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Intellectual Property Rights and Economic Development — Historical Lessons and Emerging Issues

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1 INTRODUCTION

AS it will become clearer later in this paper, the role of intellectual property rights (henceforth IPRs) in economic development has always been a controversial issue. However, the debate surrounding it has become even more heated after the Trade-Related Intellectual Property Rights (TRIPS) Agreement. Initially, TRIPS was not even a central issue in the Uruguay Round of the GATT talks that led to the birth of the World Trade Organisation (WTO) (Siebeck, 1990a), and therefore did not get much attention. A number of recent events, however, have come together to make people realise that this could become the biggest point of contention in the running of the WTO in the coming years.

The first thing that drew public attention to TRIPS was the fact that the "transition" period allowed for the developing countries to "upgrade" their IPRs regimes in accordance with the TRIPS Agreement was coming to an end, thereby exposing them to greater dangers of trade sanctions by the advanced countries (end of 2000 except for the least developed countries, which were given until 2006). Second, many people were recently enraged by attempts by advanced country individuals and firms to patent products embodying knowledge that are commonly known in some developing countries, on the back of the TRIPS provision (e.g., the notorious tumeric case; see UNDP, 1999, pp. 70-1). Third, the recent controversy surrounding the attempts by pharmaceutical companies based in advanced countries to block the exports of cheap AIDS/HIV drugs by some developing countries (such as Argentina, India, Thailand, and Brazil) using TRIPS, has highlighted the potential conflict between TRIPS and greater human well-being.

TRIPS, like other WTO agreements, is an agreement on a legal framework, so its detailed *modus operandi* needs to be worked out through the accumulation of cases. For this reason, the exact future shape of the TRIPS regime cannot be predicted with certainty at this point. However, as the above examples show, the system seems to be evolving in a way that favours the advanced country producers over everyone else (e.g., consumers in the advanced and the developing countries, developing country producers). Therefore it is opportune for a re-think on the implications of TRIPS and see whether and how it should be changed in a way that increases the welfare of all.

In this paper, we try to contribute to the debate by re-thinking the role of IPRs in economic development, and drawing some implications for a reform of the TRIPS agreement. A novel feature of this paper is that it tries to do this from a historical perspective as well as from the point of view of contemporary developing countries. The first section (chapter 2) will discuss the role that IPRs played in the development of the now-developed countries when they were industrialising, and draw some implications for the developing countries of today and for the world economy as a whole. Chapter 3 provides a discussion on the role of IPRs in economic development in the contemporary context, with a special emphasis on the patent system. This is followed by a chapter critically examining the implications of TRIPS in light of the preceding discussion (chapter 4). The last section summarises and concludes the paper (chapter 5).

2 Technology Transfer, IPRs, and Economic Development in a Historical Perspective

IN the history of industrialisation, technology transfer has always played a key role. Technology transfer during the 16th and the 17th century from the then more advanced economies of Continental Europe (especially Venice and the Low Countries) was critical in Britain's transition from a backward raw material producer to a leading manufacturing nation (Reinert, 1995; Cipolla, 1993).[1] After the British Industrial Revolution, the effectiveness of technology transfer from Britain (and to a lesser extent from the Low Countries) became the key determinant of a country's prosperity (Landes, 1969, is the definitive work on the transfer of British technology to the Continental European countries; see Jeremy, 1981, on the transfer to the US).

Some of these transfers were obviously arranged through "legitimate" means. Especially in the early days of industrialisation when the technologies employed were relatively simple to understand, a guided tour of a factory by an expert could be enough to capture the essence of technology. Even early on, however, some advanced producers refused to grant such tours or at least concealed what they considered crucial parts from the visitors. Apprenticeship was another common means to absorb advanced foreign technologies. However, until the mid-19th century, when machinery became the key embodiment of technological knowledge, the most important means of technological transfer was the

[1] The policies of Henry VII were particularly important in this respect. He not only made efforts to secure skilled wool-manufacturing workers from the more advanced countries, but once some manufacturing base was established in the woolen industry, he imposed a ban on raw wool export, thus creating a powerful incentive to further import substitution (Reinert, 1995).

transfer of skilled workers, in whom most technological knowledge was then embodied. As a result, countries tried to recruit skilled workers from the more advanced countries and also bring back nationals who were employed in advanced country establishments – sometimes through a concerted effort orchestrated and endorsed by the government (more on this later).

Needless to say, these efforts were most effective when backed by the policies intended to enhance what modern economics of technology calls "technological capabilities" (see Fransman & King (eds.), 1984). Many governments set up institutions of teaching (e.g., technical schools) and research (e.g., various non-teaching academies). They also took measures to raise "awareness" in advanced technology in a number of ways. They established museums, organised international expositions ("expos"), bestowed new machinery to private firms, and set up "model factories" using advanced technologies. These governments also provided the firms with financial incentives to use more advanced technology, especially through rebates and exemptions of duties on imports of industrial equipment (see Landes, 1969, pp. 150-1, for further details).[2]

Very often, it should be noted, acquisition of advanced technology was organised through "illegitimate" means.[3] Firms naturally wanted to shroud their technologies in secrecy and therefore limited the access of foreigners to their factories.[4] Moreover, the governments of the more advanced countries played the critical role in limiting the outflow of key technologies (although exactly how effective they were is debatable). In the early days of industrialisation, the governments of the more advanced countries mainly concentrated on controlling the migration of the skilled workers, in whom most technologies then were embodied. In

[2] It is interesting to note that this was one of the staple tools of East Asian industrial policy until recently.

[3] We put quotation marks around the term, illegitimate, because what is illegitimate from one point of view may not always be so from other points of view.

[4] However, the Dutch firms are known to have been extremely open about this until their technological superiority was visibly threatened from about the middle of the 18th century (Davids, 1995).

1719, prompted mainly by the French attempt (organised by the legendary Scottish-born financier John Law of the Mississippi-Company fame) to recruit hundreds of skilled workers and to a lesser extent by a similar Russian attempt, Britain introduced a ban on the migration of skilled workers, and especially on attempts to recruit such workers for jobs abroad ("suborning").

According to this law, anyone suborning was punishable by a fine or even imprisonment. Emigrant workers who did not return home in six months after being warned to do so by an accredited British official (usually diplomats stationed abroad) would in effect lose their right to lands and goods in Britain, and have their citizenship taken away. Specifically mentioned in the law were industries such as wool, steel, iron, brass or any other metal, and watch-making, but in practice the law covered all industries (see Jeremy, 1977, and Harris, 1998, ch. 18, for further details). The ban on emigration of skilled labour and suborning lasted until 1825 (Landes, 1969, p. 148).

Subsequently, as increasing amounts of technologies got embodied in machines, machine exports came under control. Britain introduced a new Act in 1750 banning the export of "tools and utensils" in wool and silk industries, while strengthening the punishments for suborning. The ban was widened and strengthened in subsequent legislations. In 1774, another Act was introduced to control machine exports in cotton and linen industries. In 1781, the 1774 Act was revised and the wording "tools and utensils" changed to "any machine, engine, tool, press, paper, utensil or implement whatsoever", indicating the increasing mechanisation of the industries. In 1785, the Tools Act was introduced to ban exports of many different types of machinery, which also included a ban on suborning (Harris, 1998, p. 457-62; also see Jeremy, 1977). This ban lasted until 1842 (Landes, 1969, p. 148).[5]

[5] Berg (1980, ch. 9) provides an informative discussion on the political and academic debates surrounding the abolition of the ban on export of machinery.

In response to these measures to prevent technology outflows by the advanced countries, the less advanced countries deployed all sorts of "illegitimate" means to gain access to advanced technologies. The entrepreneurs and the technicians of these countries, often with explicit state consent or even active encouragement (including offers of bounty for securing specific technologies), were routinely engaged in industrial espionage.[6] Landes (1969), Harris (1991), and Bruland (1991), among others, document an extensive range of industrial espionage vis-á-vis Britain by countries such as France, Russia, Sweden, Norway, Denmark, the Netherlands, and Belgium.

Despite all these "legitimate" and "illegitimate" efforts, technological catching-up was not an easy task. As the recent literature on technology transfer shows, technology contains a lot of tacit knowledge, which cannot be easily transferred. This problem was not easily solved even by the importation of skilled workers even in the days when they embodied most of the key technologies. These people had language and cultural problems, and more importantly did not have access to the same technological infrastructure that they had at home. Landes (1969) documents how it took decades for the Continental European countries to assimilate British technologies, even in the days when technologies were relatively simple that importing some skilled workers and perhaps a key machine could in theory enable a technological follower to replicate what the leader was doing. By the late 19th century, the observation (or not) of patents and other intellectual property rights became a key issue in technology transfer (and knowledge transfer in general). The bans on skilled worker migration and machinery exports by Britain were abolished by the mid-19th century thanks to their increasing ineffectiveness. By the middle of the 19th century, the key technologies became so complex that importing skilled workers and machinery were not enough

[6] For example, in the 1750s, a former Manchester textile finisher and Jacobite officer, John Holker was appointed as Inspector-General of Foreign Manufactures in the French government. While also advising French producers on technological problems, his main activity under this euphemistic job title consisted of industrial espionage and suborning of British skilled workers (Harris, 1998, p. 21).

to achieve command over a technology. In many areas, an active transfer by the owner of technological knowledge through licensing of patents emerged as a key channel of technology transfer.

Most now-developed countries established their patent laws between 1790 and 1850 and established other elements of their IPRs regimes, such as copyright laws (first introduced in Britain in 1709) and trademark laws (first introduced in Britain in 1862), in the second half of the 19th century.[7] All of these IPRs regimes were highly "deficient" by the standards of our time. Patent systems in many countries lacked disclosure requirements, incurred very high costs in filing and processing patent applications, and afforded inadequate protection to the patentees. Few of them allowed patents on chemical and pharmaceutical substances (as opposed to the processes) – a practice that has continued well into the last decades of the 20th century in many countries.[8]

Of great relevance to this discussion is the fact that these laws accorded only very inadequate protection of the IPRs of foreign citizens (for further details, see Williams, 1896, Penrose, 1951, Schiff, 1971, McLeod, 1988, Crafts, 2000, and Sokoloff & Khan, 2000). For example, many of patent laws were very lax on checking the originality of the invention. More importantly, in most countries, including Britain (before the 1852 reform), the Netherlands, Austria, and France, patenting of imported invention by their nationals was often explicitly allowed.

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[7] The first patent system was invented in Venice in 1474 (it granted ten years' privileges to inventors of new arts and machines). In the 16th century, some German states, notably Saxony, used patents, although not totally systematically. The British patent law came into being in 1623 with the Statute of Monopolies, although some argue that it did not really deserve the name of a "patent law" until its reform in 1852 (McLeod, 1988). France adopted its patent law in 1791, the USA in 1793, and Austria in 1794. Many of the other European countries established their patent laws in the first half of the 19th century – Russia (1812), Prussia (1815), Belgium and the Netherlands (1817), Spain (1820), Bavaria (1825), Sardinia (1826), The Vatican state (1833), Sweden (1834), Wuerttemberg (1836), Portugal (1837), Saxony (1843) (Penrose, 1951, p. 13).

[8] Chemical substances remained unpatentable until 1967 in West Germany, 1968 in the Nordic countries, 1976 in Japan, 1978 in Switzerland, and 1992 in Spain. Pharmaceutical products remained unpatentable until 1967 in West Germany and France, 1979 in Italy, and 1992 in Spain. Pharmaceutical products were also unpatentable in Canada until the early 1990s. For details, see Patel (1989, p. 980).

In the USA, before the 1836 overhaul of the patent law, patents were granted without any proof of originality. This not only led to the patenting of imported technologies but encouraged racketeers to engage in "rent-seeking" by patenting devices already in use ("phony patents") and by demanding money from their users under threat of suit for infringement (Cochran & Miller, 1942, p. 14).[9] The cases of Switzerland and the Netherlands in relation to their patent laws deserve even greater attention (Schiff, 1971, for further details).

The Netherlands, which originally introduced a patent law in 1817, abolished it in 1869, partly due to the rather deficient nature of the law (even by the standards of the time)[10] but also having been influenced by the widespread anti-patent movements in Europe at the time. This movement condemned patents as being no different from other monopolistic practices (Schiff, 1971; Machlup & Penrose, 1951, documents the anti-patent movements of the time in detail).

Switzerland did not provide any protection of intellectual property until 1888, when a patent law protecting only mechanical inventions ("inventions that can be represented by mechanical models"; Schiff, 1971, p. 85) was introduced. Only in 1907, partly prompted by the threat of trade sanction from Germany in retaliation to the Swiss use of its chemical and pharmaceutical inventions, a patent law worth its name came into being. However, even this had many exclusions, especially the refusal to grant patents to chemical substances (as opposed to chemical processes). It was only in 1954 that the Swiss patent law became comparable to those of

[9] According to Cochran & Miller (1942), therefore, the fact that between 1820 and 1830 the US produced 535 patents per year against 145 for Great Britain was mainly due to the difference in "scruples" (p. 14). Contrast this to the argument by Sokoloff & Khan (2000) that it was thanks to a "good" patent system that the US far exceeded Britain in patenting per capita by 1810 (p. 5).

[10] The 1817 Dutch patent law did not require a disclosure of the details of patents. It allowed the patenting of imported inventions. It nullified national patents of inventions that acquired foreign patents. And there was no penalty on others using patented products without permission as far as it was for their own business (Schiff, 1971, pp. 19-20).

other advanced countries (Schiff, 1971), although chemical substances remained unpatentable until 1978 (Patel, 1989, p. 980).

With the introduction of IPRs laws in an increasing number of countries, the pressures for an international IPRs regime naturally started growing from the late 19th century (the following details are from Penrose, 1951, chapter 3). The first attempt to create an international IPRs regime was the 1873 Vienna Congress. Especially controversial at this Congress was the "compulsory working" requirement that Austria and some other countries had (in the Austrian case, a patented article had to be manufactured in Austria within a year from the issue of the patent or the patent would be revoked). The Congress concluded with a resolution that recommended "compulsory licensing" instead of "compulsory working", despite objections from some countries, notably the USA.

Another conference was held in Paris in 1878. Like the Vienna Congress, it was another "unofficial" affair with no official government delegates. Unlike the Vienna Congress, however, it was a very pro-patentee gathering. However, its resolution still showed some recognition of "public interest" arguments and accepted the principle of compulsory working (but, reflecting its pro-patentee bias, rejected "compulsory licensing", on the ground that no one other than the patentee should be able to benefit from an invention, should the patentee prove unable to work it).

The 1878 Paris Congress set up a commission, which eventually produced a draft convention that was discussed in the first "official" meeting on the international IPRs regime (with representatives from 19 governments) in Paris in 1880. This draft convention eventually got ratified by 11 countries in Paris in 1883 in the form of the Paris Convention of the International Union for the Protection of Industrial Property (the original signatories were Belgium, Portugal, France, Guatemala, Italy, the Netherlands, San Salvador, Serbia, Spain and Switzerland). It covered not just patents but also trademark laws (which enabled patentless Switzerland and Netherlands to sign up to the Convention despite not having a patent

law). In 1886, the Berne Convention on copyrights was signed. The Paris Convention was subsequently revised a number of times (notably 1911, 1925, 1934, 1958, and 1967) in the direction of strengthening patentee rights and, together with the Berne convention, had formed the basis of the international IPRs regime until the TRIPS agreement (Shell, 1998; see Chapter 4).

The Paris Convention had a number of characteristics (Penrose, 1951, chapter 4). First of all, despite strong US objection, it adopted a firm "non-reciprocity" approach, where foreign citizens received national treatment but countries were not required to accord foreign citizens the same IPRs that they enjoyed in their home countries. Second, it accepted the "right of priority", which meant that the filing of an application for a patent in one country gave the applicant the right to obtain recognition of his/her claim in all other countries in which his/her invention was patentable. Most importantly, it adopted both compulsory working and compulsory licensing. The compulsory working agreement was subsequently revised in 1925 to be acceptable only when compulsory licensing proved ineffective.

However, despite the emergence of an international IPRs regime, even the most advanced countries were still routinely violating the IPRs of other countries' citizens well into the 20th century. We already mentioned that until this time, Switzerland and the Netherlands did not have a patent law. It is also interesting to note that the USA, a strong advocate of patentee rights even then, did not acknowledge copyrights of foreigners until 1891.[11] And as late as in the late 19th century, when Germany was about to technologically overtake Britain, there was a great concern in

[11] The US did not fully conform to the Berne Convention on international copyright (1886) until 1988, when the country finally abolished the requirement that copyrighted books had to be printed in the US or typeset with US plates (Sokoloff & Khan, 2000, p. 9).

Britain with German violation of its trademarks (Williams, 1896, provides many interesting details; also see Landes, 1969, p. 328).[12]

Although Britain did not have a trademark law until 1862, Kindleberger (1978) notes that "as early as the 1830s a number of British manufacturers were continuously engaged in litigation to protect trademarks" (p. 216). In 1862, it introduced a trade mark law (the Merchandise Mark Act), which banned "commercial thievery", such as the forging of trademarks and the labeling of false quantities (Williams, 1896, p. 137). In the 1887 revision of the Act, mindful of German (and other foreign) infringement of the British trademark law, the British Parliament specifically added the place or the country of manufacture as a part of the necessary "trade description". This revision banned not only patently false descriptions but also misleading descriptions – such as the then widespread German practice of selling counterfeit Sheffield cutlery with fake logos. According to this Act, "it [was] a penal offence to sell an article made abroad which has upon it any word or mark leading the purchaser to believe that it is made in England, in the absence of other words denoting the real place of origin" (Williams, 1896, p. 137).

However, the Germans employed a range of measures to get around this Act (Williams, 1896, p. 138). They placed the stamp for the country of origin on the packaging instead of the individual articles, so that once the packaging was removed customers could not tell the country of origin of the product (said to be common amongst the imports of watches and files). They also sent some articles over in pieces and had it assembled in England (a method said to be common in pianos and cycles). They would

[12] It is interesting to note that at that time, the British were criticising Germany not only for using industrial espionage and the violation of trademark law but also for exporting goods made with convict labour (recall the recent US dispute with China on this account). On the other hand, exactly at the same time, the Germans were complaining about the absence of a patent law in Switzerland and the consequent "theft" of German intellectual property by Swiss firms, especially in the chemical industry.

also place the stamp for the country of origin where it is practically invisible.[13]

All the above discussions show how ill-informed many defenders of the TRIPS are in relation to the historical importance of IPRs in promoting economic development. For example, the US-based National Law Center for Inter-American Free Trade (1997) claims that "[t]he historical record in the industrialized countries, which began as developing countries, demonstrates that intellectual property protection has been one of the most powerful instruments for economic development, export growth, and the diffusion of new technologies, art and culture" (p. 1).

Historical evidence shows that, contrary to this kind of claim, in the early days of industrial development in the now-advanced countries, IPRs, especially other countries' IPRs, were not well respected. Compared to the developed countries of yesteryears, the contemporary developing countries seem to be behaving much better in many ways. And if that is the case, it seems unfair to ask the modern-day developing countries to behave to a standard that was not even remotely observed when the now-advanced countries were at the similar, or even more advanced, stages of development.

With this historical background in mind, let us move to the next chapter, where we discuss the role of IPRs in economic development in the contemporary context.

[13] "One German firm, which exports to England large numbers of sewing-machines, conspicuously labeled 'Singers' and 'North-British Sewing Machines', places the Made in Germany stamp in small letters underneath the treadle. Half a dozen seamstresses might combine their strength to turn the machine bottom-upwards, and read the legend: otherwise it would go unread" (Williams, 1896, p. 138).

3 Intellectual Property Rights and Economic Development

PEOPLE who advocate TRIPS argue that a stronger protection of intellectual property rights is essential for knowledge generation and therefore economic development. However, when they talk about IPRs, they do not make a distinction between different forms of IPRs and assume that all IPRs are, and should be, "private" IPRs. This is, however, wrong.

Those who do not distinguish between different forms of IPRs implicitly assume that the only alternative to private intellectual property rights (PIPRs) is a free-for-all open access regime. However, in fact many pieces of knowledge are publicly or communally owned and are therefore subject to certain rules of use and disposal. For example, the private-sector participants in a publicly-financed research consortium may be obliged to make all their findings public and/or be forced to share the resulting patents with other participants in the project.[14]

Even in a situation that looks like a pure "open access" one, there may be certain laws and social norms concerning the use of particular types of knowledge for particular purposes. For example, even if the copyright of a book has expired, we do not allow other people to plagiarise from it. Another example is when many web-based software that adopt the "open access" approach, demand that the resulting (improved) products cannot be appropriated by individuals (UNDP, 1999, p. 73, Box, 2.9).

[14] For some such examples in the information technology industries, see Fransman (1990) on Japan and Evans (1995) on Korea.

So instead of talking about IPRs in general, we should distinguish different forms of IPRs from one another. This also means that when they talk of the necessity of IPRs for the generation of new knowledge, the proponents of "stronger" IPRs are in fact calling for stronger PIPRs. But is it true that we need strongly protected PIPRs in order to provide incentives to generate new knowledge? A further question is whether we need patents and other forms of "monopoly" to do so. Let us examine these questions one by one.

The case for and against private Intellectual Property Rights

Although the mainstream view these days is that PIPRs are an essential part of a market system, this view was not necessarily the dominant one at all times and in all countries. In other words, there are the historical and locational specificities of the prevailing view on what can be owned and not (for a theoretical exposition of this point, see Chang, forthcoming). This point can be most clearly seen from the example of the third President of the USA, Thomas Jefferson, who argued that ideas by their nature cannot be confined or exclusively appropriated and therefore that "[i]nventions ... cannot, in nature, be a subject of property" (cited in Penrose, 1951, p. 23).[15]

Given that he was a slave-owner, Jefferson obviously saw no problem in owning human beings, but he was against ownership of ideas, which is

[15] The full quotation is: "That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his conditions, seem to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density in any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot, in nature, be a subject of property," Thomas Jefferson, Letter to Issac McPherson, August, 13, 1813 in The Complete Jefferson edited by Saul Padover (New York, Duell, Sloan, Pearce Inc.: 1943). Cited in Penrose (1951), pp. 22-3. This may seem a curious remark from a man who, as the Secretary of the State, chaired the first Patent Board of the country (the other members being the Secretary of War and the Attorney General), but during his tenure at the office he made strenuous efforts to grant patents only to truly original inventions. Knowing this, there were few patent applications and fewer still granted (Peterson, 1970, p. 450).

exactly the opposite of what many people believe these days. Others, especially those associated with the mid-19th century anti-patent movement in Europe, objected to the idea of giving people PIPRs because they believed that any form of monopoly is bad (Machlup & Penrose, 1950, pp. 18-9). As we mentioned in Chapter 2, the Netherlands had once abolished its patent law on this ground.

However, eventually, the argument prevailed that, although PIPRs certainly create inefficiencies, they are a price that society has to pay, firstly, to motivate people to put energy into generating new ideas, and, secondly, to motivate people who have new ideas to make them public. However, these arguments are not as robust as they appear.

PIPRs as an incentive to generate new knowledge

Against the argument that PIPRs are necessary as incentives for innovative activities, it should first of all be pointed out that people often pursue knowledge for its own sake, so they do not always need monetary incentives conferred by PIPRs. The UNDP (1999) cites some examples where open access has encouraged, rather than prevented, the generation of new knowledge in certain areas, such as internet-based computer software (p. 72-3).

More importantly, even without patents, the innovator can enjoy many "natural" protective mechanisms and therefore will be able to reap substantial financial gains.[16] These natural protective mechanisms include "imitation lag" (due to the costs of absorbing new knowledge)[17], "reputational advantage" (of being the first producer), and the head start

[16] Scherer (1984) argues that "[n]atural inertia, secrecy, and the need to do some RD [his term for R&D] on one's own before mastering a new process all contribute to imitation lags" (pp. 138-9).

[17] Scherer & Ross (1990) argue that, "free riding on an innovator's technical contribution is often far from free. An appreciable but varying fraction of the original R&D may have to be replicated" (p. 626).

in racing down learning curves (Scherer & Ross, 1990, p. 627). This was a popular argument against patents in the 19th century (Machlup & Penrose, 1950, p. 18) and the idea behind Schumpeter's vision of "creative destruction" (Schumpeter, 1987).

Indeed, a study by Levin et al. (1987) based on a survey of 650 high-level R&D managers of listed companies in the US found that patents are considered much less important than "natural advantages" such as imitation lag and the ability to move down the learning curve more quickly as well as other "efforts" such as sales or service effort in preserving an innovator's advantage. The survey also found that when it came to process innovation, even secrecy was regarded as more important than patents in preserving the advantage.

In another interesting survey, Mansfield (1986) asked the chief R&D executives of 100 US firms what proportion of the inventions they developed between 1981 and 1983 would not have been developed had they been unable to obtain patent protection. Among the 12 industry groups surveyed, there were only 3 industries where the answer was "high" (60% for pharmaceutical and 38% for other chemicals, and 25% for petroleum).[18] And there were 6 others where the answer was basically "none" (0% for office equipment, motor vehicles, rubber products, and textiles or 1% for primary metals and instruments). Including 3 other industries where the answer can be interpreted as "low" (17% for machinery, 12% for fabricated metal products, and 11% for electrical equipment), the overall ratio worked out to be around 14%, according to Mansfield's calculation – a rather low proportion. The result of this study is confirmed by a number of other studies conducted in the UK and Germany as well (Scherer & Ross, 1990, p. 629, footnote 46).

[18] This tallies with the fact that industries such as chemical, pharmaceutical, and computer software were the strongest advocates of TRIPS in the Uruguay Round.

The relatively insignificant effect of the patent system on innovative activities is also confirmed by the historical experiences of Switzerland and the Netherlands that we mentioned above (Chapter 2). In a highly illuminating study of the two countries during their patentless periods, Schiff (1971) concludes that there is no evidence that the absence of a patent system held these two countries back in terms of technological development (Evenson, 1990, also concurs with this verdict).

The case of Switzerland deserves a closer look in this context. After examining international patent statistics (patents acquired by different countries in the major industrial economies) and other case-based studies, Schiff (1971) concludes that in the late 19th century, despite their country not having a patent law, the Swiss were one of the most innovative people in the world. During this period, the Swiss made world-famous inventions in areas like textile machinery (the famous Honneger silk loom), steam engine, and food processing (milk chocolate, instant soup, stock [bouillon] cubes, baby food) (see pp. 108-112, for some details).

He also points out that there is no evidence that the absence of a patent system worked as a deterrent to FDI and even cites some important cases, especially in food processing industry, where its absence was definitely a major reason behind FDI (pp. 102-3). He also shows that, on the other hand, the introduction of patent law in 1907 did not lead to a noticeable increase in inventive activities.[19] He concludes that in the Swiss case, the

[19] Of course, during its patentless period, the Swiss still could take out patents abroad, and this must have acted as an incentive to invent. However, on the basis of a careful analysis of 1901-1913 international patent statistics, Schiff (1971) argues that this alone cannot explain the high level of inventive activities by the Swiss during this period. His point is that the proportion of the Swiss inventors taking out patents only at home remained largely unchanged even after the introduction of the 1907 patent law (recall here that patenting did exist in Switzerland since 1888, although only in mechanical industries). This suggests that even for a small country, the exploitation of the home market remains the primary concern for many inventors and therefore that the possibility of acquiring patents abroad does not fully compensate for the absence of patent protection at home (p.114).

absence of a patent law, on balance, actually helped the country's industrial development (especially in industries like dye, chemical, and electro-technical; p. 104).

PIPRs as an incentive to disclose new knowledge

The idea that PIPRs are necessary for us to make the inventors of new ideas to disclose their new knowledge has been criticized on the following grounds (Machlup & Penrose, 1950, pp. 25-8). First, even if an inventor does not disclose his new knowledge, the society will not suffer because "usually the same or similar ideas are developed simultaneously and independently in several quarters" (p. 26) – as we see in the proverbial anecdote of Bell and Wallace applying for patent for the telephone on the same day. Second, it is impractical to keep any invention secret for a long time – the new ideas are worked out through reverse engineering, especially by people who were close to finding the same solution – although there is an inevitable imitation lag here. Third, "[w]here an inventor thinks he can succeed in guarding his secret, he will not take out a patent; hence, patent protection does not cause disclosure of concealable inventions but serves only to restrict the use of inventions that could not have been kept secret anyway" (p. 26). Fourth, "[s]ince patents are granted only on inventions developed to a stage at which they can be reduced to practical use, the patent system encourages secrecy in the developmental stage of inventions" (p. 26).

Problems with the currently-dominant IPRs system

More specifically, there are a number of problems with the currently-dominant IPRs regime that is built around the patent system.

First of all, as we suggested above (p. 14), it is not clear whether we need patents in order to generate new ideas. Furthermore, there are many long-standing criticisms of the patent system for its potential "wastefulness". Many have argued that its "winner-takes-all" nature encourages

an all-out competition that often results in duplication of efforts and investments. Others have pointed out that resources may also be wasted in efforts to "get around" existing patents, rather than to generate "genuine" new knowledge. Also, given the cumulative and interactive nature of technological progress, "strong protection of a key innovation may preclude the competitors making socially useful innovation" (Levin et al., 1987, p. 788). Many people also ask why all inventions should get equal length of protection despite the differences in their social usefulness and also why the length of that protection should be as long as 17 or 20 years.

The above criticisms are all rather well-known, and we don't need to repeat them at length. Increasingly, however, there is a concern about the granting of patents and other PIPRs to certain inventions that were created by using the ideas generated by publicly-funded research activities. This is a serious problem, when even according to the information provided by the US pharmaceutical industry association itself, only 43% of pharmaceutical R&D is funded by the industry itself, while 29% is funded by the US government's National Institute of Health (NIH) (see http:/www.phrma.org/publications/profile00/chap2.phtm#growth).[20]

For a more specific example, the anti-AIDS drug, AZT, was first invented in 1964 by a US researcher working with a grant from the government's National Institute of Health (NIH). The drug was then bought by the UK pharmaceutical company, Glaxo, for use on pet cats. When the AIDS epidemic broke out, the NIH later did all the work proving that AZT works on the HIV virus (because Glaxo refused to do the work). Despite the efforts of NIH, it was Glaxo, which on learning about the effect of AZT on HIV lost no time to take a patent out on it for use on HIV, that is reaping huge profits from the drug (Palast, 2000).

[20] The rest is funded by private charities and universities.

For another (even more extreme) example, we can cite the case of the cancer drug, Taxol. There is no patent on Taxol, because it was discovered by the US government. However, the pharmaceutical company Bristol-Myers Squibb has an absolute control on the price of the drug in Britain, because the minor (but crucial in clinical situations) work on dosage calculation it conducted is protected by Britain's data protection law for 10 years (Palast, 2000).

Another emerging problem is that, as increasingly minute pieces of knowledge (say, down to the gene level) become patentable, the risk of patents hindering, rather than promoting progress is becoming greater. The case of technology for the so-called "golden rice" (with extra beta carotene), which can bring huge nutritional benefits to millions of people, is quite illustrative of this point. When selling the technology to the multinational company, Syngenta (formerly AstraZeneca), Ingo Potrykus (Swiss) and Peter Beyer (German), who pioneered the technology, cited the difficulties involved in negotiating for the estimated 70-105 patents as the primary reason for doing so. While critics point out that only about a dozen patents among the 6-9 dozens cited by Potrykus and Beyer are in fact relevant for countries where the golden rice would have large benefits (see RAFI, 2000), the case illustrates how the recent changes in technology have increased the hindering potential of patents.[21]

Alternatives to the currently-dominant IPRs system

Given all the problems associated with the currently-dominant IPRs system, what are the possible alternatives?

Needless to say, it is possible to do away with PIPRs altogether. Note that this is not to argue that there should be no IPRs at all ("open access"). In this regime, there will be public regulations and social norms regarding

[21] I thank Ron Herring for drawing my attention to the golden rice in the first place and Penny Janeway for pointing me to detailed sources on the issue.

the use of ideas. Also, there will still be substantial opportunities for private appropriation of new knowledge thanks to the natural imitation gap. UNDP (1999) emphasises that there are many alternative approaches to innovation based on "sharing, open access and communal innovation" (p. 73). If abolishing PIPRs sounds dangerous, note that all countries implicitly took this position before the adoption of patent laws. Even after the adoption of the patent system, almost all countries have not accepted PIPRs in certain areas. For example, when they publicly fund certain innovation activities, they usually demand that the resulting knowledge is made a public property.

Another possibility is to replace (at least in certain areas) patents with lump-sum prizes, which will give incentive to people to invest in innovative activities but will do away with the problem of patents blocking further technological progress. This was indeed a popular proposal among the anti-patent campaigners in 19th century Europe, and was famously championed by the magazine, *Economist* (Machlup & Penrose, 1950, p. 19-22).[22] The difficulty with this proposal, however, is that we have to either give the same prize to every inventor regardless of the social value of their inventions or have to spend a large amount of resources in order to determine who should get how big a prize.

For a less dramatic, but no less important and certainly a lot more realistic, proposal, we could follow the one made by Scherer (1984). Scherer argues for "a flexible system of compulsory licensing, under which the patent recipient bears the burden of showing why the patent should not expire or be licensed at modest royalties to all applicants three or five years after its issue" (p. 139). He argues that "[w]hen a patent-holding corporation possesses a substantial share of the relevant market and well-established marketing channels ...there would be a presump-

[22] Landes (1969) points out that that before the days of cheap mass communication, incentives like medals awarded in expositions motivated potential innovators not only by offering honour but also offering *de facto* free advertising for their products (p. 151).

tion in favour of early patent licensing or expiration on the assumption that positive innovation profits could normally be attained without the added inducement of strong patent protection" (p. 139).

Scherer acknowledges that there may be some inventions where the uncertainties involved are so overwhelming that only a very strong patent protection will induce the necessary investments. However, he points out that such cases are probably rare and therefore it should be possible to devise policies that treat them as exceptions – in particular, by waiving the presumption in favour of early compulsory licensing or short patent lives (for inventions with high ex post private benefit-cost ratios) upon a showing that the patent recipient exhibited exceptional creativity or undertook unusual technical and / or commercial risks in the inventions development (p. 140).

The point is that, if what we ultimately want is the widest possible diffusion of technology, we want to "buy off" the innovators at the minimum possible cost, and there are reasons to doubt that the currently-dominant system of IPRs built around the patent system offers the most cost-efficient way.

Moving more specifically to the case of developing countries, where technology assimilation is a lot more important than the generation of patentable technology, it should be said that the benefits from a national PIPRs regime may be minimal.

The extra innovations generated by stronger PIPRs would be meagre, as economic agents in these countries possess poor innovative capabilities. As even Primo Braga (1996), who is quite sympathetic to TRIPS, admits, there is very little evidence that stronger PIPRs encourages greater R&D in developing countries. Indeed, the recent research on technology issues in developing countries show that the most important kinds of new knowledge for them are not readily patentable ones. For them, the most important type of knowledge is not knowledge that is truly "novel" on

the world scale, but more tacit and localised knowledge, which are necessary in assimilating advanced technologies (including new organisational knowledge) to the local condition, that cannot be patented, except on the margin.[23]

This is indeed why most countries had to use infant industry protection and other industrial policy measures to encourage this kind of technological development (as it was the case with the US and other follower countries in the 19th century). Unfortunately, these measures are now subject to restrictions under the WTO agreement, although probably not as much as it is widely believed to be (see Akyüz et al., 1998, Amsden, 2000, and Chang & Cheema, forthcoming).

On the other side of the equation, we must point out that the opportunity costs of establishing and running a strong PIPRs system may be considerable in developing countries, given their lack of technical, administrative, and legal human resources (more on this on p. 28). Also, given the weak anti-trust law and/or enforcement capability, the developing countries may suffer from the "monopoly" effect of patents more than do the more advanced countries.

Moreover, when 97% of world patents are held by developed countries (UNDP, 1999, p. 68), the costs from paying the royalties may significantly outweigh the benefits from (the insignificant) additional knowledge that the system extracts from the nationals of the developing countries.[24] When there is an international system, like TRIPS, that demands compliance (with some adjustment) with the international "norm", the problems for the developing countries become even bigger – as we shall see in the next chapter.

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[23] In order to deal with the difficulty with patenting "adaptive innovation", Evenson (1990) proposes the use of "petty patents", which accords shorter protection (4-7 years) without a close examination of originality.

[24] Indeed, the TRIPS implicitly acknowledges this problem, since it allows exceptions for the least developed countries and to a lesser extent to the developing countries.

4 TRIPS AND THE DEVELOPING COUNTRIES

IN the previous chapter, we examined the role of domestic IPRs regime in economic development. In this chapter, we examine the role of international IPRs regime in economic development, an issue that has been brought into the spotlight following the introduction of TRIPS. In the previous chapter, we have shown that there is no sound theoretical and empirical support for the argument that a strong protection of private intellectual property rights (PIPRs) is necessary for technological progress and therefore economic development, especially for the developing countries. In this chapter, we discuss whether stronger PIPRs protection on a world scale will benefit the developing countries through its impact on international generation and transfer of technology.

The evolution of the TRIPS Agreement

The issue of TRIPS got incorporated into the WTO agenda mainly for two reasons (see Shell, 1998, and Patel, 1989, for further details).

First of all, it was a reaction by the advanced countries, mainly the USA, against the attempt by the G77 developing countries to call for the reform of the international IPRs system through the WIPO (World Intellectual Property Organisation) during the 1970s and the early 1980s. At that time, as a part of their push for the New International Economic Order (NIEO), the developing countries sought to generate greater transfer of technology from the advanced countries through the reform of the international IPRs regime. Especially controversial was their push for exclusive compulsory licensing (where the number of licensee is restricted by the

government), reduced licensing fees for developing countries, lengthening of the period of "right of priority" for the developing country inventors, and even allowing the developing countries to revoke licences before the granting of compulsory licensing (and relaxing the condition for revocation) (Shell, 1998, pp. 120-3). Contrary to the expectation by the G77 countries, these demands galvanised patentees in the developed countries into campaigning for a counter-offensive.

Secondly, the relative decline of US industrial competitiveness prompted a wave of resentment against foreign "theft" of US PIPRs. Reflecting this mood, the US courts started favouring patentees as never before. Until the early 1980s, and especially during the Black / Douglas Supreme Court (1946-65), the US courts were quite lax in enforcing patentees' rights, but since around 1982-3, they started awarding high damages for infringement of patent and other PIPRs. However, particularly significant was the US realisation that trade threats can be used as a way to enforce the PIPRs of the US corporations onto its trading partners.

In the late 1970s and the early 1980s, the US Trade Representative (USTR) started putting pressure through bilateral trade talks on countries like Hungary, Korea, Mexico, Singapore, and Taiwan, to "improve" their IPRs regimes. Trade law amendments (especially to the so-called "Super 301" Section) in 1984 and 1988 made the IPRs issue a key element in the functioning of the USTR. In the meantime, the US realised that the use of trade threats as a means to force changes on its trading partners' IPRs regimes need not be confined to bilateral trade talks, and in April 1986 put forward TRIPS as an item in the agenda for the Uruguay Round of the GATT talks (Shell, 1998). The US push for TRIPS became particularly strong from 1988 (Siebeck, 1990a).

As it is well known, the key features of TRIPS are:

(i) national treatment
(ii) mandatory 20-year minimum patent life

(iii) tough restrictions on compulsory licensing (forbidding of exclusive compulsory licensing, toughening of the conditions under which compulsory licensing is accepted)
(iv) shifting the burden of proof of infringement on process patent from the patentee to the alleged infringer

There were some concessions to the developing countries, such as the granting of grace periods and acceptance of the non-patentability of "diagnostic, therapeutic, and surgical methods of human or animal treatment" and of "plants, animals and their biological processes".

The (alleged) benefits of TRIPS for the developing countries

The defenders of TRIPS argue that, in addition to its positive impact on the innovative activities in developing countries themselves (which we have shown to be minimal), the TRIPS agreement will bring benefit to the developing countries by increasing the availability of advanced technologies to them. This is supposed to happen through, among others, the following mechanisms:

(i) better protection of the PIPRs of foreign patentees is needed for greater technology transfer, as otherwise advanced country producers may be less willing to reveal their technology;
(ii) better protection of PIPRs increases FDI flows, as firms are then less worried about the "theft" of technology by the locals;
(iii) better protection of PIPRs increases inventive activities by developed country firms targeted at developing country markets (e.g., developing drugs for tropical diseases).

As for the argument that a stronger system of international PIPRs protection encourages technology transfer from developed to developing countries, we can say the following. While strengthening the protection of PIPRs in developing countries may in theory increase the willingness of the advanced countries to transfer technology through "formal"

channels, there is actually little evidence of this (see Siebeck, 1990b). Moreover, TRIPS will reduce the ability of the developing countries to catch up through imitation and adaptation of advanced technologies through "informal" channels (e.g., reverse engineering involving minor modifications, developing an alternative process for a patented chemical substance). Indeed, it may be argued that for the developing countries, "informal" knowledge transfer may be more important than "formal" transfer (see essays in Fransman & King (eds.), 1984). Therefore, the TRIPS may reduce the effectiveness of technology transfer from the developing countries' point of view, especially if we consider both formal and informal channels of such transfer.[25]

How about the argument that a better protection of PIPRs promotes FDI? To begin with, there is little evidence that a stronger protection of PIPRs promotes FDI (Siebeck, 1990b). Indeed, a classic article by Vaitsos (1972) argued that patents are often used as substitutes for FDI. Moreover, the IPRs regime is only one of many considerations in FDI decisions, and a minor one at that, so providing a stronger protection of PIPRs is unlikely to have much effect on FDI (Bronckers, 1994; Primo Braga, 1996). As we mentioned earlier, the historical example of Switzerland also shows that the absence of a patent law was, if anything, a major incentive to invest there (Schiff, 1971, pp. 102-3). The UNDP (1999) makes similar arguments regarding flows of FDI into Canada and Italy (p. 73, Box 2.9). And all of these have to be set against the fact that the impact of FDI is generally ambiguous and highly context-dependent (see Helleiner, 1989, Lall, 1993, and Chang, 1998).

As for the argument that a stronger protection of PIPRs in the developing countries may encourage innovative activities by the advanced country

[25] The past president of the Licensing Executive Society (LES) of Britain and Ireland, Donal O'Connor admitted that the hypothesis linking increased IPR protection to technology transfer and investment flows for developing countries "has not by any means been proven. It is one that we in LES wish to accept because it is one that we consider attractive" (cited in Shell, 1998, p. 222; the original source is Donal O'Connor, "TRIPS: Licensing Challenge", Les Nouvelles, 1995, vol. 30, no. 1, p. 17).

firms targeted at developing country markets, it must be pointed out that the developing country markets are usually marginal for these firms and therefore that the extra profits from them are unlikely to significantly affect their R&D decisions.

The above discussions show that the "international" benefits for the developing countries of having a stronger regime of PIPRs protection – namely, increased technology transfer, increased FDI, and increased inventive activities by the advanced countries – are likely to be marginal at best.

The costs of TRIPS for the developing countries

The problem with TRIPS is not only that it does it not bring much benefit to developing countries but that it imposes substantial costs on them.

First, the most direct "international" impact of TRIPS on developing countries is that they would need to increase their royalty payments, which can be a problem, especially in a foreign exchange shortage situation (which most developing countries are in).

Second, a stronger protection of PIPRs in developing countries, following TRIPS, is likely to lead to more widespread monopoly pricing and other restrictive behaviour by the TNCs – as the recent behaviour of some pharmaceutical and agro-chemical TNCs suggest. Given that the developing countries have weak (or sometimes no) anti-trust laws and low law enforcement capacity, it is unlikely that they can successfully restrain the monopolistic behaviour of giant TNCs.

Third, as we have already pointed out, there is the high costs of human resource involved in running a sophisticated IPRs regime in developing countries (p. 20). Implementing the TRIPS agreement will increase these costs even further. This is not only because the required technical and

legal standards for the domestic IPRs regimes will be made higher but also because the disputes in the WTO will require lawyers and others with skills that are not easily available in developing countries.

Fourth, there are costs that developing countries have to pay because TRIPS now allows "natural" substances and processes that have previously been considered non-patentable, to be patentable (micro-organisms, biological processes, etc.) (for further details, see Ghosh, 1999). There are also problems of justice here, because some advanced country producers are able to patent things that are already widely known in developing countries because they are able to "re-package" the products of "traditional knowledge system" in a form that is patentable, whereas the developing countries have little such capability. The recent cases of US companies patenting the medicinal use of tumeric (thwarted) or a particular variety of basmati rice under the brand name of, well, "basmati rice" (granted) are good examples.

Last but not least, with TRIPS, the developing countries are likely to find it difficult to develop their own technological capabilities. With severe restrictions on their opportunities to imitate and make minor improvements – routes that have been so crucial in the development of technological capabilities in the now-advanced countries (see Chapter 2; also see Fransman & King (eds.), 1984) – the developing countries are likely to have less room for developing their own technological capabilities through engagement in incremental innovation and learning.

5 CONCLUSION

IN this paper, we have examined the desirability of the currently-dominant form of IPRs regime, and especially the TRIPS regime, from historical, theoretical, and contemporary points of view.

The historical experiences of the now-developed countries when they were developing themselves, which we examined in Chapter 2, show that a "strong" IPRs regime, in the sense of providing strong protection of private intellectual property rights, was not an essential condition for their economic development. Most of them accorded only very incomplete and weak protection to PIPRs until quite late in their stages of development. Even the most advanced countries, like the UK and the US, established strong PIPRs regimes (except for copyright protection in the US case) only in the mid-19th century, and it was until much later that such regimes came into being in the less advanced countries.

More importantly for the purpose of this paper, all these countries were quite willing to violate other countries' IPRs, even when they had introduced laws protecting IPRs of their own citizens – poaching of skilled workers, smuggling of machinery, industrial espionage, violation of trademark laws, allowance of patenting of imported inventions, or even a flat refusal to adopt the patent system (in the case of the Netherlands and Switzerland). In some cases, countries took what can only be described as a two-faced approach to this matter. The best examples include the US putting pressure on other countries for the "improvement" of their patent laws in the late 19th century in the build-up to the adoption of Paris Convention – while flatly refusing to protect foreign

copyrights, and the routine violation of British trademarks by German producers in the late 19th century – when the country was putting pressure on Switzerland to introduce a patent law.

In Chapters 3 and 4, we discussed the problems of the currently dominant regime of IPRs built around the patent system, and the TRIPS agreement as a culmination of it. After pointing out that contrary to the current orthodoxy, a "good" IPRs regime is not necessarily the one that accords the strongest protection to private IPRs, we examined whether a stronger PIPRs regime, especially the one demanded by the TRIPS, is likely to benefit the developing countries. The "domestic" benefits of a stronger IPRs system – namely, increased knowledge generation by the nationals – are likely to be very small for most developing countries, given that they do little R&D and a lot of the new knowledge that they generate is not patentable. The "international" benefits of such regime – greater technology transfer, greater FDI, greater efforts at innovation in the developed countries – are also close to zero, if any. On the other hand, the costs of such system are likely to be considerable – increased royalty payments, monopolistic abuses, the human (and financial) resource costs of administering an elaborate IPRs system, and so on.

If TRIPS brings at best marginal benefits to developing countries and imposes quite high costs on them, especially from the point of view of promoting long-term technological development, it seems clear that it needs a serious overhaul, if not an outright abolition. The exact form of this reform is difficult to spell out here, as there are still many uncertainties about the exact shape of the TRIPS regime and as different arguments may apply to different industries and to different countries. However, we propose a few principles that we think are useful in designing an alternative to TRIPS.

First of all, I think there should be more sensitivity to the issue of historical justice. By "historical justice", I do not only mean "making up for the misdeeds during the imperialist period". There should be recognition on

the part of the developed countries that, when they were developing economies themselves, they were engaged in all kinds of "illegitimate" practices, including the violation of PIPRs (especially of foreign nationals). This means and that they can be legitimately accused of "pulling up the ladder" by insisting on a tough PIPRs regime on the developing countries. The new TRIPS, if there is going to be one, should start from this recognition.

Secondly, even from a more "technical" angle, there should be a greater acceptance that the developing countries need fundamentally different IPRs regimes from the ones that the developed countries have. There is some recognition of this in the current TRIPS regime, but this is highly circumscribed possibly except for the "least developed countries". There have to be more provisions for the developing countries. Developing countries should be allowed to grant weaker PIPRs (e.g., shorter patent life, easier compulsory licensing[26] and compulsory working, easier parallel imports) and to pay lower licensing royalty rates (probably graduated according to a country's ability to pay).

Third, TRIPS should be reformed in such a way that it does not merely generate greater and cheaper transfer of technologies (which requires a more relaxed attitude towards violation of PIPRs by these countries) but also develops long-term technological capabilities of the developing countries. Developing technological capabilities in developing countries requires "learning" through increased exposure to advanced technologies, which then leads to incremental innovation. Given that such incremental innovations cannot in general be protected through patent-like schemes, the WTO agreement should be revised in such a way that gives more freedom to developing countries to engage in infant industry

[26] Levin et al. (1987) provide strong evidence showing that compulsory licensing in general does not discourage R&D (p. 804).

protection. We could also institute an international tax on patent royalties and use at least parts of it for improving technological capabilities in developing countries.[27]

TRIPS has been imposed on developing countries that did not fully understand its implications. With the accumulation of experience, the developing countries are becoming increasingly aware that the system does not serve their interests (nor the consumers in the developed countries). The historical experiences of the now-developed countries also show how the imposition of this system amounts to "pulling up the ladder" by these countries against the developing countries. Contemporary evidence also suggests that it is unlikely to bring much direct and indirect benefits to the developing countries, while imposing considerable costs on them in many ways.

Developed countries should also recognise that an international IPRs regime that promotes technological development and growth in developing countries will generate more demands for developed country exports. Therefore, it will benefit them more than a regime that depresses the developing countries in return for some increase in royalty payments and some reduction in export competition for a few industries.

The TRIPS arrangement needs to be radically overhauled. Without a overhaul, it is going to become a major point of contention in the emerging global economic order over the coming years. Without creating a global order that is more just and dynamic than what we have, the world may in the long run descend into chaos, as it happened with the first globalisation that started in the late 19th century and came to an "end" in three decades of wars and the Great Depression.

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[27] TRIPS reform needs to be backed up by other policies to promote technological capabilities in developing countries. The advanced countries could help the developing countries build such capabilities by redirecting aids towards such capability building (e.g., higher education in science and engineering, industrial training). They can also instruct the multilateral financial institutions to minimise cuts in knowledge-related public spending (e.g., education, training, R&D) in their adjustment programmes.

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INTELLECTUAL PROPERTY RIGHTS AND ECONOMIC DEVELOPMENT — HISTORICAL LESSONS AND EMERGING ISSUES

The role of intellectual property rights (IPRs) in economic development has always been a controversial issue. The debate surrounding it has become even more heated after the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement — a regime that seems to favour advanced country producers over everyone else. The author of this paper contributes to the growing debate by calling for a re-think on the role of IPRs and a reform of the TRIPS Agreement. He asserts that the TRIPS arrangement needs to be radically overhauled or it will be a major point of contention in the World Trade Organisation (WTO) over the coming years.

A novel feature of this paper is that the author presents his arguments for change from a historical perspective and also bases them on contemporary evidence.

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is a series of papers published by **Third World Network** to provide a critical analysis of intellectual property rights protection from a Third World perspective. A particular focus is given to the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and its implications for developing countries.