

## DEVELOPING LEGAL SCENARIO AND IMPLEMENTATION OF PATENT LAWS IN DYNAMIC TECHNOLOGY-BASED SOCIETY

**Tilottma Pandey**

Research Scholar

School of Law

Manipal University Jaipur,

Dahmikalan ,Jaipur, Rajasthan

### Abstract

The thinking of reforming patent protection in most developing countries is a new concept. Though developed countries have efficiently utilized the profit of patent protection in cheering their technology- based economies, most developing countries are up till now in the initial light of appreciating its profits for economic growth and development.

There are many reasons why developing countries are concerned about approving the patent protection provided by the World Trade Organization Agreement on Trade- Related Aspects of Intellectual Property Rights (“TRIPS Agreement”). There is view that without implementing legal, economic, and political formation linked with free- trade systems, developing countries may not reap the economic benefits of patent protection. Despite this contention, this article states that reforming the domestic patent- protection systems of developing countries is the first step toward meaningful economic growth to reach with the global economic changes.

Though, there is fewer benefit from patent protection in least- developed countries, merely because the comparison of the potential benefits the cost of reforming or creating a new patent- protection system draws a different approach towards developing and least developed countries. For example, in Bangladesh, a more grave concern is to hack down unemployment and to provide education to about 124.8 million people, only 40.1% of whom are literate. The focus in this article is on developing countries that are on the edge of the status of developed countries, like China, India, and Brazil. It will discuss in detail the extent of benefits through stronger patent protection for such developing nations’ economies, as well as for other developing nations’ economies. This article express that through a stronger patent protection system developing countries can attract foreign direct investment (“FDI”); increase investments in research and development (“R&D”); encourage national scientists to invent new drugs and invest in their national economies, and improve the overall quality of health.

### INTRODUCTION PATENT LAW STRATEGIES AND POLICIES

A patent is a method of providing exclusive right to defend their invention by the authority and granted by sovereign state to an inventor or assignee for a limited period of time for the purpose of publicising the work or invention.

The law of patent characterize enthralling interface between science and law. Infringement of Patent is the commission of a forbidden act related to patented invention without consent of patentee or patent holder. Permission should be asked in the way of license. It is actually using or selling patent invention for commercial purpose. Patents are, in fundamental nature, government-sanctioned monopolies. They existed in England 18<sup>th</sup> century, and were granted by both colonial state governments and states under the Articles of Confederation. In Thomas Jefferson's words, they were proposed to make an incentive for "things which are worth to the public the embarrassment of an exclusive patent."

**Inventors** can be keep both, their work secretly and rely on trade secret protection or they can commercialize the work public at large. Secret commercialization is often an attractive option for innovators. As long as the needs for trade secrecy are met, a trade secret may be maintained indefinitely and competitors may be prevented from using the trade secret information to compete. Reverse engineering is recognizing by most of the states in a publicly sold product as beyond the protection of trade secret law. Thus, products that naturally reveal such secrets are hard to commercialize even as maintaining trade secrecy. Yet, technologies of tremendous value that can be commercialized not by providing manufactured goods that can be reverse-engineered. Like if an inventor creates a process or machine that causes cheaper to produce an existing product, it is probable to keep the ways of production as a trade secret while benefiting through the selling. On the other hand, Public commercialization is of better benefit to society because it gives a way others to grab knowledge from the invention and build upon it. Public exposure of invention, however, permanently surrenders the invention's trade secrets. Therefore, no other form of protection, competitors who learn the invention's secrets through disclosure could make use of them without paying out the time and money that the innovator exhausted to develop them. In financial terms, this would be term as pricing advantage to the competitor, as the competitor would not need to recover research and development costs. This ignores the incentive to innovate. This pressure should recognized by the Intellectual Property Legislature among private and public interests and give power to Authority to provide a substitute for trade secret protection.

### AN APPROACH FOR DEVELOPMENT OF PATENT PROTECTION

A development of any country depends on various factors, also economic growth. It is suggested in this paper that protection for intellectual property (and patents, in particular) is a major support of modern economic policy and "a catalyst for development." Patent protection would improve competitiveness in the world market and hasten up economic development for developing countries. Recent technological development is a significant tool for improving developing countries' competitiveness in the global market. Though, with the purpose of applying emerging technologies as a tool for economic development, developing countries have to boost the skills of their workforces. Developing countries can discover from developed countries about ideas and exercising programs to stimulate creativity in their scientists and researchers. Strengthen patent protection organizes scientists and researchers for developmental activities. They economic

benefits can be achieving by licensing their patented invention or by developing and promoting their patented products in market on their own.

Developing countries should hold on to the TRIPS Agreement as the instant possible to persuade investment inflows from foreign countries. Those developing countries who have clinch towards the TRIPS Agreement by reforming their patent-protection systems have experienced economic growth as a result of FDI; between 1988 and 1995, around \$425 billion worth of new factories, supplies, and equipment were invested in developing countries.<sup>(1)</sup> In developing countries, intellectual-property protection is a medium in social, cultural, and techno-economic development. Exposure is thought to advantage of society more than sustaining a trade secret, because that disclosure allows more people to utilize the information as a initiative for further innovation.<sup>(2)</sup>

**An Inventor** may maintain his invention secret and gather its benefits indefinitely. In return of its disclosure and the subsequent benefit to the community, the patent is granted. On the termination of [the patent], the knowledge of the invention inures to the people, who are thus enabled without restriction to practice it and profit by its use.<sup>(3)</sup>

From a commercial perspective, the critical features of patents are that

1. They work with new knowledge, as in material form in an innovative product or process, and
2. They grant (limited) monopoly rights to the inventor.

Novel knowledge that create potential to the production of new products and/or processes apparently carries huge economic value, other than it has kind that make it difficult for the market system to handle properly. Explicitly, knowledge is a standard public good.

### EVADING WASTEFUL INNOVATION EFFORTS BY PATENTS

The disclosure property of patents implies an essential and favourable effect of novelty of knowledge that it makes possible advance innovations and inventions. Inventions and innovations from vital research are often of this sort, at times opening up whole new areas of research. Patenting of such determining inventions can be socially beneficial. A trend can be made to the exercising of granting important claims on land where no invention has yet been made, to evade a wasteful mining of the view.

While patents in such cases have positive effects, it is also simple to perceive that broad, previously patents can negatively affect further research,<sup>(1)</sup> especially when the original invention has broader aspect. If the real inventor does not have a comparative research benefit or interest in practicing some research instructions, and licensing of the patented innovation to third parties is difficult (perhaps because of excessive transaction costs), patenting can have adverse effects on the flow of further innovations.

---

1. World Intellectual Prop. Org., Intellectual Property Profile of the Least Developed Countries 11 (2001)  
2. *Kewanee Oil Co.*, 416 U.S. at 494 (Marshall, J., concurring)  
3. *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 186–87 (1933)

### CUMULATIVE INNOVATIONS

Innovations are mainly relevant when it is a research tool, applied for basically in the R&D process for more innovations. Consider first the case of a fundamental innovation pursued by its improvement, later it can be accomplished by the same innovator. What is the effect of the extent of the protection in the diffusion of innovations over time? In this article this issue is focussed on the profit incentive for R&D when the second innovation is more beneficial than the first one (from social and private points of view) and when there is an information externality between innovators. The policy issue here is to decide how rigid the novelty requisition should be in order to safeguard the profit of innovators while encouraging disclosure of innovation. It is presumed that the reasons for granting a patent are to create an incentive to do research and to accelerate aggregate innovation through disclosure of innovations. The first reason calls for a strong novelty necessity, whereas the other reason is for a weak novelty necessity. Though, it is not always the matter that the first innovator is able to improve on her innovation or even to develop applications. So what is the suitable patent scope that provides enough incentive to the first and second innovators to carry out R&D investment? For assumption there is only one firm is capable of being the second innovator. In this way each innovator should get an incentive at the stage of the social benefit they creates. For the second innovator, there should be the extra benefit created by that improvement, whereas for the first innovator, it should be the sum of the first innovation benefit and the extra benefit. Certainly, the feasibility of the second innovation is due to the very being of the first one.

For this reason, the actual profit-sharing preparation between innovators is important. If profit sharing is in favour of the first innovator it will promote radical innovations, whereas if it is in favour of the second innovator it will support improvements. The main explanation for patents is to foster innovation in a market economy, but the patent structure is not the only technique for encouraging innovation. Other Intellectual Property Laws like Copyrights and trademarks, of course, are extra instruments for intellectual property right protection that typically apply in aspects where patents do not. Trade secrets, on the other hand, can apply to patentable innovations and can provide efficient protection against a different party's discovery by improper means (even though a trade secret proposes no protection from independent discovery or reverse engineering). Some biological innovations are also afforded *sui generis* protection through these ways where plant patents and plant variety protection certificates.

Furthermore, substitutes to patents comprise rewards or prizes, procurement contracts, and public production of new knowledge. With the payment system, the government specifies a fixed sum of money for a well-defined research aim and then awards this "prize" to the first firm to achieve the required result. Different information between researchers and the government can make it difficult to apply the reward mechanism specially, to be useful, the government must recognize about the probability of various research projects as well as be able to assess the demand for various potential innovations. But firms are likely to be better have knowledge than the government on such matters, and a distribute solution such as the patent system may be superior.

---

1. Langinier and Moschini

Not with the complement of intellectual property, human assets is of limited economic value because it is by its nature non-proprietary -human aptitude cannot be taken by and has no legal status. Excluding of human capital, intellectual property does not come into being under protection and cannot be developed. Intellectual property has become the most chief driver of economic development.

The combination of intellectual property and human capital is a well-built economic force in today's knowledge-based economy. From last many years the growth and administration of intellectual property has become a major concern of private enterprise, especially in the fast rising areas of technology and cultural industries. The "IAM" which is Intellectual Asset Management, has become a professional obedience instructed by business schools, and presented as a service by accounting, conferring with and law firms. In the private sector, complicated systems have been created for examining IP assets, including computer software and patented business methods. Big corporations worldwide and several universities have made expert offices responsible for IAM. Intellectual property has become broadly seemed as an main economic asset, the value of which can be improved by practical and strategic policies.

"There is an unlimited source of richness in knowledge, and those who have expectant and promoted the exchange of ideas and information were in the center of modern economic and social development", said Former President Ion Iliescu of Romania, a member of the WIPO Policy Advisory Commission (PAC). "Intellectual property represents the heart of commercial strategies as is proven by its increasing part of the fixed assets in the value of enterprises."<sup>(1)</sup> The National Knowledge and Intellectual Property Task Force of U.S.-based states : "In the knowledge age, a company's value is largely determined by its ability to convert individual and organization Knowledge into Net Worth in time to seize a new market opportunity. As product cycles shorten, and competitors reduce time to market, the competitive corporation must continuously validate and improve its processes to develop and commercialize new ideas. IP Management is the heart of this transformation process. It is a process that addresses the explosive growth of intangible assets and their impact on the company's strategic market position and shareholder value."<sup>(2)</sup>

New term for INTELLECTUAL PROPERTY i.e; economic asset in global market, and due to this reason a lot of countries are looking for practical information on how IP can be used to encourage economic growth. Like other types of property, it can be developed, owned and managed so that it creates an economic return. Proactive policies can be look after by enterprises and by nations to sustain the development and management of IP assets. In May, 2001 at the Seventh Consultation Meeting among the World Intellectual Property Organization (WIPO) and the Association of South East Asian Nations (ASEAN), WIPO was pleaded to perform a study on how intellectual property can contribute to the Association's purpose of encouraging economic growth and development.

- 
1. WIPO Policy Advisory Commission held in Sinaia, Romania, on November 14, 2003
  2. [http://www.km-iptask.org/competencies\\_standards.html](http://www.km-iptask.org/competencies_standards.html)

This study has been completed and describes IP asset management initiatives underway in the ASEAN countries as well as recommending further IP asset strategies. IP assets inspire economic growth in numerous ways. One of the most important ways is that companies can increase royalty revenues from licensing their IP assets to other parties. Developing countries are progressively more seeing the potential in original development and gathering up of IP assets in key areas that can help businesses participate in technology transfer agreements, catch the attention of joint ventures and expand into new local markets. IP assets increase corporate valuation in merger and acquisition contexts. On merger of companies, IP assets such as patents, trademarks and copyrights add appreciability to actual and professed value.

On proper management of IP assets it motivate and help in generating revenues from product sales and licensing royalties; stimulate research and development (R&D) based industries and create employment; attract high-value foreign direct investment (FDI) and joint ventures; increase high value exports help to retain and motivate technical personnel; support educational and research institutions; enhance corporate valuation; promote funding for R&D, which provides and enhances needed technologies and products; provide bargaining power in technology transfer negotiations; help to gain access to goods and technologies through licensing agreements.

### **IP ASSET DEVELOPMENT AND MANAGEMENT**

IP asset advancement and management has four key components, each of which is divided into sub-categories consisting of policies, practices and techniques. All of these mechanisms are interconnected so IP assets must be seen in the context of a total system involving government policies, infrastructure, education, funding, technology and other elements.

Many countries are in the procedure of establishing IP and technology development plans with well-known phases, objectives, conducts and deliverables. Those plans concentrated on education and funding, recognize priority areas for research, human resource development needs, and the likely products for research initiatives. Sometimes they relay to an exacting field or technological sector consequent to public priorities or needs.

French-speaking nations of Africa in September 2002, in the leadership of OAPI, also approved in Libreville, Gabon, a tactical plan for IP development in relationship with an proposal to strengthen traditional medicine. The countries which have developed IP-related strategic plans include Australia, Canada, China, Czech Republic, Denmark, Ethiopia, Hungary, South Africa, Japan, Philippines, Romania and United Kingdom.

### **DEVELOPMENT OF TECHNOLOGY IN DIFFERENT FIELD COMPUTER TECHNOLOGY**

Computer technology plays a more important role in modern society. Computers are the electronic machines by a capability to store and/or to process data are called "hardware." The improvement of hardware is surprising: computers are more effective and computer technology involves in more areas of life, from technological environments and offices (their initial stronghold), to routine surroundings such as household appliances, cars watches and similar products.

It cannot be operated by without instructions. These instructions (programs) may be surrounded into the hardware (the computer itself), like ROMs (Read Only Memory, circuits where digital

information can be gained), although most often these hardware are created, reproduced and distributed in media which are separate from the computer hardware. Typically, It is essential, that commercially precious programs are not denied protection because of excessively high demands concerning originality in the expression of the programs. The protection of computer programs as writings involve, furthermore, that the rights relating to copyright protection also apply to such programs. Particularly there should be applicability of the right of reproduction, the right of communication and the right of distribution of copies to the public.

The very essential issue relating with the right of reproduction in copyright laws is the question of in which cases it is justified to permit reproduction without the approval of the right-owner. Article 9(2) of the Berne Convention says the international norm which is applicable. According to this provision, national laws may permit reproduction of literary and artistic works in certain special cases, provided that such reproduction does not clashes with a normal exploitation of the work and does not irrationally prejudice the legitimate interests of the author.

### **BIOTECHNOLOGY**

In field of Biotechnology the technologies are growing importance. Inventions under Biotechnology may have a very important effect on our future, especially in the field of medicine, agriculture, food, energy and protection of the environment. This technology is more concerned in living organisms, such as plants, seeds, animals, and microorganisms, as well as biological material, like enzymes, proteins and plasmids. The Biotechnological invention comes under three divisions: processes for the creating or modification of living organisms and biological material, the results of such processes, and the uses of such results.

Biotechnology is one of the oldest technologies. The production of wine or beer includes processes by means of living organisms, and such processes have been recognized for a long time. Similarly, the selective breeding of plants and animals has an evenly long history. In other recent times, scientists have developed biological processes to adapt the genetic composition of living organisms (genetic engineering). Through these microorganisms the patent over this created the landmark decision by the United States Supreme Court, in which modified microorganisms were known as patentable subject matter. The Court noted that the laws of nature, physical phenomena and abstract ideas were not patentable. The claimed invention, though, was not directed to an active natural phenomenon but to new bacteria with noticeably different features from any found in nature. The invention in result of formed the inventor's ingenuity and effort. The statutory subject defined by The United States Congress in this matter (any new article of produce or composition of matter) broadly to "include anything under the sun that is made by man." Genetic engineering processes are too used in the alteration of microorganisms and plants for the production of new medicines. Biotechnology is usual to lead to main advancement in medicine which may be effective in combating diseases such as cancer and AIDS.

It may also direct to new chances for obtaining food and energy, and may provide solutions to the problems of pollution of the environment. Now, biotechnology apprehends the application of cellular and molecular biology to human needs and the use of cells and biological molecules to solve problems or make useful products. It contains scientific and industrial disciplines directed to considerate and operates living or biologically active material at the

molecular level. Frequently it refers to recombinant deoxyribonucleic acid (DNA) techniques and analysis of genetic information.

In recent times, however, there has been an development of the conditions in which these development aims are pursued. The various challenges of the new century call for new approaches. One such test is in information technology, notably in the worldwide spread of the use of the Internet, and all such issues it raises in copyright and related rights, as well as in fair practice in industrial property, most urgently in the application of domain names. One more challenge is in the field of biotechnology, which has seen important breakthroughs in genetic engineering, raising the questions that are not only biological and technical, but also human and ethical.

The use of traditional knowledge and genetic resources is also developing in ways that mainly affect developing countries: it should bring rewards to the societies that produce it as well as to the users. Intellectual property in itself has always been an essential part of general economic, social and cultural development worldwide, but these new challenges underline all the more how globally interconnected national and regional intellectual property systems have become. New approaches to meet the challenges have become respectively global, with determined action at the national, regional and international levels to enable developing countries to contribute in and benefit from technological advances.

The structure of international legislative and administrative aid to developing countries has been strengthened by the Agreement on Trade-Related Aspects of Intellectual Property Rights (“TRIPS”) administered by the World Trade Organization (WTO) in cooperation with WIPO. Developing countries as member States of WTO were known to different periods of time to adapt their intellectual property systems before being obliged to apply the TRIPS Agreement.

### **PATENTS AND PATENT INFORMATION**

- Reasonable and modernized patent systems, by giving that acknowledgment and substantive benefits to the inventors consists an incentive for inventiveness and innovative activity. It also creates a helpful climate for the transfer of technology by way of the security it offers for the patentee.
- Patent laws needs that an application for a patent for invention explains the invention with such clarity and completeness of all the technical details that anyone having common skill in the art should, by merely reading the description, be able to carry out the invention, and that granted patents for invention be published. In other words, at the latest when the patent for invention is granted, the invention will be “disclosed,” that is, its essence and mode of exploitation will be brought to the knowledge of anyone who wishes to know.
- The utilization of information available through this disclosure avoids wasteful repetition of effort and the multiplication of costs that research aimed at finding solutions to technical problems can involve; it acts as an inspiration or catalyst for further inventions, and this contributes to the advance of science and technology.

Inventiveness and creativity are quality of which have preferred the differentiation of mankind in the way of evolution from all other living species. The ability to put these kinds to productive use continues to be of essence within the social and economic structures of human society. Undoubtedly, the survival of any enterprise, organization, or even nation, may be said to be based on essentially on its capacity to keep pace with development and progress.



One of the most used general processes of economic progress (for a country or for an individual enterprise) is productivity, i.e. output per unit of input. The primary significance of enhanced productivity is to assist economic growth. If less input is necessary to make the same amount of output, the resources which are liberated by the use of a more well-organized process may be put to other productive uses, therefore allowing overall extension of output and economic growth to occur. One of the significant elements in the sound management of a science and technology policy based, *inter alia*, on encouraging invention and innovation is, unquestionably, the patent system.

The tasks of governments towards their inventors do not end with laws and treaties securing substantive protection of inventions. Their management must be effective and not over-expensive, in order to avoid pointless obstacles between an inventor and his legal rights. Certain countries have recognized special systems or structures to help individual inventors, small enterprises and non-profit-making organizations in attaining protection for their inventions and their effective management (for example, the payment in a mixture of kinds of fee, free consultancy services, etc.).

There are two basic attributes for pure public goods. One, they are non-rival in utilization, in sense that a person's consumption of a public good does not affect the quantity of it that is available for others. And the other is, they are non-excludable, which is it is impossible to stop individuals from exploiting the public good once it is available. Like, a pure public good is national defence. Clearly that, missing of intellectual property rights, most discoveries and inventions would exhibit public good attributes. The problems that a competitive system has with public goods are voluntarily evident. An inventor may accept all the cost of an innovation, but everyone profit (possibly to different degrees) from a discovery, and thus everyone has an incentive to free ride on the innovative efforts of others. The intrinsic externalities linked with this group of public goods create a market failure: a competitive market system may be likely to give an inefficiently low level of innovations. Intellectual property rights in common, and patents in particular, deal with this problem by attacking the non-appropriability of knowledge that lies at the heart of this market failure, particularly for endowing innovators.

A few provisions enclosed in financial or tax laws creating constructive conditions for inventors and inventive activity could be summarized as follows:

- Abridged taxes in aspect of income stemming from licensed patents and know-how;
- Abridge fees for attainment and continuation of industrial property rights by individual inventors;
- Special credits or loans or subsidies;
- Allowance for development of definite inventions and innovations;
- Potential for concluding governmentally or publicly financed "research contracts."

In a growing number of countries, specialize governmental institutions have been created to promote inventive activity and also to promote the development, utilization and to some extent the commercialization of local inventions, by providing the inventor with the relevant support. In few countries individual inventors may get support and their inventions may be tested in government-owned or government-financed research and test laboratories and institutions. Usually it is prepared on a non-profit-making basis and in some cases repayment of the expenses is required if the invention has been successful on the market.

In some countries such moral awards and festivities have been established by governmental acts. Extra important supports to inventors are exhibitions of inventions in that they highlight the inventions and assist the establishment of contacts with industry. In numerous countries, government agencies as well as in some cases the industrial property administrations manage or participate in the organization of such promotion activities. Education is an important factor in that process. In several countries the support and promotion for and encouragement of inventive activity surrounded by young people enjoys increasing attention. With a view to creating better opportunities for advancement of those talents as early as possible, a number of countries organizes special exhibitions and contests for inventions made by school children, students and young people in the society.

The limitations put forward to continue efforts are essential to look up for the workings of the patent system. A rock-solid understanding of its complex (and sometime subtle) economic implications, which author has tried to have another look at here, and should prove useful in this endeavour. Development is a continuing procedure including the new rules and regulations of the TRIPS Agreement into the national patent systems of developing countries could be the initial step toward reforming patent protection systems.

### REFERENCE

- D., R. Gilbert, J. Stiglitz, and J. Tirole. 1983. "Preemptive, Leapfrogging and Competition in Patent Race." *European Economic Review* 22: 3-31.
- Gallini, N. 1992. "Patent Policy and Costly Imitation." *RAND Journal of Economics* 23: 52-63.
- Indian Patent Act, 1970
- B.l Wadhwa Law relating to ipr;; fifth Edition 2012; universal law publications
- Amy. L.Landers; Understanding Patent law, second edition, LexisNexis, 2012
- (U.S. specific citation) "[F]or a court to find infringement, the plaintiff must show the presence of every element or its substantial equivalent in the accused device." *Wolverine World Wide, Inc. v. Nike, Inc.*, 38 F.3d 1192, 1199 (Fed. Cir. 1994)
- 35 U.S.C. § 271 Infringement of patent
- *Nordberg Mfg. Co. v. Jackson Vibrators, Inc.*
- Pradip K. Sahu and Shannon Mrksich, Ph.D. The Hatch-Waxman Act: When Is Research Exempt from Patent Infringement? ABA-IPL Newsletter 22(4) Summer 2004
- Lisa M. Tittmore, The Controversy Over Ongoing Royalty Awards In the Evolving Landscape of Remedies for Patent
- (U.S. specific citation) "[F]or a court to find infringement, the plaintiff must show the presence of every element or its substantial equivalent in the accused device." *Wolverine World Wide, Inc. v. Nike, Inc.*, 38 F.3d 1192, 1199 (Fed. Cir. 1994)
- 35 U.S.C. § 271 Infringement of patent
- 5-17 Chisum on Patents § 17.01
- *Nordberg Mfg. Co. v. Jackson Vibrators, Inc.* (1967)
- 5-17 Chisum on Patents § 17.04
- Pradip K. Sahu and Shannon Mrksich, Ph.D. The Hatch-Waxman Act: When Is Research Exempt from Patent Infringement? ABA-IPL Newsletter 22(4) Summer 2004

- 547 US 388 (2006)
- Barton, J.H. 1998. “Acquiring Protection for Improved Germplasm and Inbred Lines.” In *Intellectual Property Rights in Agricultural Biotechnology*. Edited by F.H. Erbisch and K.M. Mareida. Oxon, UK:CAB International.
- Barzel, Y. 1989. *Economic Analysis of Property Rights*, 2nd edition. Cambridge, UK: Cambridge University Press.
- Chang, H. 1995. “Patent Scope, Antitrust Policy and Cumulative Innovation.” *RAND Journal of Economics* 26: 34-57.
- Cornelli, F., and M. Schankerman. 1999. “Patent Renewals and R&D Incentives.” *RAND Journal of Economics* 30(2): 197-213.