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TRIPS and the Balance between Private Rights and Public Welfare: The Case of Pharmaceutical Sector

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Abstract

Adherence to the Trade-Related Aspects of Intellectual Property Rights (TRIPS) have had varied impacts across the world, and concerns of adverse effects on public welfare, especially in the context of the pharmaceutical sector, are largely debated. In this paper, we try to analyse the effects of TRIPS on public welfare in the context of the pharmaceutical sector. We take a closer look at the policies of some developing countries and their usage of the flexibilities that TRIPS allows. The cases of China, India and Brazil (three major players in the global pharmaceutical industry) are studied. China, which has not used the TRIPS flexibilities, has benefited from appropriate technology transfer and Foreign Direct Investment in Research &Development. The need for FDI in R&D in India and Brazil as potential destinations of research on neglected tropical diseases (NTDs) is brought out. We conclude that the effects of TRIPS on public welfare are critical for countries which do not have the ability to use the flexibilities. At a time when trade and investment treaties are

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mostly aimed at stricter commitments on Intellectual Property Rights (IPR) than the TRIPS, such countries need to negotiate appropriate investment and knowledge-sharing commitments from their developed counterparts so as not to be adversely affected by agreeing to demands on bending IPR laws.

Introduction

Economic growth and development are at the centre of economic agendas for countries around the world. Tracing the history of economic development, one finds scholars bringing out the role of endowments i.e. factors of production: labour, capital and the technology of production as being central to driving development as well as being the reason why some countries have outpaced competing nations in the race to development and human well-being. Consistent economic growth is indispensable for development.

Over time, economists have realised the limitations that natural endowments have, in fostering economic growth. Looking at the micro-level, economic development of countries is also shaped by the level of earnings generated by corporate firms. In this respect, the last fifty years of human civilization have been testimony to the birth and growth of multinational firms which have utilized not only the home markets but foreign markets as well for increasing revenues and the efficiency of production. However, today, the limitations of land, labour and markets are well recognised amongst policy makers and academics.

The key source of comparative advantage today has thus become productivity and improvements in productivity through innovation, research and development. Therefore, it is natural that firms or countries which attain productivity improvements through technological breakthroughs would want to protect the same, as these act as the primary source of generating comparative advantage for them. Knowledge thus generated to enhance productivity, or to develop a new product which enjoys market demand, is known as intellectual property in common parlance.

The role of intellectual property in shaping the world economy today is increasingly important, and more so, since it has found its way into international trade and investment agreements. Going back to the formation of the World Trade Organisation (WTO) in 1995; the TRIPS Agreement was introduced primarily through lobbying by the US pharmaceutical industry to protect their interests across all WTO member nations. Most of the laws and requirements pertaining to the TRIPS were inspired by the Berne and the Paris conventions.

Intellectual property may be in various forms, and the WTO TRIPS include the following as intellectual property: copyright and related rights, trademarks including service marks; geographical indications including appellations of origin; industrial designs; patents including the protection of new varieties of plants; the layout-designs of integrated circuits; and undisclosed information including trade secrets and test data.[2] However, it was recognised that there were differences amongst countries in terms of maturity and prevalence of the concept of intellectual property. Thus, a few flexibilities were granted to countries depending on their stages of development. To list some of the more important ones: First, countries were given time (depending on the levels of economic development) to scale up their intellectual property regimes, and developing economies had until 2005 to implement the TRIPS while the least developed countries currently have an extension till 2021 with possibilities of further extensions, especially for patents in the pharmaceutical sector.[3] Second, provisions for compulsory licences were made to grant flexibility to national governments to allow generic production of a particular product in exchange for a fee paid to the patentee. Third, patent laws were to be framed by individual countries, and the conditions for incremental innovation were left to individual countries. TRIPS only apply to new inventions and not for incremental innovation. Fourth, TRIPS does not delve into the area of parallel importation. Countries are free to import a patented drug from a third country if the price charged in the said country is less than what the patentee charges in the importing country (Mani, et al., 2014). Most of these flexibilities were granted with an eye on the pharmaceutical sector as TRIPS would affect the ability and potential of most developing countries to produce and market medicines with direct binding on domestic well-being. For our purposes in this paper, we concentrate primarily on TRIPS in the context of patents and the pharmaceutical sector.

TRIPS and Public Welfare: Literature Review

Bhagwati, (2002) had initially argued that intellectual property rights (IPRs) are not a trade issue at all and hence, should not be a part of the WTO agenda. The promulgation of TRIPS has a few narratives. According to the first narrative, it is said that the TRIPS came about as a negotiating outcome at WTO between the developed and developing nations. While the developed countries agreed to lower tariffs on textiles and agricultural products, the latter

[2] See "Uruguay Round Agreement: TRIPS Trade related Intellectual Property rights" http://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm (Accessed 11 March, 2014)

[3] See "The Least Developed get eight years more Leeway on protecting intellectual property" (http://www.wto.org/english/news_e/news13_e/trip_11jun13_e.htm)

increased IPR regulations. A coercion narrative suggests that the TRIPS were offered with the threat of trade sanctions on the developing countries. It is also contended as a third narrative that the implications of the TRIPS were unknown to most of the developing world when they signed on to it (Yu, 2005). Stiglitz, (2006) notes that the major problem with TRIPS remains that the agreement seeks to restrict the use of knowledge. Although the issue of IPR is extremely relevant for the electronics, software and entertainment industries, the greatest effect of TRIPS on public welfare is through the pharmaceutical industry.

Most countries adopted the TRIPS as a move towards incentivising research and development and investment in research activities. However, in the aftermath of TRIPS, the world learnt how it could adversely affect human welfare. In Africa, crucial Acquired Immuno Deficiency Syndrome (AIDS) drugs were patented and thereby, priced higher than the affordability of most citizens. In the late-1990s, when the outbreak of AIDS took on humungous proportions, the US pharmaceutical giants were reluctant to bring down the price and increase the supply so as to save human lives. The AIDS endemic in Africa ended up claiming at least ten million lives, a significant portion of the deaths could have been stopped if the pharmaceutical companies had agreed to reduce the price and increase supply. A documentary film has been made in this context under the name "Fire in the Blood".[4] Subsequently, in the Doha round, the provisions of compulsory licensing were further strengthened to emphasize the right of developing country governments to determine where and when the need for a compulsory licence existed.[5] Although Article 31 of the TRIPS agreement does not specifically outline the grounds on which a compulsory licence may be issued, some examples of cases under which compulsory licence could be issued – as obtained from legislations of developing country governments – are: 1) failed negotiations to obtain a licence on reasonable terms, 2) public interest, 3) national emergencies and other urgent circumstances, 4) failure to exploit or insufficiency of working of a patent, 5) counter anti-competitive practices, 6) to establish pharmaceutical industrial base or in line with trade/industrial policy objectives, and 7) Dependent patents (where a patent cannot be exploited without using another patent) (Correa, 2013).

[4] See "Fire in the Blood" (http://fireintheblood.com/)

[5] Compulsory licensing is when a government allows someone else to produce the patented product or process without the consent of the patent owner. In current public discussion, this is usually associated with pharmaceuticals, but it could also apply to patents in any field. (http://www.wto.org/english/tratop_e/trips_e/factsheet_pharm02_e.htm#art31)

There have been empirical investigations on the issue of TRIPS and its effects on public welfare. Rangnekar, (2004) establishes that TRIPS may actually hurt prospects of innovation which is the primary motive for arguing in favour of a TRIPS arrangement. Today, TRIPS form the base of intellectual property agreements that countries reach in their bilateral free trade agreements (FTAs). The US and some European Union countries have been front runners in promoting increased commitments with partner countries. This has had varied effects on partner nations. Mexico, for example, has had to significantly modify its IPR structure to be a part of the North American Free Trade Agreement (NAFTA). The literature also finds evidence that the TRIPS leads to greater technology licensing by reducing the risk of imitation by the licensee (Yang & Maskus, 2001; Park & Lippoldt, 2005).TRIPS may be instrumental in reducing the risk of reverse engineering, and may likely raise high-tech exports from the North to the South, improving productivity and innovation leading to greater welfare (Ferrantino, 1993) (Ivus, 2010). Thus, technology transfer is one channel through which welfare in the South could be affected and/or improved by the developed world under adherence to TRIPS.

Sections of the literature indicate that stronger property rights encourage foreign direct investment (FDI) and overseas R&D (Javorcik, 2004). Stronger property rights may result in an increase of Southern industrial development (Branstetter, Fishman, Foley, & Saggi, 2011). However the positive effects are not obvious. Studies find stronger intellectual property rights to have had no significant effect on domestic innovation (Lerner, 2002) (Qian, 2007), or technology licensing (Ferrantino, 1993) (Fosfuri, 2002); or overseas R&D by multinationals (Kanwar, 2012). Kanwar (2013) finds that in the context of India, there has been increased incidence of technological transfer by way of increased payments for royalties and licence fees as well as an increase in total factor productivity and innovation in India.

In protecting IPRs through TRIPS, greater welfare is expected by promoting a culture of research and innovation, foreign investment in R&D and technology transfer, while restricting piracy. However, for countries which lack the human capital for R&D and where pharmaceutical MNCs choose not to invest due to other strategic considerations, the positive effects in welfare are far from obvious. We briefly explore how TRIPS can affect welfare in theory, and then review the scenario of three emerging economies which are significant participants in the world's pharmaceutical industry but have had limited contribution in the realm of patented drugs.

TRIPS and Welfare

There are debates about stronger IPR regulations and their effects on economic welfare. The theoretical literature on this front reveals no clear-cut answer. In fact, there is nothing to suggest that stronger IPR will lead to greater economic welfare (Winter, 1989). At a broad level, it is believed that, for small countries whose R&D expenditures do not reach world levels, stronger IPR laws would imply access to more products and enhance the level of welfare. Moreover, strong IPR regulations for countries which do not have intrinsic R&D ability would result in welfare losses due to higher prices and job loss as the piracy industry would close down. However, for countries with both production and research potential, the levels of welfare changes are indeterminate especially in a general equilibrium framework. The welfare effects of stronger IPR via TRIPS may be expressed somewhat through a partial equilibrium diagram below:

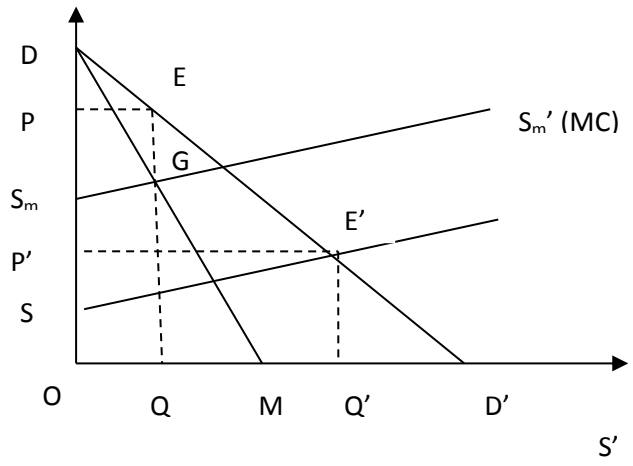

Figure 1: Partial equilibrium effect of patented drugs on welfare.

In the above Figure, we have price (quantity) on the vertical (horizontal) axis. DD' is the demand curve. DM is the corresponding marginal revenue curve. The diagram is drawn for a point in time which we refer to, to analyse multiple periods briefly. Under patent protection for a product developer, the supply curve is S_mS_m'. The vertical intercept SS_m represents the R&D costs incurred to start supplying the particular product. Now, if the producer enjoys a patent for the product, he acts like a monopolist and the market equilibrium is at E with price at P. The total welfare for this is given by the area DEP (consumer surplus) plus $PEGS_m$ and so on, for all future periods. However, in case there is no patent protection, as soon as the

product is launched in the market it gets mimicked and is supplied competitively and the supply curve is SS' for all future periods. Thus, the equilibrium shifts to E', and the consumer surplus and producer surplus are respectively DE'P' and P'SE'. In the way the diagram is constructed, the welfare out of this exercise of no protection outweighs that with protection. However, without the protection, there is limited incentive for the innovator to come up with the product in the first place, and it may actually involve a prohibitively high price such that the market does not exist at all i.e. say, S_m is above point D. Hence, patent protection for some time is required for ensuring that the supply of the product takes place and is made affordable at a price which makes it possible for customers to have access to it for a period of time before other firms can produce the same by copying the formula and it is made available to all.

In this context, Nordhaus (1972) analyses the effects on consumer surplus and concludes that the optimal life of a patent should depend on the demand elasticity. A higher elasticity of demand would imply that optimal patent life would be lower to maximise economic welfare. The (Van Dijk, 1995) (Klemperer, 1990) model of patent breadth highlights how broader patents, encompassing a variety of products as well as narrow patents could be bad as they tend to sacrifice a lot of consumer surplus for little profits.

The problem at hand, for policy makers in developing economies is that of maintaining incentives to innovate through appropriate legislation of IPRs while at the same time, ensuring access to crucial drugs at affordable prices for a large population. The issue of protecting IPRs, especially in the pharmaceutical sector, is further complicated due to an observed tendency by firms to prolong the life of a patent (ever-greening) on any existing patented product with limited incremental innovation or miniscule incremental therapeutic value.[6] In the post-TRIPS era, and especially in the context of the pharmaceutical industry, the debate of greater patent protection and public welfare has thus, taken centre stage.

Pharmaceutical Patents and IPR Generation

We look at the trends in the generation of IPR in the pharmaceutical sector at a world level, with greater focus on Brazil, India and China as these are countries with significant potential

[6] See (Vernaz, et al., 2013)

in their pharmaceutical sector, but have relatively less contribution in the amount of IPR generated.

As observed from Figure 2 below, the share of Europe in the space of pharmaceutical patents has declined from 1995 till 2012 while that of Asia has picked up steadily post-2002. The share of Latin America has been the same across the years, while those of North America and Oceania have shown minor increases. The increase in patents from Asia is mainly driven by China. This indicates greater research ability after the implementation of TRIPS. We will look more closely at this in China in the next section.

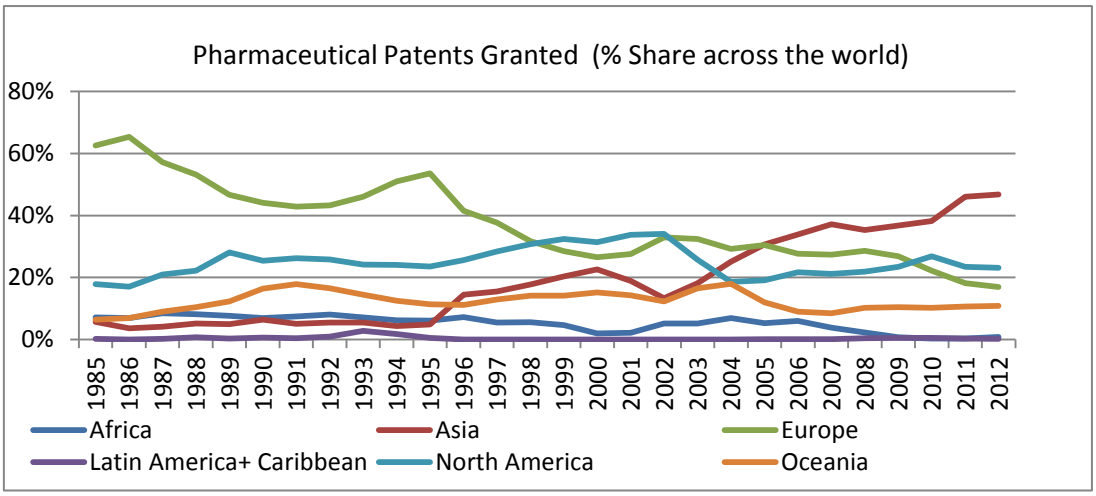

Figure 2: Geographical breakdown of the share of pharmaceutical patents across the world (1985-2012)
Source: Author's calculations using WIPO statistics.

Tracking the composition of patent holders by income groups over the last three decades in Figure 3, one finds a shift of patent holders from high income countries to upper middle income countries in the post-TRIPS era.

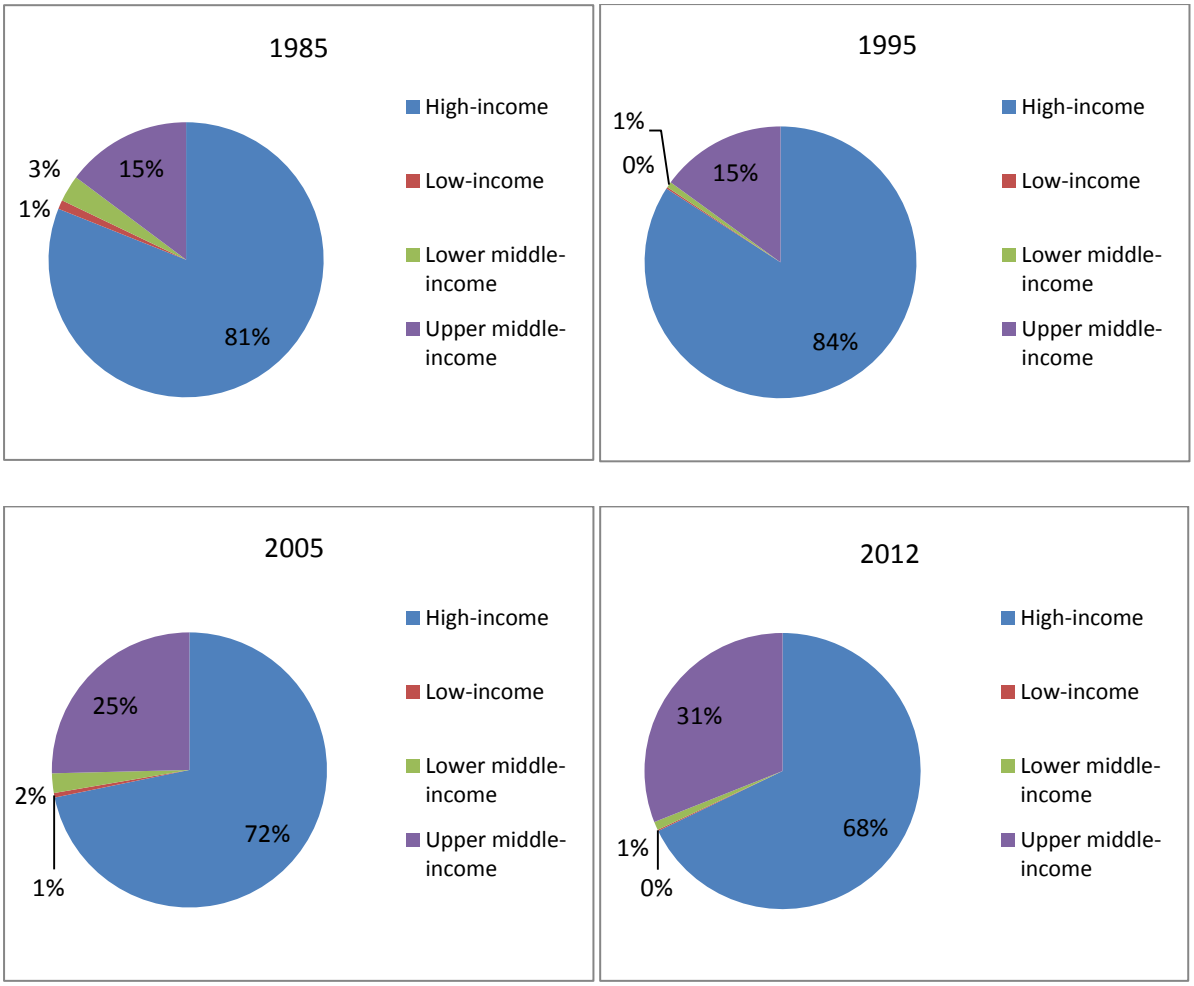

Figure 3: Changing composition of pharmaceutical patent holders across the world by income group. Source: Compiled by the author from WIPO statistics.

As the share of upper middle income countries has increased, we look more closely at patent applications by Brazil, India and China which have significant participation in the global pharmaceutical markets. Patent applications from these countries have risen at an increasing rate in the post-TRIPS period. This is shown in Figure 4 below.

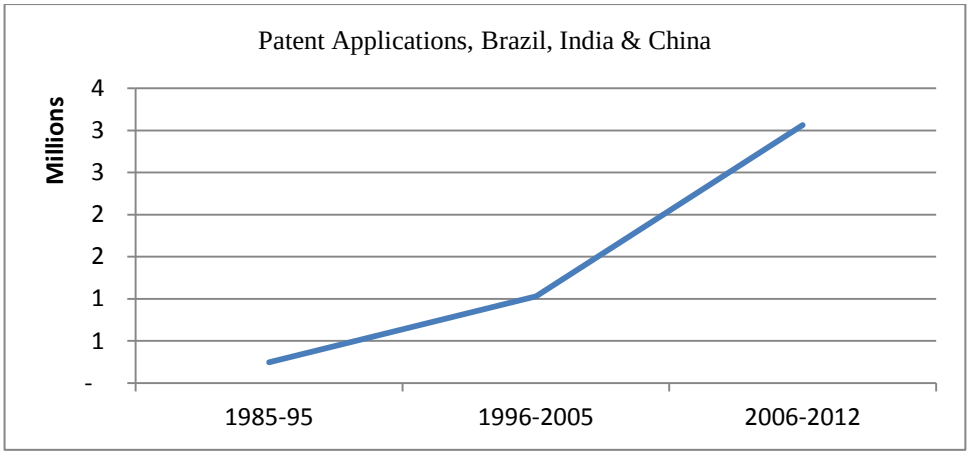

Figure 4: Decadal patent applications by Brazil, India and China. Source: Compiled by the author from World Bank databank.

Of total pharmaceutical patents granted in the world, China's share which stood at 1% in 1995 has grown to around 30% in 2011-12.[7] This is the single largest increase in a country's share of patents granted over the last decade, and accounts for the increase of the share of upper middle income countries observed in the Figure 3.

We next look at possible technology transfer to Brazil, India and China. An increase in the payments for transfer of IPR reflects the sharing of IPR. We observe an increase in the payments from these countries from 2005 till 2012. However, as exporters of intellectual property, the countries are less competitive as receipts are more or less stagnant from 2005 till 2012.

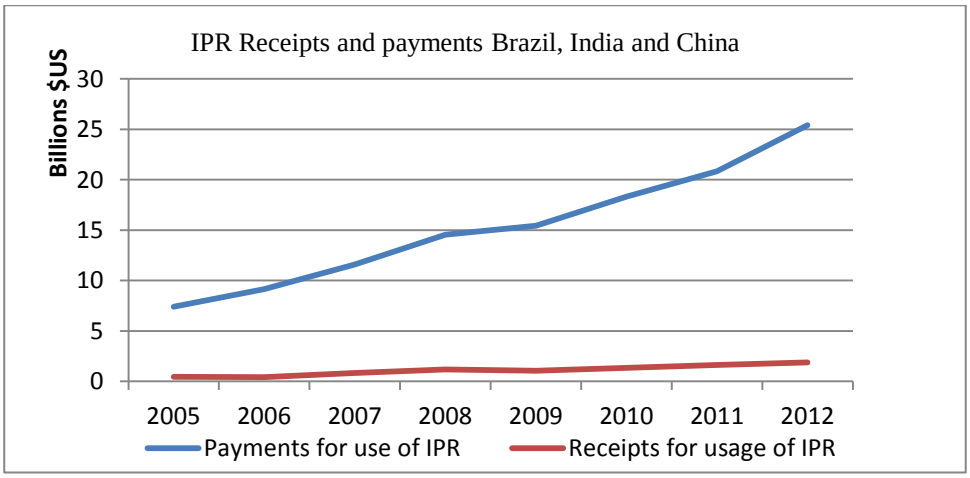

Figure 5: Technology transfer-related payments and receipts for Brazil, India and China. Source: Author's calculations using the World Bank databank.

[7] Figures calculated by the author using WIPO statistics of Patents granted in the pharmaceutical sector across the world.

Additionally, it has been contended that the amount of technology transfer is limited to intra-firm sharing of technology, and not between firms in developed countries to those in developing countries, which would reflect actual transfer of knowhow (Mani, et al., 2014).

In the next section, we study some elements of the policy structure that these countries individually formulated to use TRIPS and its flexibilities to improve domestic welfare. In doing so, we closely analyse the development of research atmosphere, usage of TRIPS flexibilities and FDI in R&D by developed nations or technology transfer as key sources of effecting increases in welfare in these nations.

Emerging Economies and TRIPS in the Pharmaceutical Sector

China

China became TRIPS compliant in the year 2000. Recent reports suggest the prevalence of corruption in the Chinese pharmaceutical sector. These problems are not directly an outcome of the TRIPS but have more to do with China's internal health policies which incentivise doctors to prescribe more medicines with a particular shift away from generics towards branded generics, even if they are available, so as to increase net payoff for the doctors (Economist, 2014). Undoubtedly, the pharmaceutical MNCs find it in their interest to push such policies since this offers an easier way to increase revenues by promoting branded generics, especially when increasing revenues from patented drugs is a challenge.

China has recently amended its IPR laws with respect to compulsory licensing.[8] After the Chinese laws on compulsory licensing were put in place in 2008, the amendments have led to restricting exports of compulsory licensed drugs made in China, barring those under circumstances where the importing country has reported the same to the WTO and requires Chinese assistance to tackle the situation.

The Chinese scenario in terms of developing research infrastructure is more positive than that in India and Brazil. As observed from statistical data, China currently accounts for about 30% of the world's pharmaceutical patents granted each year. Additionally, the positive sentiment on IPR legislation, along with a favourable FDI policy, has seen pharmaceutical MNCs like

[8] See "China: Measures for Compulsory Licensing of Pharmaceuticals Updated" http://www.loc.gov/lawweb/servlet/lloc_news?disp3_l205403105_text

Bayer set up R&D centres in China.[9] Amongst the three countries being analysed in this study, China has used the least amount of flexibilities that are allowed under TRIPS. In fact, the compulsory licensing law also came into force very late, and has hardly been used to affect domestic markets. This is noteworthy since the US as well has compulsory licences and uses it under appropriate circumstances.

India

In India, the ramifications of the TRIPS implementation have been significant, and have grabbed international attention of late. The Patent Act of 1970 was traditionally implemented to give process patents as opposed to product patent. This resulted in the growth and development of the Indian pharmaceutical sector, establishing India as the "pharmacy for the developing world", and as a global leader in exporting generic drugs (non-patentable ones). India became TRIPS compliant in 2005 which made way for product patents in place of process patents. This change was brought about amidst fears of going back to the days prior to 1970s when India used to be one of the highest priced markets for imported medicines. The product patent regime that was operational then was used by the MNCs to primarily prevent Indian companies from manufacturing the medicines while the surplus was fully mopped up by them. India was importing 80% of its medicines at exorbitant prices at that time.[10]

Post 2005, empirical studies have shown a greater expenditure on pharmaceutical R&D by Indian companies (Goldar, et al., 2010). However today, a number of erstwhile Indian pharmaceutical giants have been taken over by foreign companies, and there is a debate about the amount of R&D that occurs in India, at least for the drug development phase (Chaudhuri, 2012).

[9] See "Bayer sets up R&D Center in China" 12 February, 2009 http://www.china.org.cn/business/2009-02/12/content_17267872.htm

[10] See "India alters Law on Drug Patents" 24 March, 2005 The New York Times http://www.nytimes.com/2005/03/24/international/asia/24aids.html?pagewanted=print&position=&_r=0

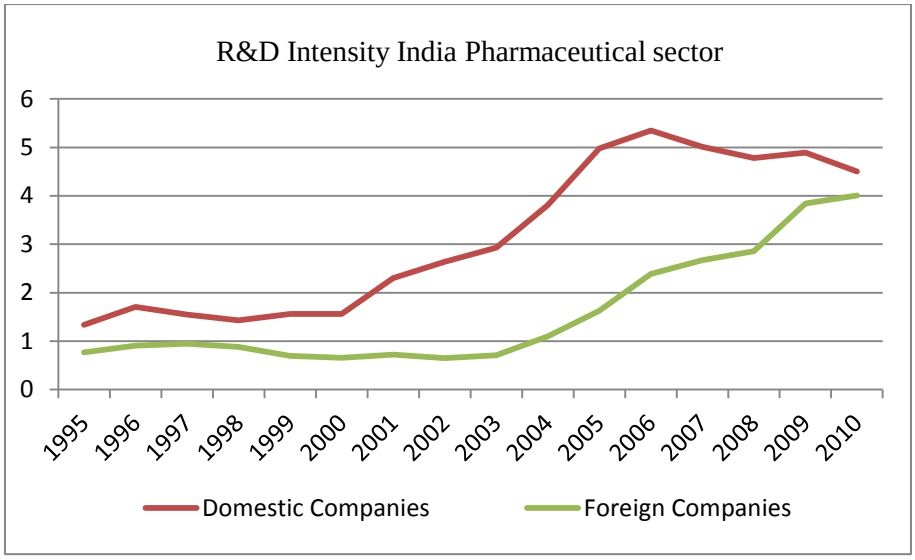

Figure 6: R&D budget as a percentage of Sales, India. Source: Author's calculation using statistics from the Bulk Drug Manufacturers Association (India) http://www.bdmai.org/statistics.php

As observed in the above Figure, the R&D intensity of domestic pharmaceutical companies has progressively increased but flattened out post-2006, and is in fact, seen to be declining. The increase in foreign pharmaceutical companies' R&D expenditure in India is increasing at a slower rate. Till date, India depends crucially on foreign companies for productive R&D. But the nature of this R&D spending has been questioned and is said to have limited focus on product development. One reason behind this is the perception regarding intellectual property rights protection in India.

In the recent past, judgements from the Supreme Court of India against Novartis, rejecting the patent plea for the cancer drug Glivec, has resulted in reasonable negative attention from the international media and policy circles. In this specific judgment, the Supreme Court of India maintained that under Article 3(d) of the Patents Act, Novartis did not deserve a fresh patent.[11] This has led India to be criticised for its IPR implementation. The issue of incremental innovation in the Act is an area where countries are granted flexibilities under TRIPS to interpret incremental innovation. This is especially to curb against tendencies of "ever-greening" of patents.

[11] Article 3(d): *The following are not inventions within the meaning of the Patent Act: ... (d) the mere discovery of a new form of a known substance which does not result in the enhancement of the known efficacy of that substance or the mere discovery of any new property or new use for a known substance or of the mere use of a known process, machine or apparatus unless such known process results in a new product or employs at least one new reactant.*

India has issued its first compulsory licence recently, allowing NATCO to produce a drug on which Bayer has a patent.[12] This in turn, has been criticised as an ad hoc decision which enables a private firm to use the licence and increase profits, especially when the medicine is a life-extension drug and not one that treats a mass disease or epidemic. In Thailand, for example, anti-AIDS drugs are provided through state participation in the production of the drug so as to keep the prices down.[13]

There is mixed evidence about the level of technology transfer although (Kanwar, 2013) brings out evidence of technology transfer (not specifically for the pharmaceutical sector). FDI regulations have been progressively relaxed, but the negative sentiment in the world with respect to the IPR regulations in India has hardly seen product development related R&D FDI inflows. There are conjectures suggesting that most R&D in India by foreign companies have mainly been at the level of clinical trials and generic drug development, not for new product generation.[14]

Brazil

Brazil is the second largest supplier of generic drugs in the world, after India. Brazil became TRIPS compliant in 1996. However, in terms of generating patents, the statistics show a less-than encouraging picture. Most of the new patents have been issued to multinational companies, and Brazil's firms themselves have a very low share. The domestic policies were amended to incentivise research in public universities in the direction of industries, and Brazil's domestic patents have thus, mainly been attributed to universities (Mani, et al., 2014).

In terms of using the TRIPS flexibilities, Brazil has made the maximum use of compulsory licences amongst the countries being analysed in this study. Brazil has issued as many as four compulsory licences, and has managed to bring down costs of a few other pharmaceutical products under expectations of possible issuance of a compulsory licence. The price reductions thus obtained for respective drugs range between 50-70% of their original price (Von Braun).

[12] See "IPAB upholds NATCO's compulsory license on Nexavar" (http://www.business-standard.com/article/companies/ipab-upholds-natco-s-compulsory-license-on-nexavar-113030500400_1.html)

[13] See "Thailand's Compulsory licensing controversy" (http://www.keionline.org/content/view/90/1)

[14] See "Pharma R&D: Basic Drug Research only a part" 22 April, 2013 Business Standard (http://www.business-standard.com/article/companies/pharma-r-d-spend-covers-expenses-much-beyond-drug-research-113042100266_1.html)

For technology transfer, the scenario in Brazil is similar to that of India. The empirical evidence is inconclusive, and a major part of licensing has happened between foreign and domestic arms of multinational companies. Hence, domestic firms have gained little if at all, in terms of licensed technology. Most foreign firms still prefer to import the patented medicines into Brazil under the protection of patents (Mani, et al., 2014). There is however, a sporadic case of the partnership between the GSK and Oswaldo Cruz Foundation in the development of vaccines that was essential for Brazil's immunisation programme (IFPMA, et al., 2011).

The new IPR regime is said to have increased research in neglected tropical diseases (NTDs) in both Brazil and India (Mani, et al., 2014). This is particularly an area where countries like India and Brazil have to closely shape their policy scenario. MNCs have the modern technology to conduct research, but their innovation is mostly focused on diseases that ail the developed world which is their largest market. The diseases that affect the developing countries are mostly neglected, and that is where the bulk of research in emerging economies should be focused on. This is precisely where countries like India, Brazil and China would want foreign investment in R&D. While China already has research centres by multiple foreign companies, India and Brazil want to capitalise on their potential by incentivising FDI in pharmaceutical R&D which is geared to product-development.

Discussion

On the whole, developing countries can consider policy options in three ways. First, compulsory licensing maybe used as a lever for containing incidence of epidemics when a patented drug is available and generic versions may be produced at a lower cost in the country. Second, designing the FDI landscape and IPR regulations to encourage R&D investment by pharmaceutical companies such that (i) domestic professionals are trained to gain the knowhow and research expertise and (ii) technology transfer is possible for access to world class technology and research knowhow. Third, a system to regulate drug prices to ensure affordability of medicines for the less-affluent sections of the population should be in place.

The TRIPS acts as a protection for private rights of crucial knowledge generated and to incentivise investment in research and innovation. Since the conditions vastly vary across the

developed and developing worlds today, the issue of technology transfer has become extremely important. Even as we understand the ability of countries to issue compulsory licences, there are many countries which simply lack the ability to produce a patented drug domestically, and have to import the required medicine from appropriate producers after approaching the WTO. It is in such countries that the effects of TRIPS work against increasing public welfare.

The increased number of bilateral and multilateral trade and investment agreements signed in the last decade has seen many countries locking themselves in commitments which are more stringent than the TRIPS. The current agreements being negotiated under the Trans Pacific Partnership (TPP) as well as Trans-Atlantic Trade and Investment Partnership (TTIP) aim to achieve higher standards of commitment than the TRIPS. It is here that the developing countries need to take stock of their local strengths and weaknesses. The general tendency of MNCs to use patent protection to guarantee a safe market for their products, rather than investing in product-development, also needs to be addressed through adequate investment commitments in the agreements being negotiated.

Conclusion

TRIPS serves as a safeguard for intellectual property rights, which in most instances, is a source of comparative advantage for firms in a globalised economy. However, considering the case of the pharmaceutical sector in particular, the TRIPS, which restricts the production of generic drugs in order to protect product patents, can have adverse impacts on public welfare in developing and least developed countries. In order to enjoy access to life-saving patented medicines, most developing economies have had to adhere to TRIPS, but there have been glaring examples of adverse effects on public well-being. Of particular mention would be the problems faced in Africa due to the AIDS crisis in the late-1990s where a generic version of the patented drug could not be made available due to adherence to TRIPS. The inability to issue a compulsory licence as no domestic company could manufacture the drug increased the scope of the problem. In the wake of this problem, the existing TRIPS flexibilities were modified accordingly.

Adherence to strict IPR laws, along with facilitating technology transfer and research knowhow through FDI by developed-country MNCs, is the stepping stone to increase public

well-being in the longer run. From our analysis of the pharmaceutical sectors in Brazil, China and India, we find that in the post-TRIPS era, China has shown the greatest potential, having generated the highest number of patents in the world. MNCs look towards China as a destination for investment in R&D. India and Brazil have yet to emerge as potential hosts to MNC R&D labs. While India and Brazil have used the flexibilities under TRIPS to address immediate adverse effects on domestic welfare, their contributions to the number of pharmaceutical patents in the world have not been encouraging. These countries are best placed to concentrate on research on neglected tropical diseases, but the knowledge and research infrastructure of MNCs would facilitate the research in a big way.

While we recognise appropriate use of compulsory licences, FDI policies to facilitate technology transfer and drug price controls are the key ways to improve public welfare. The adverse effects of TRIPS are exemplified in the context of the countries which, in spite of having the flexibilities granted under TRIPS, are not in a position to utilise the same. Indeed, it is only the middle and upper middle income countries that have used the flexibilities, like compulsory licensing to the greatest extent till date. The concern becomes acute as all trade and investment agreements today involve negotiations for standards that are higher than the TRIPS, and cover both developed and developing economies. The developing nations, thus, need to negotiate for commitments from developed countries on adequate investments and technology or knowledge transfer. This would insulate them against being used simply as markets of patented drugs which does not add to their ability to concentrate on R&D that addresses diseases that may be unique to them.

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