a corporate downturn. See Julia Huston, *Litigating Patent Rights in a Down Economy*, 32 MASS. LAW. WKLY 359, 359 (2003) (finding that "companies are investing more financial resources in patent litigation than ever before," despite a downturn in the economy).

¹² See, e.g., Sunil Kanwar & Robert Evenson, *Does Intellectual Property Protection Spur Technological Change?*, 55 OXFORD ECON. PAPERS 235, 235 (2003) (addressing whether IP rights incentivize technological innovation).

¹³ This is not such a strange proposition, since IP rights inherently stem from the idea that providing protection to inventions from piracy encourages inventors to invest in and disclose new technologies. See MERGES ET AL., *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 10-23 (3rd ed. 2003) (discussing economic incentive rationale for IP "monopoly" rights); cf. Kanwar & Evenson, *supra* note 12, at 258 (finding that there is "evidence to support the claim that . . . intellectual property protection [has] a strong positive influence on R&D investment").

¹⁴ But see GRAHAM R. MITCHELL, U.S. DEP'T OF COM., *THE GLOBAL CONTEXT FOR U.S. TECHNOLOGY POLICY* 10 (1997) (citing public investment in grants, fellowships, etc., by the government, rather than strong IP rights, as having "contributed significantly to U.S. technological leadership").

¹⁵ See, e.g., *Patently Absurd*, *supra* note 8, at 40 ("Between 1982 and 1992, the number of patents issued each year in America doubled from 55,000 to almost 110,000.").

¹⁶ See Leopold, *supra* note 6 (discussing rising patent litigation as a hindrance to industry trade groups).

¹⁷ See generally Leonard I. Nakamura, *Economics and the New Economy: The Invisible Hand Meets Creative Destruction*, FED. RES. BANK OF PHILADELPHIA BUS. REV., July/Aug. 2000, at 19-23, available at <http://www.phil.frb.org/files/br/brja00ln.pdf> (describing Schumpeter's theory that so-called "creative destruction" leads to technological innovation).

1.2. *The Increasingly International Nature of Patent Protection*

The issue of jurisdictional differences in patent protection has also come to the forefront in recent years, with numerous parties calling for the standardization of patent laws in order to harmonize territorial idiosyncrasies in IP rights.¹⁸ The rationale for harmonization follows from the fact that the development of new information technologies and the Internet have reduced the cost of information exchange to practically zero.¹⁹ Accordingly, it has become easier to obtain and distribute a host nation's domestically patented inventions in a foreign jurisdiction, thereby allowing the foreign jurisdiction to reap the rewards of technological advancements developed with the host nation's domestic public spending, and without sharing any of the costs. Nations, therefore, are incentivized to seek patent cooperation treaties with major overseas markets so that domestic patents and technologies (i.e., those developed in the host nation or through public domestic spending by the host nation) are given similar protection in important foreign markets as they are given domestically.²⁰

¹⁸ See, e.g., Patent Reform Act of 2005, H.R. 2795, 109th Cong. § 3 (2005), available at <http://www.govtrack.us/data/us/bills.text/109/h/h2795.pdf> (proposing, among other things, a change in the traditional U.S. first-to-invent mode of determining priority of invention to a first-to-file mode followed by the EU and others).

¹⁹ See, e.g., BRIAN S. WESBURY, *THE NEW ERA OF WEALTH: HOW INVESTORS CAN PROFIT FROM THE 5 ECONOMIC TRENDS SHAPING THE FUTURE 21* (2002) ("The networked economy is reducing the cost of information while increasing its value.").

²⁰ See, e.g., Thomas K. McBride, Jr., *Patent Practice in London – Local Internationalism: How Patent Law Magnifies the Relationship of the United Kingdom with Europe, the United States, and the Rest of the World*, 2 *LOY. U. CHI. INT'L L. REV.* 31, 47 (2004):

Another aspect of international patent law rests on the TRIPs agreements that came into force with the accession of many countries to the WTO in 1994. The Uruguay round of WTO negotiations introduced TRIPs into GATT and bravely attempted to harmonize global patent systems with uniform standards of protection. However, TRIPs provisions are not directly enforceable by patentees; the provisions merely impose an obligation upon member nations to enact legislation enforcing required rights. Both the U.S. and the U.K. have made changes to their laws in response to these provisions (e.g., on bringing the term of patents to twenty years from the time of filing of an application).

1.3. Patent Protection in the United States Compared to the European Union ("EU")

In the United States, patent applications are handled by the U.S. Patent and Trademark Office ("USPTO"), where examiners operate according to administrative guidelines and regulations set forth in the Manual of Patent Examination and Procedure ("MPEP").²¹ Notable features of patent procurement in the United States include the first-to-invent mode of determining priority of inventorship (i.e., when one or more patentees are attempting to obtain patent rights on the same invention), whereby inventors who can show that they were the first to invent are given patent rights to their inventions, so long as, *inter alia*, they have not "abandoned, suppressed, or concealed [their invention]."²² The U.S. courts and legislature have also been quite liberal in granting patents to inventions in a wide variety of subject matter,²³ such as computer software,²⁴ business methods,²⁵ and genetically engineered organisms.²⁶ The European Patent Office ("EPO") was established to harmonize patent protection across Europe, and it handles the applications for many European nations including, *inter alia*, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Liechtenstein, Luxembourg, Monaco, the Netherlands, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.²⁷ Applicants are allowed to file their patents with the

²¹ See, e.g., *Bristol-Myers Squibb Co. v. Ben Venue Labs.*, 90 F. Supp. 2d 522, 536 n.7 (D.N.J. 2000) ("While the MPEP does not have the force of law, it is entitled to judicial notice as an official interpretation of statutes or regulations as long as it is not in conflict therewith.").

²² 35 U.S.C. § 102(g)(1)-(2) (2000).

²³ The U.S. Congress has enacted legislation that defines patentable subject matter as constituting "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101 (2000).

²⁴ See, e.g., *Diamond v. Diehr*, 450 U.S. 175, 192 (1981) (allowing a patent on a process, even though the process made use of a mathematical algorithm and a programmed digital computer).

²⁵ See, e.g., *State St. Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368, 1375 (Fed. Cir. 1998) (permitting a patent on a process incorporating a mathematical algorithm with a result expressed in numbers, such as price, profit, percentage, cost, or loss).

²⁶ See, e.g., *Diamond v. Chakrabarty*, 447 U.S. 303, 310 (1980) (allowing a patent on a genetically engineered micro-organism under the language of 35 U.S.C. § 101).

²⁷ See, e.g., *Daiske Yoshida, The Applicability of the Attorney-Client Privilege to Communications with Foreign Legal Professionals*, 66 FORDHAM L. REV. 209, 225 (1997)

EPO in English, French, or German, and all granted patents are enforceable within any designated contracting member nations.²⁸

In contrast to the USPTO, the EPO does not formally provide patent protection for software programs or business methods.²⁹ The EPO also does not allow patents on plant or animal varieties.³⁰ Furthermore, the EPO follows a first-to-file practice of determining priority of inventorship.³¹ Moreover, the cost of procuring a European patent is much higher than obtaining the same patent in the United States.³² Another notable difference between the EPO and USPTO is that the EPO allows only one claim of each type in any given application (e.g., a method or apparatus), whereas the USPTO allows any number of claims or claim types, so long as the invention being claimed is unified across those claims (i.e., there is only one invention being claimed). This difference in the number of claims allowed may spur applicants to file multiple patent applications to protect an invention in Europe, whereas a single application may be able to include all of those claims in the United States.

Since the USPTO allows a broader range of patents at a lower cost than the EPO, patent protection is arguably stronger in the

(listing all contracting states to the 1977 European Patent Convention).

²⁸ *Id.*

²⁹ See EUROPEAN PATENT CONVENTION, art. 52, October 5, 1973, available at <http://www.european-patent-office.org/legal/epc/e/ar52.html> (excluding from patentability “schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers”). *But see* Kerem Kaya, *European Council Approves Software Patents*, WORLD SOCIALIST WEB SITE, July 9, 2004, <http://www.wsws.org/articles/2004/jul2004/pnts-j09.shtml> (describing a new EU proposal to make computer software patentable, and also pointing out that the EPO “has been granting software patents since 1998 in a violation of patent laws under which the EPO itself was established”).

³⁰ See EUROPEAN PATENT CONVENTION, *supra* note 29, art. 53, available at <http://www.european-patent-office.org/legal/epc/e/ar53.html> (excluding from patentability “plant or animal varieties or essentially biological processes for the production of plants or animals; this provision does not apply to microbiological processes or the products thereof”).

³¹ *Id.* art. 60 § 2, available at <http://www.european-patent-office.org/legal/epc/e/ar60.html> (giving the right to a European patent to the inventor with the earliest filing date).

³² See, e.g., J. Douglas Hawkins, *Importance and Access of International Patent Protection for the Independent Inventor*, 3 U. BALT. INTELL. PROP. L.J. 145, 150 (1995) (“A more recent study conducted by the European Patent Office estimated that filing a European Patent alone costs applicants over \$31,000.”). *But see* Pierce Atwood: Attorneys at Law, *supra* note 11 (claiming the cost of procuring a U.S. patent is only as high as \$15,000).

United States than in the EU. However, the quality of the EPO and USPTO's operating procedures should also factor into the analysis. It is therefore interesting to note that in fiscal year 2003 ("FY2003"), the EPO experienced total expenditures of €883 million (approximately \$1.08 billion) with revenues of €878 million (approximately \$1.07 billion),³³ whereas the USPTO experienced total patent-related expenditures of \$1.07 billion with patent-related revenues of \$1.00 billion.³⁴ By the end of FY2003, the EPO had a staff of 5,809,³⁵ whereas the USPTO had a staff of 5,081 dedicated to patents.³⁶ The USPTO, therefore, expended approximately \$211,000 per examiner in FY2003, whereas the EPO only expended approximately \$186,000. The \$25,000 more spent per patent examiner by the USPTO may imply a greater quality of patent examination, leading to higher quality patents.³⁷

1.4. Patent Activity in the United States Compared to the EU

Patenting activities in the EU from 1996 to 2003 have generally been quite different from those in the United States. The disparity is most likely a result of the differences in the markets for goods and services in the EU versus the United States, but at least some of the difference in activity should be attributed to the jurisdictional differences in patent law and practice, discussed above. Some of these differences—as obtained from the 2003 Trilateral Statistical Report produced jointly by the EPO, USPTO, and Japan Patent Office ("JPO")—are discussed below.

1.4.1. Patent procurement activities

From the years 1996 to 2003, the USPTO has consistently outpaced the EPO in terms of the number of utility patent applications filed (see Table 1 below), indicating a perceived strength of the U.S. patent system versus the European patent system. This perceived

³³ *European Patent Office, Japan Patent Office & United States Patent and Trademark Office, Trilateral Statistical Report 9-10* (2003 ed.) (on file with author) [hereinafter *Trilateral Statistical Report*].

³⁴ *United States Patent and Trademark Office, Results of Operations* (2003), available at http://www.uspto.gov/web/offices/com/annual/2003/040602_results_of_op.html.

³⁵ *Trilateral Statistical Report*, *supra* note 33, at 10.

³⁶ *Id.* at 19.

³⁷ Admittedly, the increased expenditures may be a result of increased administrative costs in the United States versus Europe.

strength is underscored by the fact that the number of patents originating in EU states (i.e., those with applicants residing within the EU) that are filed in the EPO are approximately equal to the number of EU-originating patents filed in the USPTO (i.e., most European patentees will file their applications in the USPTO as well as the EPO), whereas the number of patents originating in the United States that are filed in the USPTO greatly outnumber the same number that are filed in the EPO (i.e., most American patentees will not seek protection with a European patent).

TABLE 1. TOTAL UTILITY PATENT APPLICATIONS IN THE UNITED STATES AND THE EU BASED ON ORIGINATING JURISDICTION, FROM 1996-2003.³⁸

Office	Origin	1996	1997	1998	1999
EPO	EU	31,490	36,510	41,190	45,028
	U.S.	18,638	20,497	23,502	25,393
USPTO	EU	31,230	33,249	35,809	44,660
	U.S.	106,892	120,445	135,742	149,825
		2000	2001	2002	2003
EPO	EU	49,785	53,737	53,475	58,255
	U.S.	28,488	30,450	30,213	31,863
USPTO	EU	44,750	50,607	52,621	49,762
	U.S.	163,699	174,709	184,245	188,941

The disparity in strength of a U.S. patent versus that of an EU patent is further evidenced by the number of patents that are abandoned at the end of each year from issuance. In the United States, more than thirty-five percent of patents are kept alive for the entire twenty-year term.³⁹ In Europe, on the other hand, only about ten percent of patents are kept alive for their entire twenty-year term.⁴⁰ Furthermore, there is more of a sharp decline in patent maintenance in Europe versus the United States (see Figure 2, below). The lower level of patent maintenance in the EU versus the

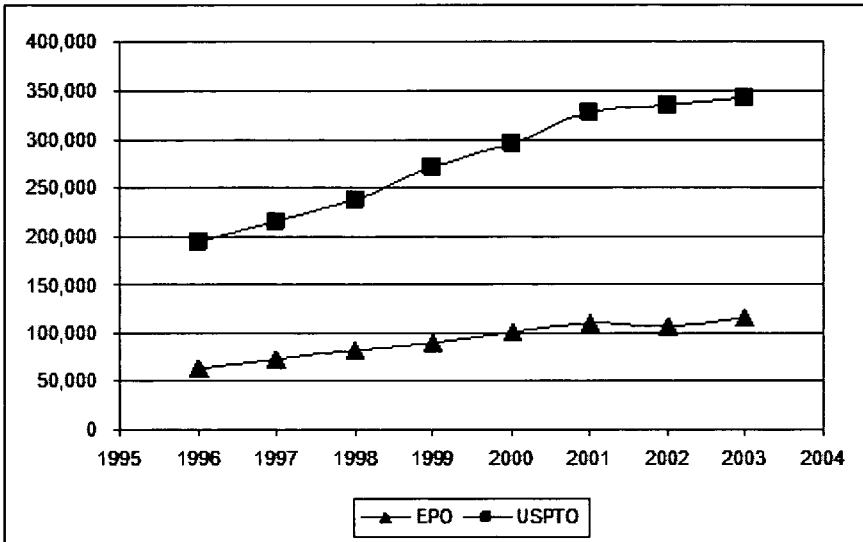
³⁸ *Trilateral Statistical Report*, *supra* note 33, at Statistical Annex.

³⁹ *Id.*

⁴⁰ *Id.*

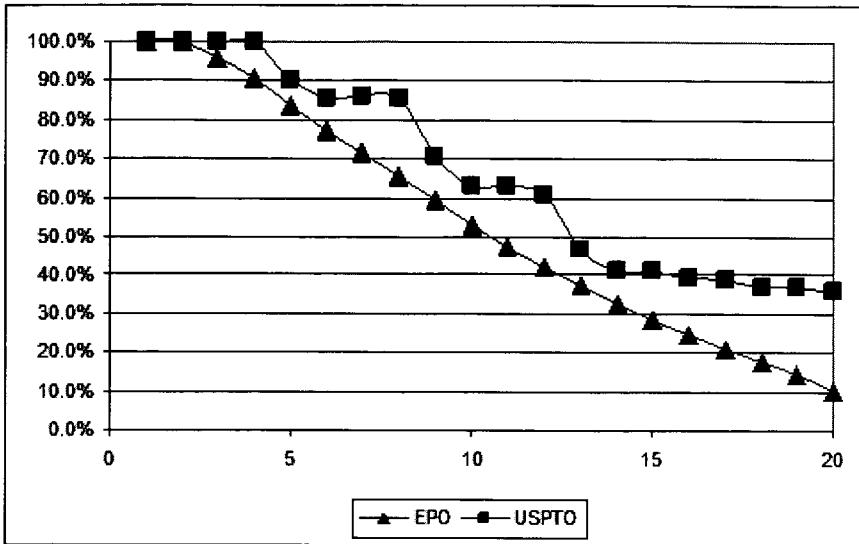
United States also implies that the value of a patent in the United States is greater than a patent in Europe; otherwise, patentees would not let their patents become abandoned.

FIGURE 1. TOTAL UTILITY PATENT FILINGS BY YEAR.⁴¹



⁴¹ *Id.*

FIGURE 2. PERCENTAGE OF PATENTS MAINTAINED AT THE END OF EACH PATENT YEAR.⁴²



1.4.2. Patent litigation activities

Given the disparity of patent filings in the EU versus the United States, one would expect a similar gap with respect to patent litigation in the two jurisdictions. Some studies indicate that patent litigation in the EU comprises roughly 600 cases filed per year;⁴³ certain other studies have shown that 462 patent cases were tried in Germany (The Federal Patent Court) from 1983 to 1997,⁴⁴ 129 in the Netherlands (the Hague Courts) from 1993 to 1997,⁴⁵ and only 61 in France from 1986 to 1997.⁴⁶

After running a search for patent cases in the LEXIS Federal

⁴² *Id.*

⁴³ See Joseph Straus, *Patent Litigation in Europe – A Glimmer of Hope? Present Status and Future Perspectives*, 2 WASH. U. J.L. & POL’Y 403, 408 (2000) (“A very rough, unofficial estimate by the EPO is that some 600 court actions are filed per year in the Contracting States that have in issue the validity or infringement of European patents.”)

⁴⁴ *Id.* at 407-08.

⁴⁵ *Id.* at 408.

⁴⁶ *Id.*

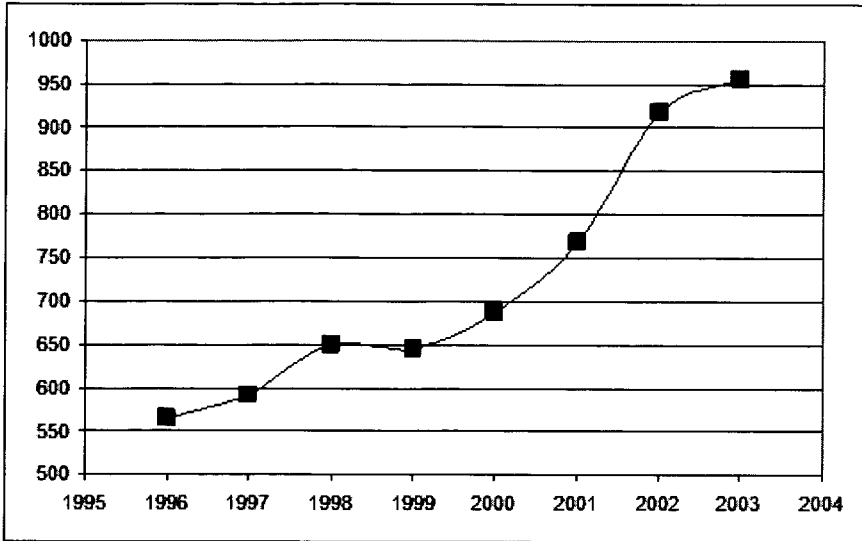
District Courts database, it was found that the United States clearly did trump the EU for the number of patent cases decided per year, which (for the purposes of this Comment) I will assume corresponds to the number filed per year. In particular, from 1983 to 1997, approximately 1,900 patent cases were decided in the United States⁴⁷ versus the 462 filed in Germany; from 1993 to 1997, approximately 700 patent cases were decided in the United States⁴⁸ versus the 129 filed in the Netherlands; and from 1986 to 1997, approximately 1,600 patent cases were decided in the United States⁴⁹ versus the 61 filed in France. In fact, the Federal District Courts of Delaware, alone, tried more patent cases from 1986 to 1997 than did the French courts (95 in the Delaware versus 61 in France). Data found on LEXIS for the number of patent cases decided in the U.S. Federal District Courts is present below in Figure 3 for the years 1996 to 2003.

⁴⁷ This data was obtained by a search on LEXIS performed on Jan. 22, 2006 for federal district court cases involving the assertion of patents. It was further found that the U.S. states that tried the most patent cases in this time period included California (204), Delaware (122), Illinois (323), New York (248), and Pennsylvania (131).

⁴⁸ This data was obtained by a search on LEXIS performed on Jan. 22, 2006 for federal district court cases involving the assertion of patents. It was further found that the U.S. states that tried the most patent cases in this time period included California (110), Delaware (39), Illinois (118), New York (85), and Pennsylvania (42).

⁴⁹ This data was obtained by a search on LEXIS performed on Jan. 22, 2006 for federal district court cases involving the assertion of patents. It was further found that the U.S. states that tried the most patent cases in this time period included California (193), Delaware (95), Illinois (278), New York (209), and Pennsylvania (108).

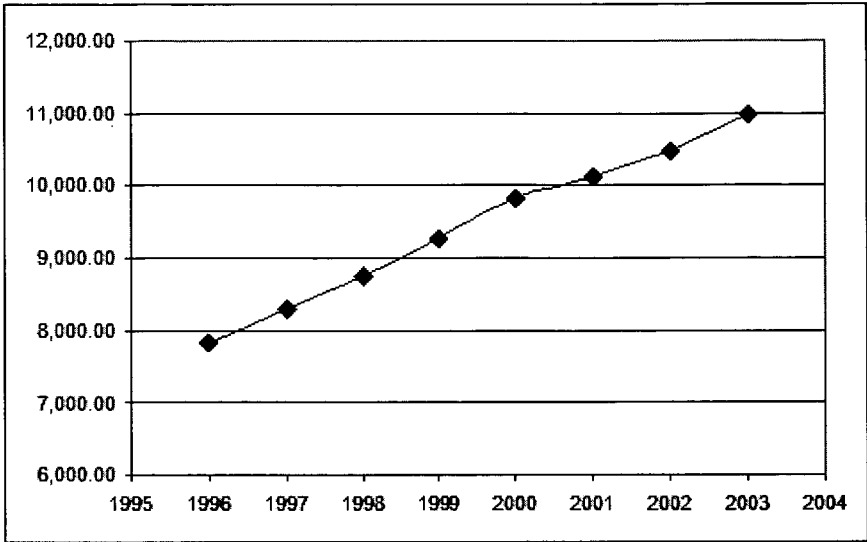
FIGURE 3. PATENT CASES DECIDED IN FEDERAL DISTRICT COURTS IN THE UNITED STATES FROM 1996 TO 2003.⁵⁰



1.5. *Economic Activity in the United States Compared to the EU*

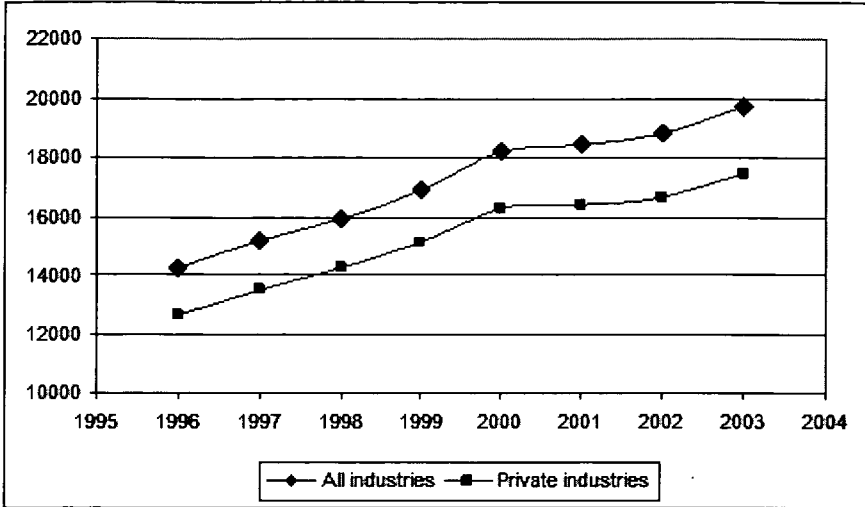
Given the rise in patent procurement and litigation in the United States from 1996 to 2003, one would expect to see a concomitant increase in the state of the national economy, as well as in the corporate profits of patent-intensive companies, such as high technology and semiconductor firms. Accordingly, plots of the U.S. Gross Domestic Product (“GDP”) and corporate profits by industry are presented (see Figures 4-7, below).

⁵⁰ This data was obtained by a search on LEXIS performed on Jan. 22, 2006 for federal district court cases involving the assertion of patents.

FIGURE 4. U.S. GDP (IN BILLIONS OF DOLLARS) FROM 1996 TO 2003.⁵¹

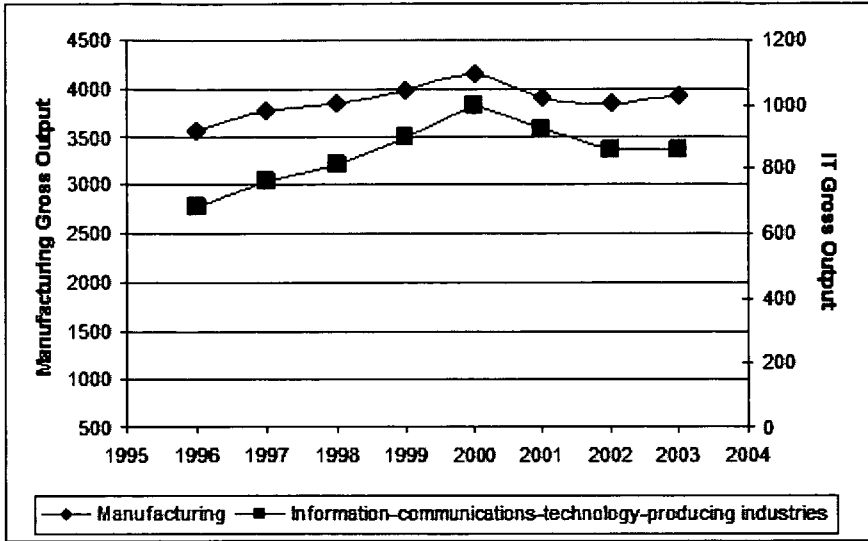
⁵¹ Data obtained from the U.S. DEP'T OF COM., BUREAU OF ECON. ANALYSIS, U.S. ECONOMIC ACCOUNTS (released Dec. 15, 2005), available at <http://www.bea.gov/bea/dn/home/gdp.htm>.

FIGURE 5. U.S. GROSS OUTPUT BY INDUSTRY (IN BILLIONS OF DOLLARS) FROM 1996 TO 2003.⁵²



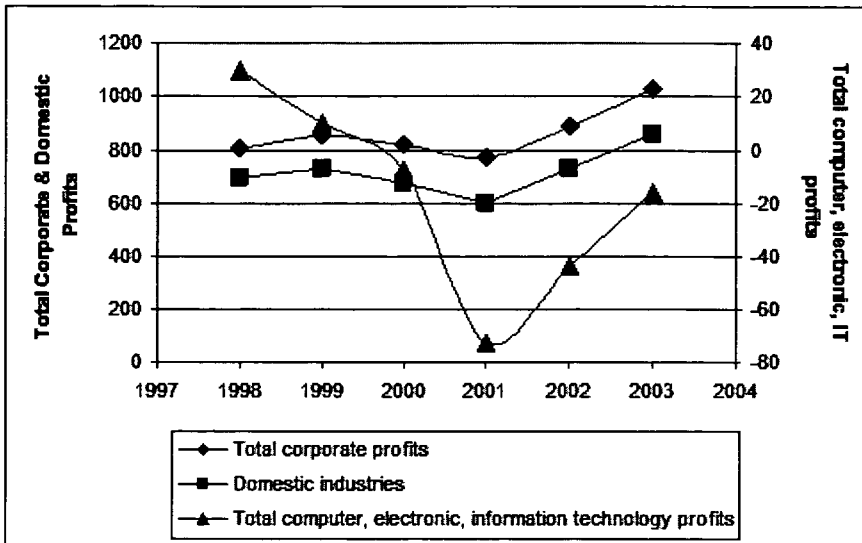
⁵² *Id.*

FIGURE 6. U.S. GROSS OUTPUT FOR MANUFACTURING AND IT-INTENSIVE INDUSTRY (IN BILLIONS OF DOLLARS) FROM 1996 TO 2003.⁵³



⁵³ *Id.*

FIGURE 7. U.S. TOTAL CORPORATE PROFITS FOR DOMESTIC INDUSTRIES AND TECH-INTENSIVE INDUSTRIES (IN BILLIONS OF DOLLARS) FROM 1996 TO 2003.⁵⁴



As shown in Figure 7, the profitability of the U.S. technology industry fell sharply from 1999 to 2001, at which point it began to recover.⁵⁵ Figures 4 through 6 also show an inflection point around 2001, when GDP and gross output for several industries took a hit, presumably due to the “dot com bust.”⁵⁶ A correlation exists with the patent litigation statistics illustrated in Figure 3, which shows a sharp rise in litigation from 2000 to 2002, as companies presumably sought to recoup losses from the “dot com bust” by litigating their patent portfolios.⁵⁷ Also, the sharp rise in patent litigation ob-

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ See, e.g., Michael Chait, *Is the Dot Com Bust Coming to an End?*, July 8, 2002, available at <http://www.internetnews.com/bus-news/article.php/1381331> (last visited Dec. 6, 2006) (describing the dot-com bust as well as the recovery in 2002); cf. Wikipedia, *Dot-com bubble*, available at http://en.wikipedia.org/wiki/Dot-com_bubble (last visited Dec. 6, 2006) (describing the events leading up to the development and bust of the dot com bubble).

⁵⁷ One would expect there to be a lag time between the fall in profitability and the decision to litigate more patents; since the data shown in Figure 3 is for patent cases decided (not filed), one would expect that there is no correlation to

served in Figure 3 appears to taper off between 2002 and 2003 in light of the recovery during that same time period, as observed in Figure 7.⁵⁸ Patent applications in the United States rose during the same period.⁵⁹

Similar data was not found for the EU, but suffice it to say that the litigation of patents in the EU during the observed time period was so sparse⁶⁰ that there would be very little statistical relevance between any rise or fall in litigation and the overall state of the economy or an industry. Furthermore, during the same period, European telecommunications companies suffered heavy losses due to exorbitant fees paid to obtain licenses for spectrum to operate 3G wireless networks.⁶¹ These telecommunications companies were primarily service providers,⁶² not product developers,⁶³ and thus likely did not even have adequate patent portfolios that could be litigated in order to recoup losses. Nevertheless, there are indications that at least some of these service providers looked to their patent portfolios as a source of possible income in order to recoup losses, such as those from the 3G spectrum auction bust for example.⁶⁴

the loss of profitability since presumably the decision to litigate came before such losses. However, the losses in profitability were only made public on the dates shown, and corporate managers would have known of such losses prior to the publication of such data. At least temporally, therefore, there is logically a correlation between the sharp drop in profitability in the technology industry and the concomitant rise in patent litigation.

⁵⁸ Furthermore, the number of patent cases decided in 2004 was found to be 956, further bolstering the tapering off of patent litigation in Figure 3.

⁵⁹ See *supra* Figure 1.

⁶⁰ See *supra* notes 43–46 and accompanying text.

⁶¹ See, e.g., *Beyond the Bubble*, ECONOMIST, Oct. 9, 2003 (describing the enormous failure of the European 3G auction, as companies paid exorbitant sums to obtain spectrum rights for an over-hyped technology).

⁶² Examples of service providers include British Telecom (“BT”), Vodafone, Deutsche Telekom, etc.

⁶³ Examples of product developers include Cisco Systems, Nokia, Ericsson, etc.

⁶⁴ For example, BT looked to its patent portfolio of 14,000 patents around the time of the telecoms bust in order to identify valuable patents that could be licensed or litigated. See, e.g., *Britain’s BT and Patents*, ECONOMIST, Jan. 17, 2002, available at http://www.economist.com/displaystory.cfm?story_id=E1_JQDJGP (describing BT’s push to identify value in its patent portfolio in order to develop a patent licensing strategy).

1.6. Preliminary Conclusions

A few conclusions may be drawn from the findings above: (1) patent procurement in the United States, as well as the EU, is on the rise, but the number of patent filings in the USPTO are greater than those filed in the EPO, without any indication that filings in the EPO are going to reach U.S. levels anytime in the near future;⁶⁵ (2) the disparity in patent filings in the United States versus the EU may be explained by, among other things,⁶⁶ the high cost of patenting in the EU,⁶⁷ as well as the narrower scope of patentable subject matter in the EU;⁶⁸ (3) patent litigation in the United States is on the rise and currently exceeds the number of cases filed in the EU,⁶⁹ though some commentators predict that the EU may be able to catch up;⁷⁰ and (4) the decision to litigate patents in the United States (and probably in Europe as well)⁷¹ is affected by the state of the national economy and, more closely, the corporate profits in patent-heavy sectors such as the technology sector.⁷²

The increases in patent procurement observed in conclusion 1 may be explained by noting that corporate strategy is increasingly focused on patent procurement and portfolio management.⁷³ Even

⁶⁵ See *supra* Figure 1.

⁶⁶ Though they were not researched, other factors affecting the disparity in patentability could conceivably include a smaller market for patented/patentable goods and services in the EU, a more negative public perception of patents and intellectual property rights in the EU versus the United States, and/or traditional modes of business in the EU, which may not have focused heavily on intellectual property rights as a source of income.

⁶⁷ See Hawkins, *supra* note 32.

⁶⁸ See *supra* notes 26–27 and accompanying text.

⁶⁹ See *supra* notes 43–50 and accompanying text.

⁷⁰ See, e.g., Straus, *supra* note 43, at 427–28 (explaining that there may be a “glimmer of hope” that the EU will form a unified court of patent appeals, similar to the U.S. Court of Appeals for the Federal Circuit, in order to “get an integrated system for litigating European patents”).

⁷¹ Cf. *Britain’s BT and Patents*, *supra* note 64 (indicating that BT has begun to identify key patents in its portfolio so that it may license them; there is also the implication of increased patent litigation).

⁷² See *supra* notes 51–59 and accompanying text; see also Huston, *supra* note 11.

⁷³ As recently explained in the Economist:

IBM alone now earns over \$1 billion annually from its intellectual-property portfolio. HP’s revenue from licensing has quadrupled in less than three years, to over \$200m this year. Microsoft is on course to file 3,000 patents this year, when in 1990 it received a mere five. Earlier this year it set up an entirely new corporate division to exchange its technology for cash or equity in start-up firms. Nokia has recently started li-

if a company has no intention of licensing or asserting its IP against competitors, it will nevertheless patent its inventions, when possible.⁷⁴ Furthermore, the increase in U.S. patent litigation may be at least partly explained by the increasingly high damages⁷⁵ awarded against patent infringers,⁷⁶ though some of these awards are reversed on appeal.⁷⁷

2. EFFECTS ON MANAGERIAL DECISION MAKING

While not within the scope of this Comment, a model may be developed to more specifically predict corporate managerial behavior with respect to patent portfolio management depending on the state of the national economy, or, more appropriately, the economic state of a particular industry.⁷⁸

Just as a downturn in the industry promotes increased patent litigation as a way to recoup losses,⁷⁹ an upturn in the market ar-

censing its technology to other firms and plans to do more. And some companies, such as ARM, a British firm that designs the blueprints for microchips used in wireless devices, do little other than create and sell intellectual property.

A Market for Ideas, ECONOMIST, Oct. 20, 2005, available at http://www.economist.com/displaystory.cfm?story_id=E1_VDTQJJD.

⁷⁴ *Id.* *A Market for Ideas* states further that:

Companies cannot simply turn their back on what is happening in intellectual property. Even if they refuse to play the game, they may be unwittingly infringing someone else's patents because there are so many more of them around. Unless firms have patents of their own to assert so they can reach a cross-licensing agreement (often with money changing hands too), they will be in trouble. Thus many companies are acquiring large numbers of patents for purely defensive reasons, for use only to keep others' patent threats at bay.

Id.

⁷⁵ For a list of intellectual property settlements, damages awarded, and licenses, see Gregory Aharonian, Patent/copyright infringement lawsuits/licensing awards, available at <http://www.patenting-art.com/economic/awards.htm> (last visited Dec. 6, 2006).

⁷⁶ See, e.g., *Polaroid Corp. v. Eastman Kodak Co.*, No. 76-1634-MA, 1991 U.S. Dist. LEXIS 344 (D. Mass. 1991) (awarding \$873,158,971); *NTP Inc. v. Research in Motion Ltd.*, 270 F. Supp. 2d 751 (E.D. Va. 2003) (issuing an order that eventually awarded NTP more than \$26m in damages); *Eolas Technologies. v. Microsoft Corp.*, No. 99 C 626, 2004 U.S. Dist. LEXIS 522 (N.D. Ill. 2004) (awarding \$520,562,280).

⁷⁷ *Eolas* and *NTP* were both sent back to their respective District Courts by the Federal Circuit.

⁷⁸ See *supra* Section 1.4.

⁷⁹ Cf. *Huston*, *supra* note 11 (finding corporate managerial dedication to pat-

guably promotes increased R&D expenditures with a concomitant increase in patent procurement.⁸⁰

2.1. *The Semiconductor Industry as a Case Study*

There are at least some industries, however, that do not seem to make rational decisions regarding their patent portfolios. For example, in the U.S. semiconductor industry, numerous surveys and studies have shown that semiconductor firms rely more on trade secrets than on their patent portfolios in order to protect their IP.⁸¹ Nevertheless, the same studies and surveys have shown that the semiconductor industry continues to procure patents at a fervent pace.⁸² Hall and Ziedonis have theorized that this apparent “patent paradox” may be explained, at least in part, by the proliferation of so-called “patent thickets” in the U.S. semiconductor industry.⁸³ They explain that the semiconductor industry produces so-called “cumulative”⁸⁴ technologies, where new advancements are built on the shoulders of the previous technologies. Accordingly, “semiconductor firms often require access to a ‘thicket’ of IP rights in order to advance the technology or to legally produce or sell their products.”⁸⁵ In order to obtain access to the “thicket,” semiconductor firms must amass their own thicket of patents to use as a bargaining chip for exchange.⁸⁶

The patent activities of semiconductor and other high-technology firms in the United States can be compared to those of the EU in order to determine whether there are any jurisdictional differences in patent portfolio management (i.e., litigation and procurement for the purposes of this paper) in the semiconductor industry. In particular, three of the top semiconductor firms in each

ent litigation even in bad economic times).

⁸⁰ Cf. KEITH E. MASKUS, *INTELLECTUAL PROPERTY RIGHTS IN THE GLOBAL ECONOMY* 140 (2000) (“[S]tronger patents would induce further R&D, patent applications, and patent exploitation.”).

⁸¹ See Bronwyn H. Hall & Rosemarie Ham Ziedonis, *The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979-1995*, 32 RAND J. ECON. 101, 101-25 (2001), available at http://www.rje.org/abstracts/abstracts/2001/rje_Spring'01_Hall.pdf (analyzing and explaining the “patent paradox” in the U.S. semiconductor industry).

⁸² *Id.*

⁸³ *Id.* at 102.

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ *Id.* at 125.

jurisdiction may serve as exemplary case studies. In Europe, these three semiconductor firms include Infineon Technologies, Philips Semiconductors, and STMicroelectronics.⁸⁷ In the United States, they are Micron, Texas Instruments, and Intel.⁸⁸

The three European firms hold a combined total of approximately 35,000 patents in Europe.⁸⁹ The U.S. firms hold a combined total of approximately 37,000 patents in the United States.⁹⁰ It should be noted that there are more U.S. semiconductor firms than European ones, however, and even the European Semiconductor Industry (a trade group) has identified certain weaknesses in their industry.⁹¹

Breaking down the total number of utility patents filed for inventions classified under either "Physics" or "Electricity," which presumably substantially covers the breadth of patents for the semiconductor industry, we see that the number of such applications filed in the USPTO from the years 1996 to 2003 also dominates, more than tripling the number filed in the EPO in 2003 (see Figure 8 below). The total number of "high-technology" patent filings in the USPTO is also greater than in the EPO, more than quadrupling the number of "high-technology" patents filed in the EPO in 2003 (see Figure 9 below).

Patent litigation statistics were not parsed by industry,⁹² but it

⁸⁷ See, e.g., Press Release, Philips Semiconductors, Top Three European Semiconductor Manufacturers Announce Initiative to Eliminate Lead from Semiconductor Products (July 12, 2001), available at http://www.semiconductors.philips.com/news/content/file_728.html (dubbing Infineon, Philips, and STM as the top three European semiconductor manufacturers). For more general information, see the company websites of Infineon (<http://www.infineon.com>), Philips (<http://www.semiconductors.philips.com>), and STM (<http://www.st.com>).

⁸⁸ These three companies were chosen as a random sampling of charter members of the Semiconductor Industry Association (http://www.sia-online.org/mem_list.cfm). For more general information, see the company websites of Intel (<http://www.intel.com>), Micron (<http://www.micron.com>), and Texas Instruments (<http://www.ti.com>).

⁸⁹ This data was obtained by running a patentee search on http://ep.espace.net.com/search97cgi/s97_cgi.exe?Action=FormGen&Template=ep/en/home.hts.

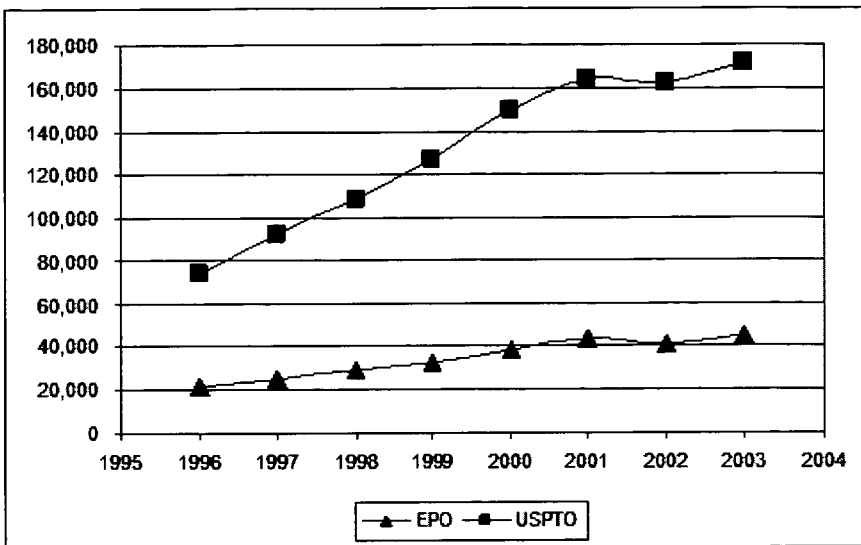
⁹⁰ This data was obtained by running a patentee search on <http://patft.uspto.gov/netahtml/PTO/search-adv.htm>.

⁹¹ See, e.g., The European Semiconductor Industry Association, The European Semiconductor Industry: 2005 Competitiveness Report 4, Executive Summary, available at http://www.eeca.org/pdf/final_comp_report-exec-summary.pdf (2005) (noting that "the EU lacks a dedicated sectoral approach to supporting [the semiconductor] industry").

⁹² In other words, the statistics presented in this Comment do not indicate the number of patent cases filed or decided by players in the semiconductor industry

would be reasonable to assume, based on the findings vis-à-vis patent procurement,⁹³ that there is more high-technology patent litigation in the United States than in the EU, given the much higher number of patent litigation cases in the United States.⁹⁴

FIGURE 8. "PHYSICS/ELECTRICITY" PATENT FILINGS BY YEAR.⁹⁵

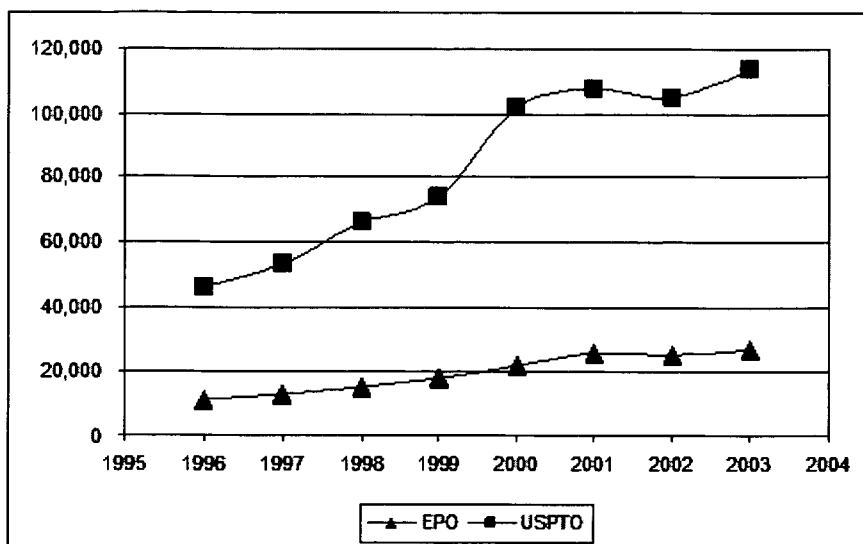


versus the information technologies industry versus the consumer electronics industry, for example.

⁹³ See *supra* notes 38–42 and accompanying text.

⁹⁴ See *supra* notes 43–50 and accompanying text.

⁹⁵ *Trilateral Statistical Report*, *supra* note 33.

FIGURE 9. "HIGH-TECHNOLOGY" PATENT FILINGS BY YEAR.⁹⁶

3. POSSIBLE EFFECTS OF GLOBALIZATION AND FINAL THOUGHTS

While not considered in this Comment, looking forward, it is clear that increased globalization will play a greater role in managerial decision-making and corporate strategies regarding patent activities.⁹⁷ Companies in the United States, for example, may seek monopolistic rents on their patents not just domestically, but abroad, by filing PCT applications on domestic IP in order to obtain patents in foreign jurisdictions. The collection of rents abroad would allow companies to recoup even more losses in economic downturns.⁹⁸ This would also serve, essentially, as a foreign subsidy to domestic public spending in R&D.⁹⁹

⁹⁶ *Id.*

⁹⁷ See, e.g., C. P. Rao & Jerome Witt, *The Interface between Global Sourcing and Marketing*, in *GLOBALIZATION AND ITS MANAGERIAL IMPLICATIONS* 98, 102 (C. P. Rao ed., 2001) (describing "global sourcing strategy" as "a partial corporate strategy aimed at the worldwide utilization of material resources").

⁹⁸ I.e., there would be a greater market of potential infringers.

⁹⁹ I.e., public spending on R&D will produce patents that may be asserted in foreign jurisdictions, thereby exogenously recouping costs. This also explains, at

Ultimately, however, the idea is that globalization will lead to harmonization of the patent laws across nations, inherently resulting in an increase in innovation and technological advancement on a global level. At such a time, the analysis undertaken in this Comment should shift to an observation of patent procurement and litigation vis-à-vis the global economy, rather than individual national economies. However, IP rights have traditionally been viewed as drivers of national economic wealth creation. In a globalized world having harmonized patent laws and a uniform economy, individual nations would have an incentive to provide certain quirks and wrinkles in patent protection to induce arbitrage by patentees in their favor. This view of the future can either advocate for or against patent policy harmonization.

The incentive to providing opportunities for IP arbitrage is also somewhat of a twist on the tragedy of the commons, as nations will always want to be at the forefront of innovation, but will have their hands tied by harmonized patent laws. Accordingly, it may be that nations with strong IP rights will not only choose to side against harmonization, but they may also opt to compete with each other for increasingly stronger IP rights.¹⁰⁰

Nations with strong IP rights¹⁰¹ would nevertheless have an incentive to harmonize amongst each other, so that their domestic R&D spending may be subsidized by similarly wealthy foreign nations who would otherwise use the technologies at no cost. This may precipitate the formation of even more tightly knit trade groups among the industrialized nations (who may accept patent harmonization within the group, but not globally), which would necessarily increase the inequality gap with third world countries. These are all issues left for future consideration.

least partly, the push for harmonization of patent laws across borders, making it easier to obtain protection in multiple jurisdictions.

¹⁰⁰ The competition will be within reason, of course, as it has been shown that “patent thickets” can actually discourage innovation. See, e.g., Rosemarie Ham Ziedonis, *Patent Litigation in the U.S. Semiconductor Industry*, in PATENTS IN THE KNOWLEDGE-BASED ECONOMY, 180, 209 (Wesley M. Cohen & Stephen A. Merrill eds., 2003) (discussing “patent thickets”).

¹⁰¹ Such nations may include the United States, European Union Member Nations, and Japan, for example.

4. TABLE OF FIGURES

FIGURE 1. TOTAL UTILITY PATENT FILINGS BY YEAR.....1088

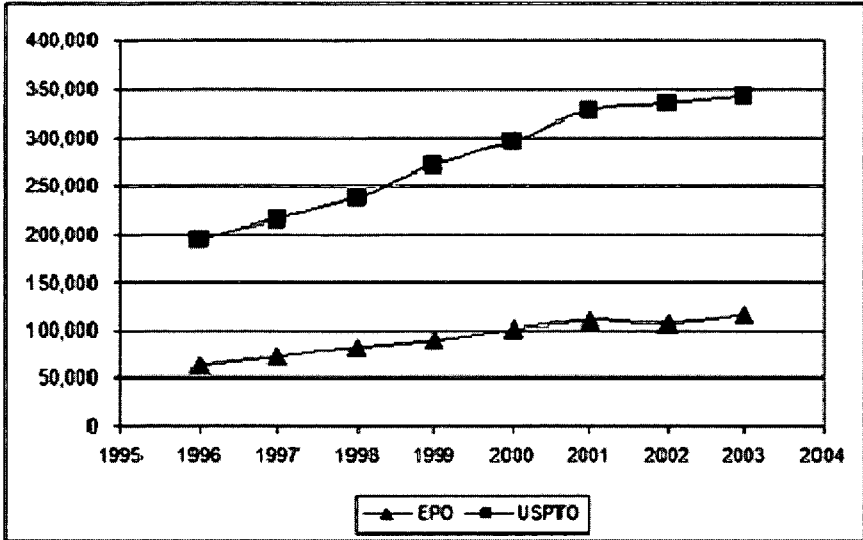


FIGURE 2. PERCENTAGE OF PATENTS MAINTAINED AT THE END OF EACH PATENT YEAR.....1089

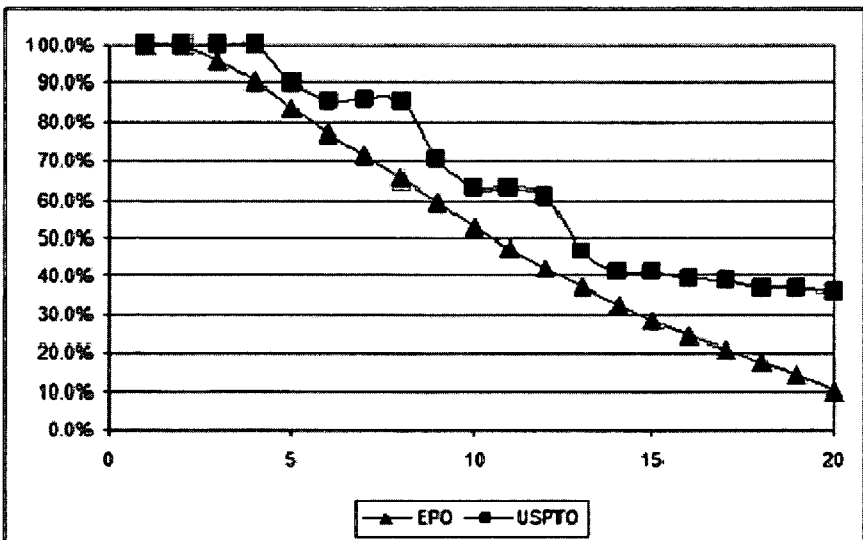


FIGURE 3. PATENT CASES DECIDED IN FEDERAL DISTRICT COURTS IN THE UNITED STATES FROM 1996 TO 2003.....1091

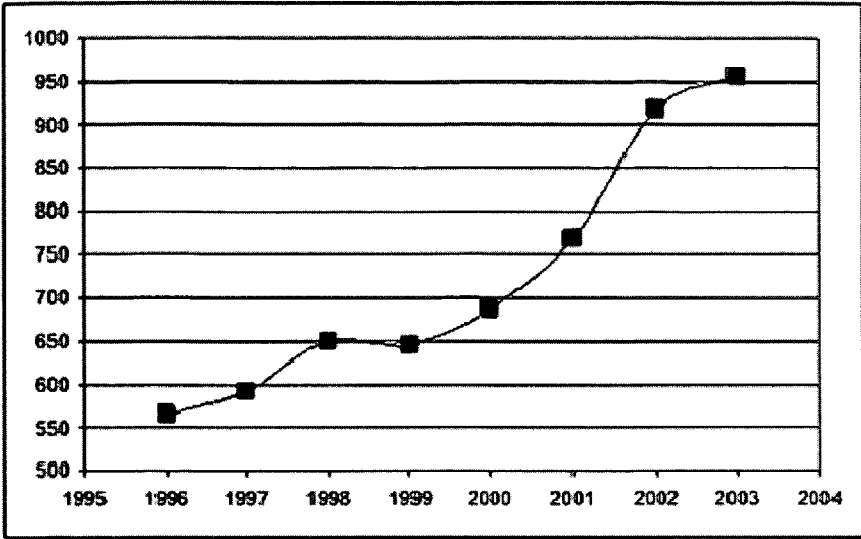


FIGURE 4. U.S. GDP (IN BILLIONS OF DOLLARS) FROM 1996 TO 2003.....1092

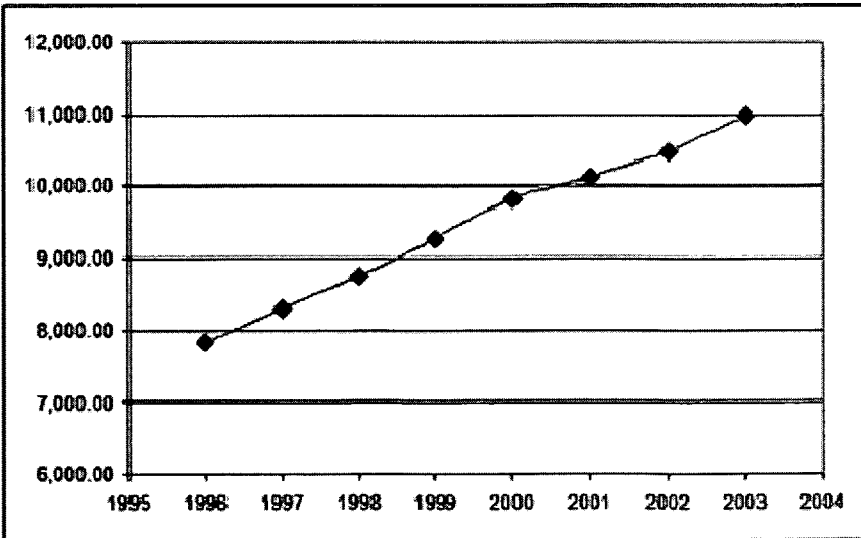


FIGURE 5. U.S. GROSS OUTPUT BY INDUSTRY (IN BILLIONS OF DOLLARS) FROM 1996 TO 2003.....1093

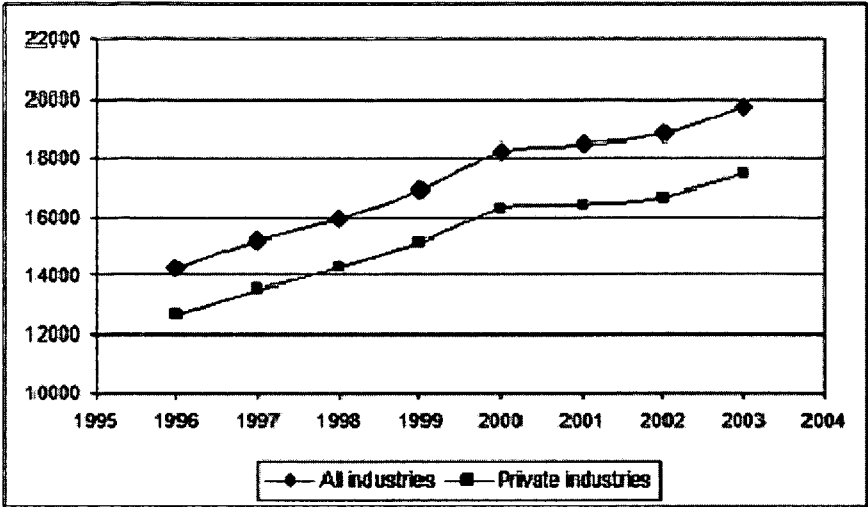


FIGURE 6. U.S. GROSS OUTPUT FOR MANUFACTURING AND IT-INTENSIVE INDUSTRY (IN BILLIONS OF DOLLARS) FROM 1996 TO 2003.....1094

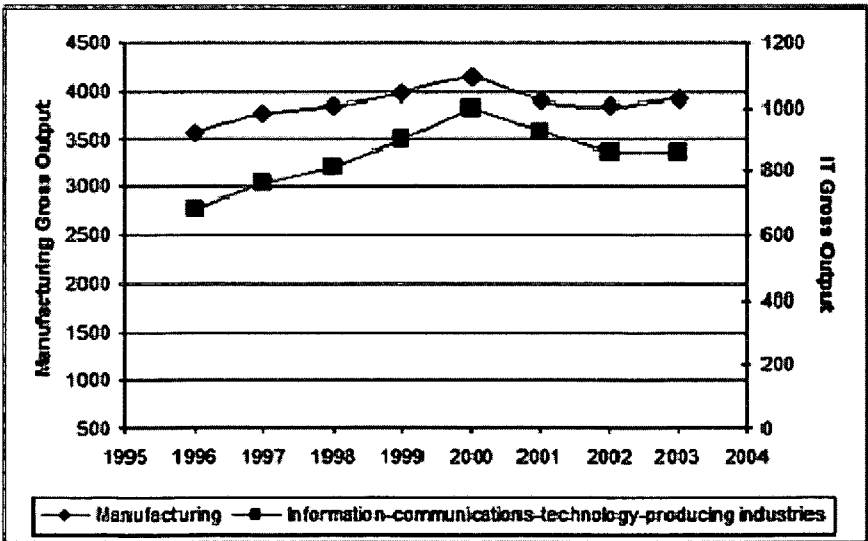


FIGURE 7. U.S. TOTAL CORPORATE PROFITS FOR DOMESTIC INDUSTRIES AND TECH-INTENSIVE INDUSTRIES (IN BILLIONS OF DOLLARS) FROM 1996 TO 2003.....1095

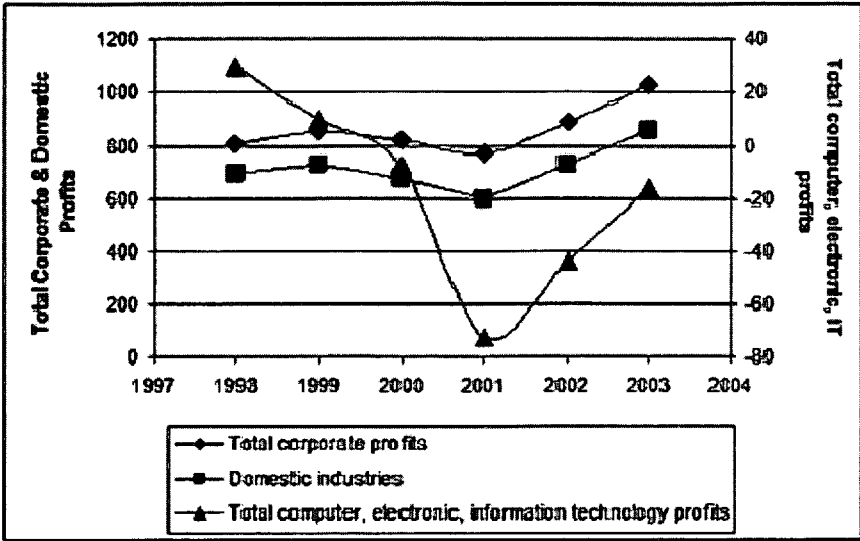


FIGURE 8. "PHYSICS/ELECTRICITY" PATENT FILINGS BY YEAR.....1101

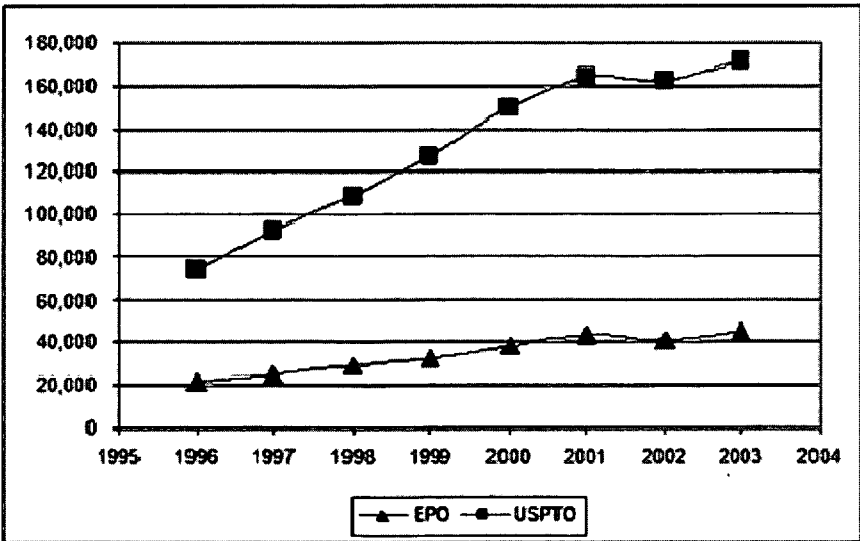


FIGURE 9. "HIGH-TECHNOLOGY" PATENT FILINGS BY YEAR.....1102

