



Patents-A Power Tool for Economic Growth: An Approach with Special Reference to India

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Utilizing physical capital like machinery, has historically been essential to spurring economic expansion. A lot of research work has been done in this area in the past. More recently, the digital revolution specifically ICT has introduced cutting-edge communications and computer tools to boost productivity and promote economic growth. To promote growth, and innovation businesses began spending more on R&D which resulted in the production of intangible assets at a large scale. The effects of intangible assets on economic growth are difficult to see or quantify but one thing is clear that IP rights assist in preserving these intangible assets. The main purpose of this article would evaluate the relationship between IP and economic growth. Research shows that there are some factors like innovation, R&D, FDI, MSMEs and domestic policies etc. which can be enhanced by IP and in turn it will promote economic development. These factors would be analyzed in the second part from the Indian economic aspect to find out the best IP regime to promote economic development. This paper further evaluates the possible ways to increase the contribution of IP and innovations for economic growth.

Keywords: Innovation, Indian Economy, R&D, FDI, MSMEs, IPR, IP Policy, Patents

The IP system has various ranges of tools for countries that are in different stages of economic development. There are various tools that can be used for different cultural and sociological contexts. Peru and Thailand which use collective or certification trademarks to protect their local handicraft and other products instead of GI like other countries, are a best example of the various ways that countries use to protect IP in their countries.¹ For the last many years, economists have tried to explain that why some countries grow faster and others slower through their theories and economics models.

IPR basically is a set of monopoly rights made by a state made for the inventor to promote and protect creativity by rewarding the inventor for his intellectual and monetary investment.² In case of having no such protection or a weak law may lead to imitation and the creator would not be able to recoup the investment in the R&D. So, to ensure and keep continued sustained innovation, we need IPRs as it has a direct connection with the innovation.³ How can we use IP as an instrument to give the maximum contribution of such industries in the economy of the country? The answer to these questions would be found by studying the relevant factors like R&D, FDI,

innovations and IP policies etc. These factors can be used as a tool to promote economic growth through the IPRs. In this paper, the author has given more emphasis to the patents. While studying the abovementioned factors, IPR as a whole would be considered.

The enactment of the Patents Act of 1970 is a very important step in the industrial development of India.⁴ The lawmakers of the Act intend to encourage invention and use the same without any hindrances.⁵ The patents are not granted only to give the inventor an incentive and a right to exploit but also to let the invention to exploit to give maximum benefit to the public at large.⁶ The provision of compulsory licensing under the Patent Act is inserted for the sole reason of promoting of innovations for social welfare and not merely a right of the owner.⁷ Section 52 of the Copyright Act of 1957 is another example that restricts the right of the copyright owner if the use falls under the definition of “fair use” given under the same section.⁸ The discussion regarding the role of the IP regime in innovation and economic development has always been controversial.

The Global Acceptance of IP in the 1990s

The economic development of some economically strong countries in the 1990s was the result of the policy changes emerging from the speedy knowledge

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creation and changes due to new technologies.⁹ To regulate this, the need of IP laws was felt at the international level, which resulted in the formation of TRIPS.⁹ TRIPS mandates have pushed a lot of countries to change their domestic laws and India also made lots of changes in the patent and copyright Acts. To use IP to promote economic growth we need to devise countries IP development strategy that would become an integral part of the general innovative development strategy and to understand the phenomenon of IP that enables it (IP) to promote economic growth.¹⁰

The enactment of IP laws in the countries is not the sole solution and there are some other factors that we need to take care of at the same time. In the case of patents, the most important thing to understand is its relationship with innovation and R&D.

IP, Innovation and R&D

IP plays a very diverse role in a firm. Employees in IP-intensive industries have more job creation capability, better employee income and better contribution to the state economy as compared to the other industries.¹¹ So, IP creation should be encouraged in India otherwise the make in India without IP creation would make it just a labour of the world.

One of the most interesting questions is ‘Do IPRs promote innovation’? Experts either say ‘yes’ or ‘no’. But the real answer may be ‘it depends’. Not all innovation per se leads to economic development. The US Economics and Statistical Administration (ESA) and the US Patent and Trademark Office (USPTO) have researched the impact of IPRs on innovation, creativity and various other factors like GDP and employment etc. In the summarized statement it concluded that IP is in use everywhere in the economy. 24% of all the industries were found IP-Intensive, and it accounts for 34.8% of US gross domestic productivity (GDP) which is about 5.06 trillion in value.¹² According to the study by the Office for Harmonization in the Internet Market (OHIM) and the European Patent Office (EPO), to create a more competitive economy with higher employment Innovation was chosen as one of the five key targets set in ‘Europe 2020’ growth key strategy. This study shows that 50% of the European industries are IPR intensive and generate 39% of the total economic activities (GDP).¹³ In the context of innovation-driven economic development in the field

of science, technology and innovation have become major factors of growth. In the world practice growth has been observed in R&D financing. There is a need to take steps to improve innovation in India. The patent filings in India, China and the US in the years 2016-2019 (Fig. 1).

The number of filing of patents per year in India is very low as compared to China and the US. In 2019 India filled 56284 patents as compared to China and the US which is 1400661 and 621453.¹⁴ Filing of the patents is a prima facie indicator of innovation happening. As innovation is an important factor for economic development there is a need for investment in R&D in India.

Need to Handle of Innovation in the 21st Century

After the beginning of the 21st century, the business field became complex and competitive because of globalization. Out of all the innovative ideas, only 0.6% are successful and especially in the pharmaceutical industry the success rate is one out of 10000.¹⁵ Due to the Globalization of competition the intensity of competition has increased. There is a great explosion in technological knowledge in such a way that the number of journals has increased from just 10000 in 1900 to nearly 100,000 in 2000. About 90% of the information in documents that are patented is not protected due to various reasons like rejection and expiration and because of these reasons, there is a lot of technical knowledge in the public domain which is freely accessible.¹⁵

There is a dramatic rise in the cost of R&D and the companies are producing more and more products by reduction in the innovation cycle. To handle the high competition cost, the companies are heading to achieve differentiation with the customers.¹⁵ Innovation is not just to develop the new product but to develop new services and business practices. So, establishing a competitive edge in the market,

Year	China		United States of America		India	
	Filing	Grants	Filing	Grants	Filing	Grants
2016	13,38,503	404,208	605,571	303,049	45,444	9,847
2017	13,81,594	420,144	606,956	318,829	47,854	13,045
2018	15,42,002	432,147	597,141	307,759	50,659	15,283
2019	14,00,661	452,804	621,453	354,430	56,284	24,936

Source: DPIIT.

Fig. 1 — The patents filings in India, China and the US in the years 2016-2019

developing new business practices and finding solutions which make such advantages renewable and sustainable are also important.¹⁵

Collaborative R&D

Because of the increased complexity of science and technology, short innovation cycles have resulted in high costs and added more risks in doing innovation. Biotechnology and “information, communication technology” and aerospace are two sectors in which the most R&D collaboration took place. In this situation, collaborative R&D is an easy way forward. There are different levels of competitiveness and challenges.

(Source: Martin A. Bader, *Intellectual Property Management in R&D Collaborations: the case of the service Industry sector, Physica-Verlag publications, Switzerland, 2006*)

The level of competition increases chronologically, and the maximum competition is with collaboration with competitors as shown in Fig. 2. Collaboration with customers and universities is considered the best source of knowledge for intense innovation while collaboration with competitors and suppliers is considered good for incremental innovation. The collaboration should challenge each partner and they should reach to a consensus in the early stages for successful collaboration. According to studies 50-60% of collaborations fail and most of these fail at the set-up phase of the collaborations.¹⁶ So, collaboration with the universities and education institutions can have a robust impact on R&D as India holds a huge number of universities. Collaborative R&D has the potential to foster the rate of innovation in India through partnerships between educational institutions, research institutions, and private and public entities.

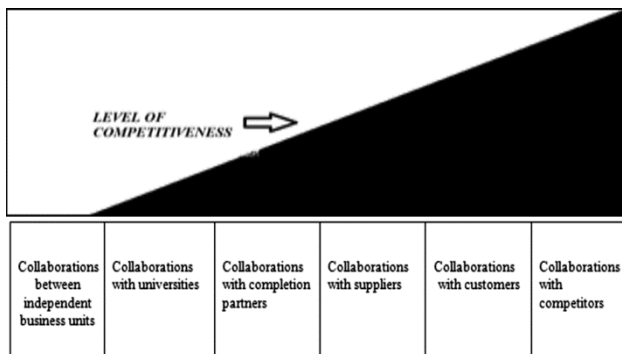


Fig. 2 — Level of competitiveness concerning collaboration types

Managing IP in R&D

The companies would heavily invest in R&D only if they are going to gain competitive advantages and they would invest in research and development on a long-term basis. The demand to use and apply for intellectual property rights increased dramatically with a rate of 24% annually between 1998 and 2002.¹⁵ A study of R&D shows that royalties made 14% of all licensing-based revenue and this royalty revenue comprises around 17% of the R&D expenditure.¹⁵ Therefore, India needs policies to promote commercialization (Licensing), to further encourage the R&D expenditure. IP also plays a positive role in international research and collaboration. Management of IP is a very important factor for the R&D and other collaborations. From the above discussion it is evident that for innovation, investment in R&D is very important as they are *sine qua non* to each other. The government needs to focus on R&D at every level from universities to corporations. The investment in R&D at the universities and institutions and promotion of Research in the corporation sector through policies and by providing incentives could help the growing MSME and domestic market in India. There is a need to revisit the IPR policy of 2016 to consider these factors.¹⁷ While working on a strong and efficient IP regime there are following challenges that may arise in the due course.

Strong IP and the Tragedy of Anti-Commons

Overprotection and giving over rights to the owner of the property create congestion for economic development. According to Michel Healer’s thesis excessive property rights recognitions can lead to economic “gridlock” when the innovation will be restricted by the IP owners from being distributed among the society. This phenomenon is called the tragedy of anti-commons.¹⁸ When there is total absence of rights with respect to a property then it leads to the excessive use of that property in a large number of the society and the property would vanish or lose its value with the passage of time. It is called the tragedy of the commons. This theory was in support of the creation of the IP rights. Opposite to this, there comes the tragedy of anti-commons under which the right to the property is so much that the economic benefit of the property does not reach to the common people, and it is restricted in the hands of the owner of the property.¹⁸

Historical Evidence

In 1978, research was conducted by Boldrin and Levine on the Italy pharmaceutical market before and after the introduction of the IP laws related to the pharmaceutical industry. Industry accounted for 9.28% of active chemical compound discoveries. After bringing the new IP laws to regulate the industry, it shrank to 7.5% from 1980 to 1983. This is a good example of the tragedy of anti-commons.¹⁹

Too Much of Litigation Issues

Too much protection can lead to unnecessary litigations and disputes and it can also bog down pharmaceutical firms and inventors in litigation and can divert the money and creative energy of the firm from the research and development which is necessary for innovation. The software industry of the US is currently under such a problem. Software in the US was not patentable and only could be protected by copyright but after the 1980 court's decision in some cases allowed the grant of patents to new software.²⁰

According to economist Eric Maskin, a Nobel Prize winner says that the increase in IP rights in the software industry did not increase innovation. The ownership of patents was taken not for innovation purposes.²¹ A good example of it is when Google tried to buy patents worth \$3 billion from Nortel Networks Corporation for the purpose of warding off infringement cases in court. But later Google with other firms bought the worthless patents for \$4 billion for the same purpose.²² Dean Becker once stated that:

"Every operating company is in the market because of the expense, distraction and the potential financial risk of patent litigation."²³

Indian pharmaceutical industry also gives the effect of the new strong IP law to regulate the Indian pharmaceutical industry. Since 1978 India has been known as the primary centre for pharmaceutical production without patents and now India may be losing this strong position as it started to implement strong IP protections under the obligations of WTO-TRIPS, after 1995 when India became a party to the treaty.¹⁹ A paper published by Chaudhuri, Goldberger, and Jia shows that the Indian pharmaceutical industry faced a problem after joining the TRIPS.²⁴

As India is going through the developing phase (developing country) such litigation issues could be a problem in the near future. The delay of cases in the Indian courts would make it worse by restricting the application of the invention which is in dispute.

Abolition of IPAB may speed up the dispute resolution but it brings different problems of its own. The different judgments of High Courts on the same legal issue would create problems in framing a legal IP jurisprudence which may cause problems in future.²⁵ To use IP as a tool for economic growth the litigation problems need to be resolved in the country. The formation of separate courts for disputes related to IP may be helpful in dealing with this issue.²⁶ Creating separate rules would help in speedy dispute resolution and would also improve the enforcement system. This in turn would make the India IP regime stronger and better.²⁷

IPR and Foreign Direct Investment (FDI)

FDI is another factor that has the potential to promote the economic growth of the country along with IP and can be used as a tool. If there is a difference in the IP regime of the home country of the investor and the country where he is going to invest also creates problems for the investor. Research done by the OECD in 120 countries in which it studied the relationship between a set of indexes that quantify IPRs and various measures of technology transfer. The conclusion of the study led to a positive correlation between the strength of IPRs (patent particularly) and FDI.²⁸

The most important instrument to protect IP in foreign countries is TRIPS which protects against any infringements, but this treaty often appears to be insufficient of the protection of IP rights of the investor. The other effective alternative for the investor is the Bilateral Investment Treaties (BITs) between the home country of the investor and the country where he is investing.²⁹ Since the first BIT between Germany and Pakistan in 1959, around 2902 BITs have been enforced till 2013 between the different countries in the world. In the absence of such BITs between two countries the investor becomes dependent on the domestic laws related to the IP protection in the country which causes problems in the business of the investing country.²⁹ But having a strong IP regime is not the only criterion to attract FDI.

The country seeking FDI inflow should have a certain degree of absorptive capacity and a good technologically advanced infrastructure. In the poorer countries, the strong IP system which is good for developed and developing countries would not be good for them to attract FDI. Therefore, there should

be different approaches by different countries according to the economic setup of their country. A country that wants to attract FDI inflow should already have good infrastructure, a good advanced technological base, and skilled labour. These factors with a strong IP regime are very important for investment.¹⁸

A firm that wants to invest abroad also looks at the location of the country so that it would cost cheap for the transportation of goods. Low input price access distribution channels and tariffs in the country are also important factors when talking about FDI. Software Technology Parks of India (STPI), an initiative of the Government of India can make the infrastructure and advanced technology base stronger. There is a strong need for such policies to attract FDI in the country.

Edwin Mansfield's research shows that most R&D-intensive firms take the IPR as an important factor among the other important factors. His research shows that IPRs have differing levels of value while talking about the FDI.³⁰ IP protection is not the sole criterion to increase foreign investment. It might not be positive for the growth of FDI even if IP protection is implemented.¹⁸ In the Netherlands and Switzerland there were no patent protection from 1869-1912 and 1850-1907 respectively. Studies show that the introduction of patent laws contributes as an incentive for innovation and industrialization. Evidence shows that there is a causal connection between the introduction of the patent system and the speeding up of industrialization in both countries. Though the absence of patent laws did not cause any harm to the economy the introduction accelerated the growth.¹⁸ Hence, we can say that while considering IPR to promote FDI, IP is not the sole criterion the country has to take care of the other factors (as indicated by the author James T. Gathi) like better infrastructure, advanced technological base, skilled labour etc. These factors with a strong IP regime are significant for investment.

FDI has been seen as a primary factor of provider of technologies, and managerial skills essential for the countries to achieve speedy economic growth.³¹ It has been clear that a strong FDI flow in a developing country like India needs a strong IP system that can protect the IP rights of the investors. IP is not the only sole criterion but other factors like a good infrastructure, cheap transport accessible market etc. are other factors which determine the strong flow of

FDI along with a strong IP system. China is an exception, as it has a weak IP regime but still a very strong FDI inflow. The reasons for this exception are:

- (i) The government had made a massive capital investment in the infrastructure.
- (ii) Intensive modern manufacturing capacity.
- (iii) Cheap and skilled manpower.¹⁸

Hence, we still need a huge investment in the infrastructure and to build a manufacturing capacity. Focusing on skilled labour along with the two other fields, India can potentially increase FDI inflow.

Education and Training Workforce

To have a skilled workforce there is a need for good quality education in schools. To make a policy in the area of education and skill development it needs to be closely linked with the social policy and economic agenda of the country.³³ In India, the digital economy will play an important role in the economic development of the country and for that, it would need a huge digitally skilled workforce to meet the expansion of the digital economy. By 2025 India will need nine times more digitally skilled workforce which is a very big challenge.³⁴

MSME: The Gateway to Indian Economic Growth

By developing innovative products, the MSMEs will have IP as intangible assets. MSMEs possessing IP have various possibilities like to sell the IP property or licensing it to somebody else who has the potential to commercialize it internationally. The MSMEs have to be creative especially those who are dealing with industries related to copyrights.³⁵

Why IP is Important for MSMEs

Since the 1990s globalization has reduced the degree of freedom and control on trade by governments but still they can play an important role in encouraging MSMEs to innovate and to make them compatible to meet the globalization challenges through the strategic implementation of policies. IP are important factor for a firm but it becomes even more important for a startup. An award-winning startup ends up in the global startup graveyard because they do not secure enough IPR. IP is a key factor for the investor and investment is in itself a lifeline for startups in the early stages of its life.³⁶

The Indian Government can use various tools like incentives, appropriate regulations and institutional learning and guidance. For the "High-tech" startups

IP becomes a very important factor for the growth and investment in the competitive market.

Small Firms: The Soul of Innovation

In several empirical studies related to R&D, it came out that SMEs play an important role in R&D activities. Large firms indeed undertake considerably more R&D but SMEs play an important role too. According to the National Science Foundation (1999), the total expenditure for industrial R&D by large firms increased only by 20% while by small firms it increased almost three times between 1985 and 1995.³⁵

Audretsch (1995) identifies that SMEs contribute 2.38 times more in innovation per employee as compared to large firms. The smaller firms make an impressive contribution towards innovation as compared to the large firms. The SMEs have some advantages over large enterprises. One of them is that SMEs by many advances in technology accumulate large and detailed inventions of individual parts and components and techniques which often attract the interest of large corporations as such inventions are very useful for them.³⁵ The MSMEs can be made more successful by adopting specific strategies. One of which is niche Strategy under which the MSMEs choose to pursue increasingly specialized markets or innovative fields, whose presence is in both domestic and foreign markets. The most important category of MSMEs is the technology developers which help in the development of new edge technologies. The main objective of the technology follower category is to close the knowledge gap between the technical and engineering knowledge available and their day-to-day business activities. To meet this need, there is a requirement for a very different set of skills unlike those which administrate institutions and to generally skilled persons in the field have.³⁵ Lack of basic infrastructure and financial challenges are the two major barriers for the MSME sector in India. The innovation cost is high and the startup lacks the financial resources and it is also difficult to get capital from external financial resources.³⁷ The author suggests the availability of finance and the making of capacity-building programs as solutions to these barriers in the Indian MSME sector.

Other Important Factors

IP and Investment

In the 1990s there was a steep increase in the FDI inflow in India when changes were made in the patent

and trademark laws. The only exception is the 1999 dip which was due to the East Asia crises. The increase in the FDI inflow in Brazil after the introduction of a new industrial property law in 1966 in which 20-year patent protection and pipeline protection for drugs was given.⁹ In the case of R&D the investor will only invest if they would be able to make a lion's share out of that investment in future. It can be convincingly asserted that IP protection works as a catalyst in stimulating R&D.³⁸ The aim of a country's IP policy also should be to prevent the exportation of knowledge and inventions to other countries. Some support the positive relationship between economics and IP while others have different views. The steep rise increase in the FDI in India is evidence of the reform in the patent and trademark laws in the early 1990s. The same can be seen in the dramatic rise in the FDI in Brazil after introducing industrial property law in 1996, which protected drugs that were not yet on the market and patents for 20 years. Trademark which is an important component of IP have a very strong influence on investment and market decisions.³⁸

IP and Merger & Acquisition

IP plays a strong role in mergers and acquisitions. The World Investment Report says the second main motivation for a firm to merge and acquire a company is the quest for strategic assets, like R&D, patents, brand names, licenses etc.³⁸ The acquisition of Tetley by TATA Tea, a UK-based company was to obtain a globally recognized trademark. The deal was solely for access to a global brand name and distribution network. According to a report, the second main reason for a firm to merge and acquire an existing company is for the strategic assets like R&D, patents, licenses, supplies and distribution networks.³⁹ The Arm acquisition by Nvidia is a good example as Patents played an important role in the \$40 billion acquisition.⁴⁰

Collaboration of Universities and Education Institutions with the Firms

The initiation of most of the innovation is the firm. According to ZviGriliches (1979), firms engage in the pursuit of new economic knowledge to start the process of generation of innovative activity. The most important factor for developing new economic knowledge is R&D, human capital, scientists and engineers. The empirical link between knowledge input and innovation as output becomes stronger as

the unit of observation becomes aggregated. So, engagement of Indian educational institutes with the companies would benefit both and will increase innovation.

Protection and Promotion of IPR Protection outside the Country

There are several patents filed in other countries by domestic companies, and the same should be promoted by the government. Compared to China and Japan, Indian companies file fewer patents overseas. The initiatives like Patent Prosecution Highway (PPH) are good steps to encourage patent filing in other countries as it would speed up the patent filing.⁴¹ Such engagement should be made with other countries as well. The U.S. position on intellectual property rights at the international level is based on the proposition that additional innovation induced by a strong patent system is so substantive that the final social impact abroad would be positive. These propositions are empirically testable but empirical evidence underlying these propositions is not so clear.⁴² BITs and unilateral agreements could be a better option to protect the IP in other countries. BITs can give protection to the goods and services in the contracting country. The treaty between Singapore and the EU resulted in many changes in the laws related to GI in Singapore to provide better protection for the Goods of the EU.⁴³

Considering IPRs as an important factor for entering into BITs, it may give India a bigger market access and consumer base in the contracting states, to the goods and services manufactured in India. Protection of IP outside the country becomes very important for India as it is negotiating with several countries (Australia, UK, EU, Canada, South Korea etc.) to enter into FTAs.⁴⁴

Conclusion

The straightforward conclusion is complicated because of the dynamic interplay and intervention of R&D, trade, FDI, licensing, and other various factors and these all factors intervene while deciding the role of IP in economic development. Analyzing research and theories that support the argument of the ability of IPR to promote economic growth we can say Intellectual property indeed is a powerful tool for economic development which has yet not been used to optimal effect in all countries, especially in developing countries like India.⁹ There is a huge

opportunity to unlock the full potential of IP to promote economic development in the country. As IPR could affect the inflow of FDI, technology transfer and trade that might impinge on growth, the IP policies need to be framed while keeping these factors in mind.⁴⁵ Most importance must be given to the innovation and R&D policy in the country as it is the sole factor for the creation of IP and patents specifically. This would also help to increase the number of patents filed in the country. The litigation problems related to IPR also need to be taken care of as it would help in the protection of IPR and execution of the decisions of the courts and tribunals as well.

To attract foreign investment, all the factors discussed above need to be taken care of as IP is not the sole factor. As SMEs contribute a lot to the domestic economy, especially to the IP-based industries, MSMEs should be given special attention, and rigorous policies should be made for the incubation of startups, and its need for infrastructure and investment.

Analysing the entire factors which affect the ability of IP to promote economic growth, need to be studied holistically to get a bigger picture so that maximum economic benefit can be drawn from IPRs. The national IPR policy, of 2016 somehow lacks this holistic approach and not enough emphasis is given to expanding India's innovation system which is one of the most important factors for economic growth.⁴⁶ The 161st Parliamentary Committee report (2021) also suggested reviewing the 2016 policy to have a wider approach and to discuss more about the Increasing R&D activities, providing more IP financing and implementation of the policy.⁴⁷ The role of the state government can be a game changer if state governments can formulate their policies and strategies under the national IPR policy.⁴⁷ Efforts should be made to prevent disruption by the new technology to protect the jobs and employment of the huge population working in the industry. The new technology should be regulated in a way so that it can put value to the old setup without causing economic losses.

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