

HAVE INTELLECTUAL PROPERTY RIGHTS FAILED TO ACHIEVE THE SOCIO - ECONOMIC EQUILIBRIUM?

Subhadip Sarkar*

Abstract

*Due to the advent of the knowledge and data-driven economy, intellectual property rights (**IPRs**) have become important and essential components of economic development of any country. IPRs provide the creator and owner of the intellectual property (**IP**) exclusive and limited monopolistic rights, thereby generating higher returns on investments for the innovator. However, it may not be necessarily true that strong and aggressive IPR systems and approaches, backed up by stringent legal frameworks around IP processes nurture innovation for the benefit of the common public and create stronger socio-economic development of a country. Therefore, it can be argued that there is a need to re-define the legal systems regulating IPRs to enable the socio-economic equilibrium of IP, and to bring tangible impact created by IP to the development of economy.*

Keywords: economic equilibrium, IPR, Intellectual Property, Public Policy, Socio Economic Impact, Knowledge dissemination.

DOI: <https://doi.org/10.61238/ijipl.2023v1306>

* Subhadip Sarkar is a Vice President – Legal and Corporate Affairs at Cognizant Technology Solutions and manages global Intellectual Property, Technology Licensing, Legal Operations, and Commercial Contracting. He is responsible for establishing and driving the IP and technology licensing strategies and implementing various IP practices across the Company. Subhadip has extensive work experience in the field of technology, IP and Legal & Corporate Affairs. He speaks frequently at several industry forums, conferences/workshops, and has to his credit several papers and articles/book chapters in national and international journals/conference / books, including a granted patent. He has been also recipient of various awards in National and International forums.

INTRODUCTION AND BACKGROUND

The study of socio-economic dynamics of IPRs sounds quite fascinating and exciting. IPR provides the creator and owner of the IP exclusive and monopolistic rights, thereby generating higher returns on investments.¹ However, the real value of IP to the new society can come only when IPs are managed effectively through appropriate and structured economic and public policies, procedures, judiciaries and enforcement models, and a highly efficient governance programme.² A number of renowned economists, including Joseph Stiglitz believe that the differences between developed and developing countries are not only resource gaps, but also the gaps in knowledge and information.³ Consequently, the success of economic development is to reduce this gap.

As stressed by Keith Maskus, the issue is complex, the effectiveness of IPRs in development and growth, depends on the circumstances of each country.⁴ The effects on economic growth and technological progress are positive only if they are structured in such a way as to promote competition.⁵

The investments associated with the creation of IP are costs that relate to advanced R&D, marketing, legal and associated costs and expenses related to preservation, protection and enforcement of IP,

¹ Stanley Besen & Leo Raskind, 'An Introduction to the Law and Economics of Intellectual Property' 5(1) *The Journal of Economic Perspectives* (1991) 3–27.

² S. Bhaduri *et al*, 'Politico-Historical Contingencies, Intellectual Property Rights, and Economic Performance Across Countries: A Simultaneous Equation System Perspective' 18 *The Journal of World Intellectual Property* (2015).

³ Joseph E. Stiglitz, 'Economic Foundations of Intellectual Property Rights' 57 *Duke Law Journal* (2008) 1693.

⁴ Livia Ilie, 'Intellectual Property Rights: An Economic Approach' (21st International Economic Conference, Romania, May 2014).

⁵ Keith E. Maskus, 'Intellectual Property Rights and Economic Development' 32(3) *Case Western Reserve Journal of International Law* (2000).

maintenance of IP, so on and so forth.⁶ At the same time, having IP creates the ability to charge premiums to its users, thereby not only protecting the Ips for the future and getting the limited exclusive rights, but also generating more income and profits for the inventor.⁷

This in turn enables companies and individuals to invest further in R&D and develop more advanced products and services. As the cycle perpetuates, higher returns on investments are generated. This process makes good sense because inventors would need incentive to create good and valuable IPs and therefore, having a strong IPR ecosystem definitely enables these financial goals. The creation of valuable IPs is a time-exhaustive process and requires high investments in R&D and other areas. As widely recognised, creating IP is not only expensive but the administrative hassles, time and complexity in IPR laws in different countries. Consequently, it becomes a complicated process which involves engaging experts on IPR to create documentations, protect and commercialize IP. Hence, inventors, innovators, and corporations need a very good reward mechanism and process so that they can continue to invest and create more IPs for the nation. The limited exclusive and monopoly rights possibly provide that incentive to the innovators. This is how a nation becomes innovative, powerful and more progressive.⁸ Thus, this cyclic process of IP generation, its protection, monopoly rights, and commercialization creates rewards and motivation for the IP creators.

As rightly mentioned by Joseph E. Stiglitz, “the intellectual property regime is part of society’s innovation system, and its intent is to provide incentives to innovate by allowing innovators to restrict the use of the

⁶ C. May and S. Sell, *Intellectual Property Rights: A Critical History* (Lynne Rienner Publishers 2005).

⁷ Stiglitz (n 3).

⁸ Carsten Fink and Keith E. Maskus, *Intellectual Property and Development: Lessons From Recent Economic Research* (Washington, D.C.: World Bank and Oxford University Press, 2005).

knowledge they produce by allowing the imposition of charges on the use of that knowledge, thereby obtaining a return on their investment.”⁹ However, it is also argued that the conventional IP system also leads to exploitation. Zakir Thomas in his article wrote that Martin Shkreli, the Chief Executive of Turing Pharmaceuticals was the “most hated man in America”, and his infamy was a direct reaction to the rise in the price of Daraprim, a generic drug originally developed in the 1950s, by 5000%.¹⁰

However, there are a few pertinent questions that require some deep thinking and intrinsic analysis, such as:

- 1) How does IP benefit the people and society and create any economic development of a nation?
- 2) Does IP create a socio-economic equilibrium and impact in society?
- 3) What are the metrics and value index to measure the success and can we think of alternative models to break this monopoly chain, or
- 4) Can we have a hybrid model?

The above questions do not comprise an exhaustive list of queries or issues in hand to discuss. There are more of such fundamental questions. The key, however, is to draw a fine balance and trade-off between the protection of IP and the dissemination of knowledge for the benefit of society.

Notably, historically, the alliance between trade and intellectual property is a contemporary beast. The significance of the onset of

⁹ Stiglitz (n 3).

¹⁰ Zakir Thomas & Martin Shkreli, ‘The Man of the (Pharma) Year 2015’ (*SpicyIP*, 15 January 2016) <<http://spicyip.com/2016/01/guest-post-martin-shkreli-the-man-of-the-pharma-year-2015.html>> accessed May 4 2023.

COVID represents the convergence of the trade regime's disadvantages with that of the patent regime's failings, begging, nay, forcing us to examine the ill-fated historic and yet contemporary alliance of trade and intellectual property rights. In that, contemporary IP laws are independently embroiled in a struggle to define the limits of the involved exclusivities, especially in the context of addressing the system's ability to deliver its purported objective.⁶

The paper aims in coming out with some recommendations to address the above issues. The paper is divided into four broad sections. The first section generally talks about the advantages of IP for any economy and why IPR systems are important for a country. The second section talks about the challenges faced by a strong IPR regime and how the impact of IPRs and innovation fails to significantly impact the general public.

The third section will provide the readers with a suggestive framework advocating for a hybrid solution, and approaches that provide a window of opportunity for a fine balance to be struck between a strong IP regime and a culture of open innovation, through the intervention of public policy and governance. The final section depicts a Socio-Economic Value Index of IP, which measures the social and economic impact and effectiveness of IP through the interplay between various dynamic variables. The author argues that a hybrid model enables the maximum socio-economic impact for a country and leads to the creation of an effective economic equilibrium.

HISTORICAL RELEVANCE OF IPR SYSTEM

The patent system was developed to encourage innovation and technological advancements which would benefit the society. The system was designed to capture the objective of enhancing public benefit by incentivizing creativity without imposing undue social cost.

patent law is a misfit within the traditional property regime. That is, the prevailing notions of patents as an extension of property rights lead one to construe patents in terms of rights rather than obligations. Property law posits rights in correlative terms and thus, defines rights from the perspective of the duty of third parties. Thus, acquisition of patent rights signals a societal duty to forbear from the patented invention. However, the property-based construct of patents does a poor job of defining the limits of the rights. As such, patent law lacks a clear outline or measure of the patent owner's duties corresponding to the rights.¹¹ However, the current practice is designed in a manner that is intended to exploit the patent system in such a manner that is detrimental for the benefit of society with almost no obligations expected from the inventors.

IPR AND ITS IMPACT ON ECONOMY

It is needless to say that the generation, protection and monetization of IP have significant impact on the economy of a nation. Knowledge helps create IP, thereby creating an entire lifecycle of the protection and monetization of IP. Unless continuous investments are made to generate, develop and improvise the existing knowledge and IP, new developments or enhancement do not occur.

The speed of innovation is also critical in today's technology world. Speed will require rapid investments. This is how development advances in any area of technology and eventually leads to the development of a nation. In order to incentivize the inventors and technologists, reward in some form is mandatory. Hence, the entire concept of monopoly rights that is associated with the protection of

¹¹ Srividhya Ragavan & Swaraj Paul Barooah, 'Historic Tensions involving international intellectual property protection of medical technology with disastrous public health consequences' Seton Hall Review: Forthcoming <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4386259> accessed 24 April 2023.

IP and the legal framework surrounding the protection of IP is required. It is also important to note that the structure of the IP programmes and policies, including reforms brought by the government should ideally bring in innovativeness, creation of knowledge economy, which further lays the economic foundation of knowledge and leads to the growth of a nation.

There are enough historical data to demonstrate the success of a nations that have invested in the generation and protection of IP.¹² However, there is also an underlying assumption, that is, that IP is consumed by people, and its benefits accrue to people, both in the public and private domains.¹³ Thus, there is a larger benefit to society and the public.

At this point, it is important to bring in the economic concept of Public and Private Goods, and knowledge is a public good. It is pertinent to point out that throughout the paper, the readers will come across the word “knowledge” and “IP”, which have a close relationship. The basic assumption behind these two words is that “knowledge” creates “IP” and hence they are closely linked to each other.

Economists use the concept of “public goods” in technical terms. Paul Samuelson defined it precisely more than fifty years ago.¹⁴ A “public good” is a good whose consumption is non-rivalrous. By contrast, “private goods” can only be consumed by one person. In other words, a tangible private good can be consumed or used by a single person at any given point of time. Whereas, knowledge, IP and all forms of intangible knowledge can be consumed by many at any given point of

¹² OECD, *World's Top R&D Investors: Industrial Property Strategies in the Digital Economy* (European Commission and OECD, Brussels and Paris, 2017) <<https://www.oecd.org/sti/world-top-rd-investors.pdf>> accessed March 23 2023.

¹³ Stiglitz (n 3).

¹⁴ P.A. Samuelson, ‘The Pure Theory of Public Expenditure’ 36 Rev. Econ & Stat. (1954) 387.

time. Thus, there is no marginal cost associated with the use of knowledge. This “public” nature of knowledge as a good was described eloquently in 1813 by Thomas Jefferson in his letter to Isaac McPherson. He said that knowledge is like a candle- when one candle lights another, it does not diminish the light of the first candle.¹⁵

Understanding this concept is at the core of understanding efficiency in the use of knowledge. It is more efficient to distribute knowledge freely to everybody, than to restrict its use by charging for it. Therefore, the key question is whether knowledge, when converted into a tangible form, restricts the benefits for society? The paper aims at addressing this question.

The regulation and management of knowledge, and more importantly, the access of knowledge by the general public determines the benefits associated with knowledge. Therefore, it is imperative that the production, preservation, and distribution of knowledge are key in deriving the benefits of knowledge for the economic growth of a country, and for the overall growth of the knowledge economy.

In general, IP helps a country become technologically stronger, more advanced and innovative. Innovation leads to the generation of employment, creation of new companies and opportunities, higher revenues and profits for corporations, which further leads to higher taxes and cesses for the country, exports, FDIs, GDPs and further investments in a country.¹⁶ All these have direct and indirect benefits for the development of a nation and its people. In the long run, these benefits further yield positive outcomes for the nation as well. These profits ultimately lead to further investments in technology and

¹⁵ Letter from Thomas Jefferson to Issac McPherson (Aug, 13, 1813), in *The Writings of Thomas Jefferson*, 326, 334 (Andrew A Lipscomb ed 1904).

¹⁶ R. A. Atun *et al*, ‘Innovation, patents and economic growth’ 11(2) *International Journal of Innovation Management* (2007) 279–297.

innovation, creation of more IPs, and this cycle continues itself. These also lead to the opening of different avenues for employment, as well as the emergence of newer business streams and opportunities for the overall development of the public.¹⁷

It is also important to note that the creation of IP needs to be backed by a strong legal framework and laws around Intellectual Property.¹⁸ This is important for the protection and enforcement of IPs. Currently, IPRs and related laws create a strong framework for creation, protection, enforcement, and monetisation of IP.¹⁹

A strong IPR regime also creates a lot of job opportunities for people in a country. This is evident from the significant presence of the several hundred IPR professionals in our country who support various emerging innovators and enable the protection of these IPRs. The field of IPRs has not only created opportunities for innovators, scientists, engineers and doctors, but for individuals across domains and other areas.²⁰ Innovation also opens doors for newer areas of investment opportunities and newer business models. IP creation has catalytic effects for employment opportunities and growth. Today, a job-seeker has many choices for new areas of studies and job opportunities. Exclusive disciplines and areas of studies around Data Mining or science, agro-engineering and other fields within science, technology, arts, finance, commerce, and medicine significantly contribute to the overall development of a nation.

¹⁷ J. Hudson *et al*, 'Innovation, intellectual property rights, and economic development: a unified empirical investigation' 46 *World Development* (2013) 66–78.

¹⁸ O. Granstrand, 'Innovation and intellectual property rights' in J. Fagerberg *et al* (eds), *The Oxford Handbook of Innovation* (OUP 2009).

¹⁹ R.J. Rossberger *et al*, 'Participative and team-oriented leadership styles, countries' education level, and national innovation: the mediating role of economic factors and national cultural practices' 49(1) *Cross-Cultural Research* (2015) 20–56.

²⁰ Keith E. Maskus (n 5).

Countries that are unable to invest money, time or capabilities to develop IPs and foster innovation can adopt new technologies. These countries get an opportunity to innovate in the application side of IP. These opportunities, in turn, help their economy, create job opportunities, enhance their technology, innovate manufacturing techniques, and spur innovation in the service side of IP, including distribution and logistics.²¹ Therefore, even though some countries may not be the principal creators of IP or the investors in the creation and development of core technologies, they may end up being innovators in the downstream innovation cycle. For example, country A may develop the core technology in a particular area. The technology may move to country B through licensing arrangements, where manufacturing, distribution, other services, and support may occur. Country B gets an opportunity not only to create jobs for local people but also innovate the manufacturing processes, enhance the technology through local R&D, and so on. Therefore, the entire supply chain participates in the innovation and creation of IP. This is a perfect example of a win-win situation for all the participating economies. However, going back to the key questions that were raised in the beginning of the paper, we examine whether the common man benefits from these innovations, and whether these innovations reach the public quickly. Additionally, are we in a position to effectively disseminate this knowledge? These issues will be addressed in the subsequent sections of the paper.

EMPIRICAL INSIGHTS

Gould and Gruben related economic growth rates across many countries to a simple index of patent strength and other variables. They found no strong direct effects of patents on growth, but there was a

²¹ P. Neves et al, 'The Link between Intellectual Property Rights, Innovation, and Growth: A Meta-Analysis' 97 *Economic Modelling*, (2021) 196-209.

significantly positive impact when patents were interacted with a measure of openness to trade.²²

Their argument was that open economies tend to experience greater competition, higher amounts of competitive FDI, and enhanced needs to acquire advanced technologies for the purposes of raising product quality. Moreover, firms in such countries would be more likely to undertake the costs of effective technology transfer and adaptation to local circumstances. However, such innovation would be more prevalent in economies with adequate IPR systems in place.

In 1997, Park and Ginarte studied how IPRs affect growth and investment. They found no direct correlation between patent strength and growth, but there was a strong and positive impact of patents on physical investment and R&D spending, which in turn, raised growth performance.²³

Kanwar and Evenson related strong IPR protection with economic growth based on the reasoning that strengthened patent rights positively increase innovation through cost-saving technology and new product creation, and hence lead to economic growth.²⁴

The evidence presented above suggests that a robust IPR protection system could lead to more international economic activity, and better indigenous innovation. But such effects would be conditional on certain circumstances.

Circumstances vary widely across countries and the positive impacts of IPRs should be stronger in countries with appropriate

²² D.M. Gould & W.C. Gruben, 'The Role of Intellectual Property Rights in Economic Growth' 48 *J. Dev. ECON.* (1996) 334-35.

²³ J. C. Ginarte and W. G. Park, 'Determinants of Patent Rights: A Cross-National Study', 26 *Research Policy* (1997) 283.

²⁴ Sunil Kanwar and Robert Evenson, 'Does Intellectual Property Protection Spur Technological Change?' 55(2) *Oxford Economic Papers* (2003) 235-64.

complementary endowments and policies.²⁵ Countries face the challenge of ensuring that their new policy regimes become pro-active mechanisms for promoting beneficial technical change, innovation, and consumer gains.

However, the hypothesis that aggressive IP approaches, backed up with strong IPR systems and processes nurture innovation for the benefit of the common public, thereby creating stronger socio-economic development of a country, is debatable. The subsequent sections will cover elements of this particular argument and will conclude with a proposal for a hybrid model.

IMPACT OF IPR ON THE “BOTTOM OF THE PYRAMID”

In the previous section, how “Knowledge” is closely related to IP, was emphasized. Knowledge creates IP and a strong IPR regime restricts the distribution and use of knowledge.²⁶ Therefore, can it be inferred that strong and conventional forms of IPR systems have a detrimental effect on the economy, and create negative socio-economic impact on a society? However, caution must be exercised in arriving at such conclusions until more specific details and principal issues are analysed deeply.

The current model of IPRs encompasses a strong legal framework which governs and controls the creation, use, distribution, making, and consumption of the knowledge or the IPs. This essentially means that knowledge is not free, but restrictive, and this is completely opposed to the concept of the free distribution of knowledge.

If knowledge is not free, then the further development and enhancement of knowledge is not free. If development and

²⁵ C. Forero-Pineda, ‘The Impact of Stronger Intellectual Property Rights on Science and Technology in Developing Countries’ 35(6) *Research Policy* (2006) 808-824.

²⁶ P. David and D. Foray, ‘Economic Fundamentals of the Knowledge Society’ 1(1) *Policy Futures in Education* (2003).

enhancement of knowledge is not available in an economy, then the common public cannot use the associated IPs because the system provides the innovators with limited monopoly rights and no incentive for the distribution of knowledge.

The IP regime is part of society's innovation system, and its intent is to provide incentives to innovate by allowing innovators to restrict the use of the knowledge they produce by allowing the imposition of charges on the use of that knowledge, thereby obtaining a return on their investment. Monopoly leads not just to inequities in the economic balance but also to major distortions in resource allocations. Thus, monopoly power is limited and this is precisely also the focus of anti-trust policies.

A predicament arises as we do not only tolerate this distortion and inefficiency by restricting the use of knowledge, which further creates monopoly power, but also sanction it. This is part of our legal framework as we operate under the belief that this behaviour fosters innovation.²⁷ More importantly, we assume that this framework will also help improve the socio-economic condition of a nation and innovation would reap benefits for the needy and the poor.

When we attempt to recollect the top ten IPRs of the last two decades and study the velocity of the penetration of the knowledge associated with these IPRs to a common person, anyone would find it difficult to make that list. It can, therefore, be argued that an excessively strong IPR regime and framework can impede innovation and this has little or no impact on the socio-economic development of a nation.

One of the most important reasons for the establishment of conventional IPR systems was the disclosure of innovation for the further enhancement of technology in society, so that the reinvention

²⁷ Stiglitz (n 3).

of the same things could be prevented. The legal framework is also built upon the same philosophy. As per the Patent Laws in most countries, sufficient disclosure of an invention is mandatory.²⁸ The disclosure of a patent document should be in such a manner that anyone who reads the patent can understand the invention completely without making a single phone call to any of the inventors. However, how many, and to what extent can the patents be understood by a common person?

Sometimes, even inventors struggle to understand their inventions even though their patent applications drafted by very competent patent lawyers entail their very own creation(s). Majority of the inventions are owned by large corporates who have unlimited budgets, efforts and time to invest in R&D, who continuously develop patent portfolios with the intent of blocking competition, ever green their monopoly rights and, charge premium from customers to quickly recover the costs and return on investments.²⁹ The most important point to consider is whether or not these inventions and innovations reach the common person, and even if they do reach, when?

Even if the enhancement of technology by a common person as a concern is disregarded, the pertinent question of how many people are able to access these inventions and innovations, remains unanswered. Even if these inventions reach common people, they come at a very high cost, which many are not able to afford in the first few years. The access to these inventions by society comes much later in the lifecycle when the actual impact of the invention is lost, or has very minimal effect on society and the economy of a country. It is important to note that not just high-end technological innovations are being referred to

²⁸ J. C. Fromer, 'Patent Disclosure' 94 Iowa Law Review (2009) 539.

²⁹ Emdad Islam and Jason Zein, 'Inventor CEOs' 135 Journal of Financial Economics (2020) 505-527.

here, but even inventions and technologies that significantly improve the quality of life of people, and have larger impact on society that are inaccessible by the general public.

Further, another related topic concerning disclosure and patent rights is the concept of “prior art” and publication. A patent is granted to an inventor only if it is novel, and is not available as any “prior art” in the form of publication, articles, patents, or other similar public disclosures.³⁰ Therefore, common knowledge, which is known to the general public and creates an impact on society may not be always documented because it is generally known to everyone, and does not necessarily warrant publication. However, if this knowledge is not published or available through tangible means in the public domain, then it may not meet the requirements of being called “prior arts”, as per the patent language. By remaining unpublished, a patent for the same can be filed, and may also get granted as the patent examiner may not find any “prior art” to reject the patent. Technically, thus, a known innovation, in the absence of a valid “prior art”, can give monopoly rights to an inventor unless such a patent is challenged by others, by providing valid documents, evidences and justifications, which is a long-drawn process of invalidation. Such complexities of the IPR regime within the realm of Patent Law may sound unconventional, but the current legal framework under the strong IPR regime supports this approach and rightfully so, because the objective of the system is to provide the inventor with premium monopoly rights even if the period is limited.

³⁰ *Graham v John Deere Co.* 383 U.S.1 (1966).

It is important to draw attention to the study by Ginarte and Park on the index of patent rights³¹, and the subsequent studies done by Keith E. Maskus.³²

These findings may be explained by the nature of technological development. Least-developed countries devote virtually no resources to innovation, and have little intellectual property to protect.³³ As incomes and technical capabilities grow to intermediate levels, some adaptive innovation emerges, but competition flows primarily from imitation.³⁴ Thus, the majority of economic and political interests at this stage are inclined towards the weak protection of IPs. As economies mature to higher levels of technological capacity, and the demand shifts towards higher-quality products, domestic firms start favouring stronger, and more protective IPR systems. Finally, the strength of IPR systems shifts upwards sharply at the highest income levels, as these latter processes are cemented.³⁵

Here, it becomes imperative to refer to certain basic concepts of economic theory. The output cost and supply of a manufacturing set up or any industrial investment depends on the cost and availability of the input material or resources.³⁶ In the case of IPRs, the primary input for creating IP is knowledge and the output could be highly innovative and commercially viable IP or IP assets. If we restrict the knowledge as the input, the output is not only less but also becomes expensive because of the costs of creation or through the increase in operational

³¹ Ginarte and Park (n 23).

³² Keith E. Maskus (n 5).

³³ UNCTAD, *The Least Developed Countries Report 2007: Knowledge, Technological Learning and Innovation for Development*

³⁴ C. Lorenczik and M. Newiak, 'Imitation and innovation driven development under imperfect intellectual property rights' 56(7) *European Economic Review* (2012) 1361-1375.

³⁵ Yee Kim *et al*, 'Appropriate Intellectual Property Protection and Economic Growth in Countries at Different Levels of Development' 41 *Research Policy* (2012).

³⁶ David A. Shapiro, *Principles of Microeconomics* (2017)

costs. If we increase the price of an input, it reduces the supply of the output.

Since the input is knowledge; a strong IP regime would increase the price of this input, which in turn, would reduce the availability and reach of the output for the common man. Therefore, an excessively aggressive and strong IPR regime impedes innovation and leads to an insignificant socio-economic impact on a country.

Further, as indicated in the earlier sections, patents directly create monopolistic rights, thereby providing incentives to inventors and innovators. The common economic theory of monopoly is that when someone has monopolistic rights in manufacturing, the production is controlled and regulated in such a way that premium can be charged for low supply. Also, the motivation to further innovate is also low as long as the monopoly is able to generate sufficient income and revenue stream for the innovators.

Furthermore, monopolists through a strong IPR regime prohibit innovation by others, especially by blocking competitors or raising the cost of the innovation for third parties. This either increases the cost of replacement products/innovation, or prohibits further innovation in the market. Hence, overall, this approach impedes future innovation and technology growth, thereby affecting the overall economy and growth of a country.

Even if competition emerges, it does not survive and more importantly, follows the same approach of commercialization and revenue generation. Even competitive innovation cannot create impact on society or the common man as the end goal remains the same- that of- creating monopoly rights, exclusivity, premium pricing, thus, blocking further competition. One monopoly follows another as new companies try to displace the existing monopolistic economy. This

leads to intense competition. This kind of competition is generally referred to as Schumpeterian Competition.³⁷

THE SCHUMPETERIAN COMPETITION THEORY AND INNOVATION

Standard competitive equilibrium theory has paid very little attention to innovation.³⁸ The only rigorous proof of the efficiency of competitive markets is provided by the Arrow-Debreu model, and that model assumes that technology is fixed.³⁹ One might think this is strange- how could economic theory pay any attention to models that assume technology is fixed in a dynamic economy? That is a question that sociologists ought to address, but the Arrow-Debreu competitive model is the standard, reigning paradigm, and sadly, it ignores innovation. However, there was a strand of thought associated with Joseph Schumpeter that focused on innovation, and argued that this competition for innovation resulted in temporary monopolies.

Intense competition between competitors prohibits collaboration and partnerships between companies.⁴⁰ In today's interconnected economy, in all technology domains, collaboration is the key for faster innovation.⁴¹ Most companies are moving towards focusing on niche technologies with more attention on a particular area of technology in building smarter products and services. Therefore, in order for a

³⁷ Joseph A Schumpeter, *Capitalism, Socialism and Democracy* (1st edn, Routedledge 1976) 102.

³⁸ Nicolas Petit and David Teece, 'Innovating Big Tech Firms and Competition Policy: Favoring Dynamic over Static Competition' *Industrial and Corporate Change* (2021) 1-31.

³⁹ Kenneth J. Arrow and Gerard Debreu, 'Existence of an Equilibrium for a Competitive Economy' 22 *Econometrics* (1954) 265.

⁴⁰ R. Gilbert and A. Melamed, 'Innovation: A Bridge to the New Brandeisians?' (*Competition Policy International Columns*, 21 February 2022) <https://www.pymnts.com/cpi_posts/innovation-a-bridge-to-the-new-brandeisians/#:~:text=The%20New%20Brandeisians%20believe%20that,to%20democracy%20and%20social%20justice.> accessed February 27 2023.

⁴¹ W. Kerber, 'Competition, Innovation, and Competition Law: Dissecting the Interplay' (12th Annual Conference of the GCLC: Dynamic Markets and Dynamic Enforcement: Which Competition Policy for a World in Flux?, Brussels, January 2017).

complex technology or innovation to exist, strategic partnership among multiple companies and alliance partners is required, and such parties must be willing to jointly work and collaborate, thereby creating a win-win situation for all. This is an ideal model to bring innovation quickly to the market and create ground-level economic impact.

Gone are the days when a single company would build a complete technology or a big invention indigenously. Partnering with smaller companies who are experts in their respective fields generates better and faster innovation.⁴² However, the competitive IPR regime creates fierce competition with the sole aim of achieving premium pricing, strong IPR enforcements, costs, and procedures. In this restrictive regime, innovation and knowledge sharing is lost, let alone economic impact. Some inventions are perpetually kept as “trade secrets” and confidential information and the knowledge never reaches the public domain.

Today, some companies spend more time, effort and investments in defending their Patent rights, than in marketing their products or creating socio-economic impact. These costs are eventually recovered through their product offerings by charging premium from the public. Knowledge sharing is delayed, and the process becomes even more complex. It generally requires 10-12 months to distribute and spread knowledge. It is not only important for such knowledge to reach the public, but also reach at a point in time when its relevance is retained. There is no point making the knowledge available to the public, when the importance and relevance of it is lost.

As rightly pointed out by Keith E. Maskus in his paper, a fundamental concern raised about the IPR system is that its exploitation could result

⁴² J. Hartley, ‘Collaborative Innovation: A Viable Alternative to Market Competition and Organizational Entrepreneurship’ 73(6) *Public Administration Review* (2013) 821-830.

in the diminished access to technological information.⁴³ As suggested above, pharmaceutical and biotechnological patents could raise imitation costs, and place considerable pressures on the imitating enterprises in the developing economies. Improving trade secrets protection also makes it more difficult to acquire technologies through misappropriation. Additionally, copyright protection makes it more difficult to copy computer software.

Another unique process in the Patent system is on the “black out” period for publication of patent. It generally takes 18 months from the date of patent filing for a patent application to appear in the public domain. Therefore, for that period, no one else is made aware of the filed patent. In this period, there could be many third parties and other innovators across the globe who may be working on the same invention or technology, and possibly using a similar or even identical approach. Suddenly, after 18 months of investing time, effort and finances, the inventors realize that their work needs to be stalled because a patent has been filed in their country by someone else who may prohibit the inventors from practicing or using the technology in the country where the patent is filed, without valid permission or license (which of course, does not come free). The second innovator(s), who missed the opportunity to file a patent, or decided not to file the patent, may have been able to use the technology for society. Therefore, this opportunity is also lost for the country. Hence, this process not only demotivates inventors but also delays the innovation process, thereby causing a hindrance in the overall impact on socio-economic growth.

If a country or company wants to import IPR protected innovation from another country, the process of technology transfer, licensing,

⁴³ Keith E. Maskus (n 5).

negotiation, and other legal processes are so cumbersome, that the impact of the technology for society is lost or diminished. This is one of the ways through which imitators who find it easier to copy, evolve. This process not only prohibits innovation, but creates legal complications, litigations, and creates a negative image of a country. However, instead of creating strong IPR regime, if the focus is shifted in defining and implementing a framework that motivates other innovators to further develop technology and use it for the general public, then better socio-economic impact for the country would be generated.

OTHER HINDRANCES IN THE PROCESS OF INNOVATION

The patent system evaluates an invention on the merits of “novelty”, “utility” and “non-obviousness”. However, the second criterion, which is about the utility and the usefulness of an invention, is the least focused area of evaluation. The utility of the invention is viewed from the perspective that it should not cause harm to society or the public and have positive benefits for the people.⁴⁴ However, it does not focus on whether the invention will reach the poor and if it does, then how and when. It never looks at how this invention can create positive and socio-economic impact on society and the reach (the breadth and spread) to society and the common public. The conventional IPR system also does not look at the working process and the implementation plan of the invention. The focus remains on meeting the legal requirements only. While, the legal requirements are important and must not be ignored, there is also a need to have additional parameters or check-points during the evaluation process. Therefore, the design and framework of the patent system significantly

⁴⁴ D. Encaoua *et al.*, ‘Patent systems for encouraging innovation: Lessons from economic analysis’ 35(9) Research Policy (2006) 1423-1440.

affects the efficiency of the economy, its innovativeness, and effectiveness.

The patent system and the IPR system, in general, need to be remodelled to meet the requirements of the modern world, keeping in mind primarily the socio-economic impact. The current system may not fully focus on the dynamic pace of the efficiency of innovation. Rather, it slows down the pace of innovation and more importantly, the economic impact of innovation. In other words, the current system does not provide incentives to the general innovators and inventors on the basis of social impact or social return of their invention.

The provision of monopoly rights and the lack of an appropriate framework to monitor and control the misuse of the monopoly rights lead to negative economic and social growth of the economy. This distortion has far reaching consequences for the economy. While there are avenues available in the current legal framework in some countries, like compulsory licensing, or disclosure requirements on the use of a patented technology, or the disclosure of licensing revenues through the commercialization of a patent etc., these mechanisms are more in the nature of monitoring and recording controls, and not necessarily avenues to create or monitor the socio-economic impact of IPRs. Therefore, it can be strongly argued that it is time to re-define the system, processes, controls and the overall legal and operational framework of the existing IPR regimes to bring about real impact on the economy and the general public.

ECONOMIC EQUILIBRIUM

Currently, it appears that there is an equilibrium dis-balance with the conventional IPR systems. IPR systems under the existing regime are essential to the overall framework of innovation. More importantly, the legal IPR system should be considered as one of the essential

components of the overall framework, but may require upgradation to meet the economic requirements. Further, we need to strengthen the other components of the framework or introduce newer components and re-model the overall framework to increase the economic benefits, and create meaningful impact on the socio-economic aspects, reduce costs, speed up innovation awhile enabling a platform for knowledge dissemination in society.⁴⁵ This will create an economic equilibrium in society.

In the paper by Srividhya Ragavan, it is rightfully stated that the “shift in rhetoric towards a rights-centric approach has resulted in a more Blackstonian view of patent protection, causing patent law to move away from the public benefit goals of the system. Consequently, instrumental elements of the patent system have coalesced to predominantly protect the inventor. In turn, public benefit aspects of the system have been relegated to the status of a by-product. Patent law has long suffered from a lack of a realistic scale to measure its output, which has led to technical measures such as the number of patents to become predicates of its outcome. Slowly, patent disclosures increasingly became perceived as the sole exchange for gaining exclusivity.”⁴⁶

In order to streamline the framework, support has to be obtained from innovators, the government and public policy experts, IPR experts, and the international community to model the framework. Some of the suggestions are briefly indicated in the subsequent sections.

Reward mechanisms or incentives-based approach is good alternative to motivate inventors and innovators.⁴⁷ The exact nature of the reward

⁴⁵ L.Y. Yueh, ‘Global Intellectual Property Rights and Economic Growth’ 5(3) *Northwestern Journal of Technology and Intellectual Property* (2007).

⁴⁶ Ragavan (n 11).

⁴⁷ J. Behrens and H. Patzelt, ‘Incentives, resources and combinations of innovation radicalness and innovation speed’ 29(4) *British Journal of Management* (2018) 691-711.

system may vary from one country to another, and depend on multiple factors. However, depending on the benefits that a society or government may decide to vest in the inventors, the reward mechanisms may be decided through appropriate public policy models. There are many open innovation systems across the globe, which have multiple approaches to the reward model.⁴⁸ Some countries have mandatory patent reward policies, while there are many countries in the world which still do not have any inventor reward system.⁴⁹ A proper reward mechanism for the inventor's nurtures innovation, creates motivation, and further incentivises innovators to innovate. It provides recognition for the invention, and also helps generate revenue and benefit for innovating further. Incentives may be based on the extent of disclosures done by the inventors. It is not just the disclosure, but the means by which the disclosure, its availability to the public, its ease of access, and preservation is documented.⁵⁰

There is also a need to establish a strong governance program on knowledge management, and implement models to allow the strategic dissemination of knowledge to the public. The governance program should also model on how such knowledge can be utilized by the public to create impact for society.

The disclosure by innovators and inventors can provide multiple set of benefits to the innovators such as tax incentives or rebates, priority access, financial breaks, and easy availability of loans or other financial and operational benefits from the government, the ease of business,

⁴⁸ H. Chesbrough, 'The logic of open innovation: managing intellectual property' 45(3) *California Management Review* (2003) 33-58.

⁴⁹ A. Jaffe, 'The US Patent System in Transition: Policy Innovation and the Innovation Process' 29(4) *Research Policy* (2000) 531-557.

⁵⁰ P.M. Bican *et al*, 'Managing knowledge in open innovation processes: an intellectual property perspective' 21(6) *Journal of Knowledge Management* (2017) 1384-1405.

and the list can go on.⁵¹ However, there is a need to have appropriate systems and processes in place to provide that incentive to innovators. These forms of rewards will incentivize the innovators, provide them with lower costs of R&D, reduce overall product costs, reimburse patent filing costs or overall cost of protection, allow priority grants that reduce the time for the grant of patents, etc. The framework should also provide priority to start-ups and small-scale innovators and provide them with incentives to be more innovative. These beneficial factors will, in turn, help increase the access of the technologies to the common public and society, thereby creating socio-economic impact.⁵²

The IPR policies of a country should also measure the effectiveness of the patent(s) and the IPR system. Inventions which are merely filed but not utilized by the inventors should have a mechanism to either get traded in the market or be utilized by others at lower costs. This will help create value for these innovations, and create impact for society. The country's policies should also keep a watch on the foreign filings of public inventions that are invented in the host country, and are meant to be for common public. Any international filing or transfer of public innovations should be monitored and controlled efficiently.

The idea is not to prevent foreign filings but to monitor the distribution of knowledge prevent the monopolisation of such knowledge.⁵³ If an invention which is created for the upliftment of society in a country (host country), the inventions should be monitored and reviewed by the authorities in the host country before they go out for foreign filings or protection in other countries, or before they are licensed out to third parties.

⁵¹ Jinhwan Kim and Kristen Valentine, 'The Innovation Consequences of Mandatory Patent Disclosures' 71 *Journal of Accounting and Economics* (2021).

⁵² I. De Leon, *Innovation, startups and intellectual property management* (Springer 2017).

⁵³ E. Petit *et al*, 'Global patent systems: Revisiting the national bias hypothesis' *Journal of International Business Policy* (2021) 1-12.

These innovations can come out from general public or through government-funded labs etc. Government can play a key role in owning these innovations, funding them internally through academia or through collaborations with private parties and ensuring that the benefits of such valuable innovations reach the common public.⁵⁴ The innovators shall be rewarded in exchange of these innovations.

It should be noted that the reward system may not be able to replace the entire benefit that an innovator may obtain through the normal IPR system. However, the idea behind the incentive model or reward system is to provide a mechanism to the inventor to open up the invention to the general public at a low cost or provide other benefits of the innovation to society in exchange of the reward. This may create a partial compromise of the large revenue stream for the inventors, which may be very insignificant in the larger scheme of things. Nothing stops the inventor from continuing on the path of making revenue through the conventional IPR system.

Further, there is a need to have an effective IPR policy for private and public R&D labs and institutions. These labs and institutions should be provided with market demands and the investments on R&D should be aligned to those demands. The output from those labs should be demonstrated to public with sufficient details to nurture further innovation and real-life products and services.⁵⁵ There should also be a strong IPR framework and innovation framework, which will enable strategic alliances and partnerships with corporates and academia with clear policies and benefits of such collaborations.⁵⁶ The

⁵⁴ J. Hong *et al*, 'Government grants, private R&D funding and innovation efficiency in transition economy' 27(9) *Technology Analysis & Strategic Management* (2015) 1068-1096.

⁵⁵ B. Becker, 'Public R&D policies and private R&D investment: A survey of the empirical evidence' 29(5) *Journal of Economic Surveys* (2015) 917-942.

⁵⁶ A.N. Link, *Public/private partnerships: innovation strategies and policy alternatives* (Springer Science & Business Media 2006).

benefits should be linked to the creation of societal impact and not necessarily the revenue outcome of the innovations. These policies, if implemented properly, will help in creating jobs, strengthening human capital and skill acquisition, promoting flexibility in the innovation network, ensuring healthy competition on domestic markets, and developing a transparent, non-discriminatory, and effective competition regime, which will help create a notable socio-economic impact in the country. The framework should also focus on marketing innovations to public, creating a platform for all innovators to come together, brainstorm and work on problem statements to find an innovative solution (akin to the 'hackathon' concept). The platform can be hosted and managed by the Government or administered through private parties. The government through this program can provide appropriate incentives and benefits to the successful innovators through the program to nurture the innovation. The government should also try and build a strong innovators' network by partnering with innovators, inventors, public labs, and private labs through the CSR model, wherein real-life problem statements can be provided to run low costs R&D and innovation.⁵⁷ The IPs generated through this model shall be made open to public. Further, the framework should also have a model for the government to license-in technologies from third parties at a reasonable cost and benefits provided back to the innovators. These licensed technologies will be provided to start-ups and MSMEs who will be able to work on these innovations and develop products and services for public.⁵⁸ This model will provide mutual benefits to innovators, third parties, smaller companies and public at large. Likewise, a common platform should

⁵⁷ P. Ratajczak and D. Szutowski, 'Exploring the relationship between CSR and innovation' 7(2) *Sustainability Accounting, Management and Policy Journal* (2016) 295-318.

⁵⁸ M. Morsing and F. Perrini, 'CSR in SMEs: do SMEs matter for the CSR agenda?' 18(1) *Business Ethics: A European Review* (2009) 1-6.

be provided to all individual inventors for them to share their IPs and ideas/innovation so that others can benefit or invest in productizing the ideas or commercializing the ideas.⁵⁹ Currently, there is a lack of a unified platform to enable this objective. This platform can enable creation of a good ecosystem of innovations which can then create long-term impact and benefits for society.

It should also be noted that just a good innovation ecosystem and framework may not be enough to witness the success of the model. The ecosystem should also have a measurement system to determine the impact of the ecosystem. In order to measure the impact, there is a need to have an innovation index. This innovation index can be benchmarked with global standards. There are multiple models that are currently available on measuring innovation and innovation index. However, the use of the innovation index is not necessarily linked to the socio-economic impact and creation of societal IPs. Therefore, the proposed index should focus on being an integral part of the company's trading index and share price and how the success of a company is measured. The innovation index should be an important component to drive the share price of a company when the company's share price is publicly traded or when a company is acquired etc. Further, the index should not be based on the just the quality of innovation but should comprise multiple other factors. The driving factor for this index should be the socio-economic impact innovation to society or value index of intellectual property, and the next section talks more about such an index.

⁵⁹ F. Murray and S. O'Mahony, 'Exploring the foundations of cumulative innovation: Implications for organization science' 18(6) *Organization Science* (2007) 1006-1021.

SOCIO-ECONOMIC VALUE INDEX OF INTELLECTUAL PROPERTY

There are lot of research that talks about “prize” system or “reward” mechanism, which many researchers and authors argue should either replace the patent system or be a complement to the existing system as it is a better approach to incentivize innovators who may eventually generations inventions for society. However, a new system may not be able to completely replace the existing system and create the economic impact. We would need both the old system and a new system, which focusses on a mechanism to evaluate innovation and create a value index of innovation. The Value Index helps evaluate the merit of an innovation or intellectual property. The merit is not based on the quality of innovation, or novelty or revenue impact etc. Those parameters can be part of the existing or modified legal framework. The merit in the Value Index is based on the socio-economic impact of an invention or innovation or in general IP. The index can act as an invention rating mechanism, which can be used to trade on IP or innovation, have an IP trading index, can be used by investors to fund an idea or innovation, can be used by investors during mergers or acquisitions and a host of other benefits. This Index can also be used by governments to provide aid to innovators or provide them with rewards or prize or even tax and other benefits.

The proposed Value Index should form an important component of the framework. The index focusses primarily on a mechanism to determine the impact of an IP or innovation to society and how the IP creates socio-economic impact for a country. The index section below should be read in conjunction with the earlier section on economic equilibrium as most of the metrics or parameters under this Value Index relates to the earlier section. The parameters under the Value Index are as follows.

A. Span and Accessibility of the IP

This parameter demonstrates the spread and reach or accessibility of the IP to common public and society. This parameter determines how the IP affects the society in general and helps reduce the socio-economic imbalance in society. This metric can be further broken down into actual measurable parameters and unit of measurement to measure the potential impact. How may offerings have reached society at a low and reasonable costs and in how much time? What was the adoption rate and the measure of impact? These measurements under this metric will be an important element to determine the value of the innovation. The “span” metric also covers the breadth of technology/innovation. Does the innovation target only a small section of society or has far-reaching consequences for many sections of people across the globe in multiple technology domains? This is again very critical information to determine the value of the innovation.

B. Competitive Pricing

This metric or parameter should evaluate the pricing competitiveness. If the price of innovation is high, then it will not reach the public quickly. Hence, the price and costing of the new innovation that are meant for common people should be fair and reasonable. The benchmark for pricing can be obtained by comparing price of comparable offerings in market to determine the reasonableness and fairness.⁶⁰ Another important aspect of this metric is to evaluate the impact of the pricing on competitive products/offerings. Has the innovation lead to influencing the competitive price of similar

⁶⁰ J.A. Ordover & R.D. Willig, ‘An economic definition of predation: Pricing and product innovation’ 91(1) *The Yale Law Journal* (1981) 8-53.

products, thereby changing the overall ecosystem and creating more or better and positive economic impact?

C. Time to Market and Low Barriers to Entry

Time is an important factor in the evolution of IP and the overall lifecycle of IP. However, we are not referring to the time taken to recover R&D costs or a simple measure of payback period or a determinant return on investments. It is the “time” to demonstrate its socio-economic impact and how the invention caused grass-root impact on the “bottom of the pyramid.” Low barriers to entry are an important factor, which determines how quickly an innovation enters common market.⁶¹ Common market may not necessarily mean local market but general common people in global market. It is also important to note that whether the innovation helped generate new distribution or alliance network. It essentially means that through the innovation, have the innovators or company enabled newer service providers/partners or new lines of business models to collaborate with the inventor’s network and generate newer business opportunities, jobs and create an overall impact for society and economy? Further, this metric also determines the overall velocity of global reach of the innovation and how quickly and widely can the invention touch lives of people across the world.

D. Knowledge dissemination

This metric focusses on how quickly the knowledge is disseminated to public or in other words, how easy it is for public to access the information or knowledge base of the IP or innovation. The idea is not about making the entire innovation open to public. However, the focus is to ensure that certain aspects of the knowledge is open and made available to public and more importantly, quickly, while the core

⁶¹ B. Buettner, ‘Entry barriers and growth’ 93(1) *Economic Letters* (2006) 150-155.

processes/technology can be kept as “protected IP” for the people belonging to the top of the pyramid and for a limited time. This metric aims at creating a fine balance between the typical IPR systems and an open knowledge distribution system to reduce or optimize the “monopolistic” nature of the IP and move away from the traditional IPR system regime. The availability of information or knowledge should be made available to public quickly and not after several years when the information or knowledge may become redundant. This would enable and create the adequate impact for society or at least help create some positive impact on the society.⁶²

E. Brand Enrichment of Society and Country

The final metric evaluates how the innovation may help create a good brand story for a country and enhances the image of a country or a society to position itself as a leader, innovator in creating “innovation for society”. This metric also measures the effectiveness of a country in spreading innovation across the globe, sharing and distribution of knowledge to create a larger impact on society and on the welfare of common public.

The above parameters can be further broken down into multiple smaller elements or metrics or quantitative parameters depending on various factors. Each of those metrics can be mathematically evaluated and scored using different statistical methods to determine the overall value or score of the innovation or IP. It should be noted that the idea is not to always generate a very high Value Score and it is also not the aim of the author to propose that all innovations should be an open book and should be implemented in the open innovation network. The proposal is to create a balance between both worlds and have some

⁶² K. Carlaw *et al*, ‘Beyond the hype: Intellectual property and the knowledge society/knowledge economy’ 20(4) *Journal of Economic Surveys* (2006) 633-690.

percentage of innovation targeted for societal improvement (let's assume A) and the remaining could be for revenue generation through the traditional IP systems (let's say B). The A will drive the Value Index, which will come with a host of benefits, rewards and incentives. These benefits will drive the motivation of the inventor for future development and also partially or fully compensate for the possible loss or decline of earnings through the B model (assuming that if B model was used for 100% of the deployment, there would be additional profits for the inventors, which may not happen if there is a combination of A and B model).

CONCLUSION AND FUTURE WORK

In essence, IPRs and the conventional methodologies, processes and systems existing today are critical, but the potential benefits of the IPR systems to economic growth and development may have been exaggerated, as they talk about only one pillar of the overall innovation ecosystem. The proposed new system that I talked about in this paper comprises several other important and critical pillars, which should also be considered to create the impact from such systems. When all these pillars work together and in tandem with a more realistic and practical judicial system, maximum impact for society is created, thereby bringing large-scale socio-economic impact for any country. The policy makers, judiciaries, bureaucrats and all innovators and creators of IPs need to unite themselves to understand and debate on this topic and jointly re-create the unified new innovation ecosystem to bring in that economic equilibrium in society.

The policy-makers around the globe play a very critical role in determining the right model for a country. While the overall framework can be uniform and generic, some of the country specific customizations are required to meet local demands and to focus on

immediate priorities of a country. The overall aim should be to create the socio-economic equilibrium and impact to the “bottom of the pyramid” and for general public at large. While the traditional IP commercial models may still continue to exist with some modifications and changes, focus should be placed on creating a parallel system to nurture ground level innovations, knowledge dissemination and distribution and making faster impact for society. If innovations don't reach people quickly, economic development gets delayed and with the rapid change of technology today, there is a need to revisit our entire IPR and innovation systems and processes and join hands to make the change.

This paper provides a brief overview of the need for such a new and improved system and framework. The author shall continue to do more research on this topic, which will help drill down further into the details of developing and implementing such new IPR ecosystem. The readers can expect further papers in future from the author on the same topic.