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## Is TRIPS a four-letter word?

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*World Intellectual Property Organization (WIPO) headquarters in Geneva, Switzerland. WIPO is the UN agency charged with protecting and promoting intellectual property throughout the world. (Photograph by Raphael Calel)*

Innovation has many social benefits. One of the most important benefits is to reduce the cost of production. Reducing the cost of production allows more output to be produced from the

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same resources, thus enabling economic growth. Economic theory emphasizes this and the standard theory even submits that innovation is both *necessary and sufficient* for sustained economic growth.<sup>1</sup> It is no surprise, then, that it has long been hotly debated in development policy forums how to stimulate innovation. The conclusion has often been to strengthen intellectual property rights (IPRs),<sup>2</sup> perhaps most famously (or infamously) in the World Trade Organisation's (WTO) agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

The two main elements of TRIPS are the 'national treatment'-principle and the setting of an international minimum standard of IPRs regimes. 'National treatment' means that national and foreign IPRs receive equal recognition. The international minimum standard of IPRs that is established under TRIPS is roughly at the level of the now developed countries (NDCs). When combined, these two elements effectively expand the intellectual property protection regimes of NDCs to cover the less developed countries (LDCs).<sup>3</sup>

Whether this type of agreement actually promotes international economic development is far from settled, however. Especially contentious is the international recognition of IPRs embodied in the 'national treatment'-principle. Some commentators contend that TRIPS stand in the way of economic development.<sup>4</sup> This article merges theoretical and historical perspectives to provide a richer framework in which to assess the role of IPRs in promoting economic development, focusing on the two core principles of TRIPS.

## **Theory of intellectual property rights**

### ***Standard argument for intellectual property rights***

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<sup>1</sup> In the neoclassical model, long-run economic growth is determined wholly by 'technological progress'. Technological progress features prominently in endogenous growth theory as well, e.g. Jones (2005) Growth and Ideas, in Aghion and Durlauf *Handbook of Economic Growth* (Elsevier, 2005) Volume 1B, 1063-1111. Also available electronically at <http://elsa.berkeley.edu/users/chad/JonesHandbook2005.pdf>

<sup>2</sup> 'Intellectual property rights' and 'patents' are used interchangeably in this article, since the focus is on the type of intellectual property that concerns technological innovation.

<sup>3</sup> See the WTO website ([http://www.wto.org/english/tratop\\_e/trips\\_e/trips\\_e.htm](http://www.wto.org/english/tratop_e/trips_e/trips_e.htm), 4<sup>th</sup> November 2008) for both introductory, and more advanced discussions of TRIPS.

<sup>4</sup> For instance, see Wade (2003) What strategies are viable for developing countries today? The World Trade Organization and the shrinking of 'development space'. *Review of International Political Economy*, 10, 621-644

Proponents of strong IPRs argue that such rights provide necessary incentives for innovative activities. The argument rests on two key assumptions:<sup>5</sup>

1. *Knowledge is a public good* (i.e. non-rival and non-excludable). ‘Non-rival’ means that if one person knows something, it does not prevent another person from knowing that same thing simultaneously. In contrast, eating a bowl of rice prevents others from eating that bowl of rice. ‘Non-excludable’ means that once knowledge exists, it is freely available to everyone.
2. *Innovation is driven by the motive of making profit*. An inventor may pursue one of several ideas. Each idea has some probability of becoming a successful invention, and each successful invention allows the inventor to earn a certain amount of income. He would choose pursue the idea for which the probability-weighted income most outweighs the costs. If the expected difference was less than s/he could earn from some other activity, s/he would invest his time and money in that other activity.

Accepting these assumptions for the time being, we can delineate a positive relationship between strong IPRs and innovation. If someone produces and begins selling an invention, anyone can immediately replicate that invention and begin selling it too, since knowledge is a public good. The copycat can sell the new product at a price that just covers the cost of production. For the original inventor to compete with a copycat selling an identical product, he must match this price. Though, while he covers his costs of production, he will not recover the cost of creating the invention in the first place. Anticipating this, he would not bother inventing anything, since he is motivated by profits. In this scenario, there will be no innovation.

If the government now announces that it will guarantee sole ownership of an invention to its inventor for one year, this implies that the inventor could sell his invention for one year without facing competition. In the absence of competition, he is able to charge a price above the cost of production and recuperate his innovation costs. Hence, some low-cost innovative activities may be undertaken. If he is the sole owner for two years, he might take on more expensive projects with a possibility of an even greater return, and so forth. The stronger the rights to intellectual property, the more willing the inventor is to undertake innovative

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<sup>5</sup> For a more comprehensive textbook treatment of IPRs, see Scotchmer (2004). This article focuses on aspects of the theory of particular relevance to our present objectives.

activities, and the greater is the potential for economic growth.

A second benefit of granting IPRs is that inventors have an incentive to disclose their innovations, rather than to keep them secret. If no resources need to be expended to mask or hide the new technology to safeguard against appropriation, there are more resources available for more productive use (Akiyama and Furukawa 2009).<sup>6</sup> Moreover, duplication and obsolescence, which may both result if innovations are kept secret, amount to a pure waste of resources (Scotchmer 2004).<sup>7</sup> Hence, to the extent that IPRs induce disclosure, they also reduce waste.

There are also social costs of IPRs. Firstly, if the copycat sells the new invention at a lower price than the original inventor this is naturally better for consumers. Prohibiting the copycat means that the original inventor can sell the product at a price above the cost of production, a burden borne by consumers. Secondly, new innovation often builds on existing inventions. If the original inventor owns the rights to his invention, other inventors are not able to build on his success and generate many new inventions (Stiglitz 2006).<sup>8</sup> IPRs, in this respect then, slow the pace of future innovation.

The benefits of IPRs arise because of the inventors' *expectation* of profits, whereas the costs are borne by consumers. Hence, given that an invention exists, it would be better if copycats were permitted. Yet, if the government systematically rejected patent applications, inventors would come to *expect* that they could not earn profits, bringing us back to the situation with no innovation. Granting IPRs is hence a question of maintaining credibility. The *optimal strength of IPRs* is then a question of striking a balance between the social benefits from providing incentives for innovation and disclosure, and the social costs of granting monopoly rights to the inventor.

It is important to note here that 'strength' is not merely the *length* of a patent. Its many dimensions include the *breadth* of a patent (how different an invention must be from the existing invention in order to be patentable), the *height* of a patent (how much the existing

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<sup>6</sup> Akiyama and Furukawa (2009) Intellectual property rights and appropriability of innovation. *Economic Letter*, 103, 138-141.

<sup>7</sup> Scotchmer (2004) *Innovation and Incentives*. MIT Press.

<sup>8</sup> Stiglitz (2006) *Making globalization Work: The next steps to global justice*. Allen Lane.

invention must be improved upon in order to be patentable), and the *scope* of a patent (what is the patent holder allowed to do with his intellectual property). This multi-dimensionality raises the further question of whether IPRs can be clearly defined in the first place? For the argument presented in this section, it must be assumed that this is always possible.

### ***A theoretical appraisal***

Consider now the merits of the three main assumptions made: (1) knowledge is a public good, (2) innovation is driven by profit motive, and (3) IPRs can be clearly defined. Whether knowledge is a public good depends on whether it truly is non-rival and non-excludable. Non-rivalry is usually considered fairly uncontroversial, since the knowledge of one person does not technically prevent another person from also knowing that same thing simultaneously. Nevertheless, acquiring knowledge may require the consumption of rival resources. For instance, a place in a school or at a university is certainly a rival. This is of particular concern in LDCs that often lack universal access to such services. Non-rivalry of knowledge thus depends on the abundance of rival resources. This is relevant when rival resources are sufficiently scarce to effectively hamper competition, which is more likely in LDCs.

That knowledge is non-excludable, other than by legal recourse, is more contentious. Non-excludability implies that others can appropriate the knowledge of the inventor without cost. Yet in reality, the copycat may need pre-existing knowledge and significant resources in order to replicate an invention. Figuratively speaking, if s/he buys the invention, s/he must then be able to disassemble it, analyse what each component is made of, and then figure out how each part fits into the whole. Next, s/he must tackle the practical problems of manufacturing the product and, moreover, to raise investment in order to begin production and marketing (Lucas 2008).<sup>9</sup> In this light, the assumption of non-excludability seems to understate the true costs of appropriating knowledge. If the true costs are high enough to present substantial barriers to competition, the inventor may be able to recover his costs even in the absence of IPRs.

Second is the assumption that innovative activities are driven by a profit motive. This, perhaps, goes against the romanticised perception of inventors as ‘tinkerers’ who are intrinsically motivated. If innovation is propelled by other motives than profit, then the lack of protection of profits may not be a huge obstacle for innovation. The importance of the profit

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<sup>9</sup> Lucas (2008) London School of Economics Department of Economics, *Economica*, Philips public lecture. *Schooling and Growth*

motive in developing countries is largely an empirical question. This will be considered in greater detail in the next section. Presently it should be noted, however, that the cost of undertaking innovative activities has increased over time. The pharmaceutical industry is an obvious example. Because increasing costs are associated with greater financial risk, innovation is more likely to be a corporate activity. It would thus not be entirely out of line to expect the profit motive to be more important today than in the past.

Thirdly, there is the argument that IPRs implicitly rely on the assumption that IPRs can be clearly defined (Stiglitz 2006). Again, the ‘strength’ of IPRs includes its length, breadth, height, and scope. These dimensions collectively define what is ‘a new idea’, and thus patentable. But since all new ideas build on previous ideas, deciding what is ‘*sufficiently* new’ is inherently arbitrary. This arbitrariness greatly complicates the economic argument that IPRs can achieve an efficient amount of innovation. It is perhaps the reason why we observe a ‘one-size-fits-all’ patent system, which uses the same parameters for many innovations. In this system, if the strength is adapted to encourage the more costly innovative activities, those that undertake less costly innovation will be getting a free ride. They will be able to reap returns that far exceed what is necessary to induce that innovation. This is a social cost borne by consumers.

Additionally, defining intellectual property in a particular way affects the pace of future innovation. Stronger patents would make the hurdle higher for the next generation of inventors. It is therefore not obvious that a patent-based IPRs regime is the best strategy to encourage innovation. The patent system may therefore be inefficient because it does not maximise the pace of technological progress at a given social cost, or conversely, does not minimise social cost at a given pace of innovation. For instance, one might prefer to give incentives by awarding a prize to the inventor who is able to solve a particular problem, such as developing a vaccine for a particular infectious disease. The prize money would be sufficient motivation, but the inventor would be prohibited from profiting by restricting the use of the discovery.<sup>10</sup>

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<sup>10</sup> One should note, though, that prizes have other drawbacks. In the case of a patent, a ‘tax’ is imposed on consumers through the monopoly prices. In the case of prizes, this tax would have to be imposed explicitly. Explicit tax collection may be politically infeasible. Moreover, it may be difficult to project the value of innovations, and hence to assign appropriate prizes. Taxes also mean that everyone pays, rather than only those who benefit from the invention.

A further consequence of the difficulties in defining what is patentable is that ‘ease of definition’ of an innovation will determine what types of innovations are encouraged – not only their social value. For example, while drugs and medical instruments are patentable if they are ‘sufficiently new’, young medical examination procedures or operations are generally not patentable. Perhaps, then, it is not entirely surprising to find a multi-billion dollar pharmaceutical industry with extraordinary sums invested in research and development, but no corresponding innovation efforts in most other areas of patient care. It is by no means clear that this allocation of research efforts is efficient, or that it promotes the best healthcare system.

To sum up this theoretical appraisal, there are considerable doubts about the assumptions used to justify IPRs. Firstly, if knowledge cannot be strictly thought of as a public good, then intellectual property can yield profits even if it is not subject to strong legal protections. With a smaller proportion of the population receiving much formal education, and with more imperfect credit markets, barriers to replication are much greater in LDCs. In these circumstances, IPRs are less important in providing inducement for innovation. Secondly, the high costs associated with innovation today suggest that the profit motive may be important. Yet, theory alone cannot tell us how important. Thirdly, there appears to be substantial problems in defining IPRs. This presents substantial obstacles for the argument that a patent-based IPRs regime can be used to optimally trade-off the social gains and losses of innovation. Next, this paper explores the history of intellectual property rights, with the aim to learn something about the importance of the profit motive for inducing innovation in developing countries and to see what IPRs regimes were pursued by successful developers.

### **History of intellectual property rights**

Innovation first took foothold with the invention of primitive tools. The accumulation of inventions that ensued has been a long and uneven process.<sup>11</sup> The Egyptian and Greek civilisations made significant strides forward in science and technology. The Romans, perhaps, made lesser scientific strides, but contributed many administrative innovations and rolled out a large infrastructure of roads, aqueducts and sewage systems across their empire.

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<sup>11</sup> The discussion of pre-industrial innovation is largely based Scotchmer (2004). The historical description has a substantial European bias towards. This choice is deliberate, since other civilisations did not achieve subsequent economic development comparable with the European and North American industrialising countries. Since we aim to identify the role of IPRs in successful development, our focus remains with a few countries in Europe and North America.

Scientific innovation regained some momentum in European monasteries during the Middle Ages. During this period, too, the first guilds were formed around the emerging printing technology. Universities also began to appear, studying only religious scriptures initially, but eventually rediscovering the science and mathematics of the Greeks and Arabs. This momentum kept building throughout the renaissance, leading up to the enlightenment movement in Europe.

During this long and uneven innovative process, various forms of encouragement for innovation existed, including patronage, elevated social status, divine charge in monasteries, and more. Patents first appeared in Venice in 1471, and then in various German states during the 16<sup>th</sup> century, where they were unsystematically issued. In Britain, patent law appeared in the early 17<sup>th</sup> century, but some have argued it had been ineffective until reformed over a century later. Austria, France and the USA adopted patent law near the end of 17<sup>th</sup> century, and most other NDCs adopted some form during the 19<sup>th</sup> century (Chang 2002).<sup>12</sup> Thus, it was not until the eve of the industrial revolution that IPRs began to emerge on any significant scale. During the second half of the 18<sup>th</sup> century, governments began to realise that innovation enabled the unparalleled economic growth that NDCs were experiencing. With this realisation, efforts were made to protect the intellectual property of inventors. Kahn and Sokoloff (1993)<sup>13</sup> present evidence for the period 1790 to 1865 that “great inventors” in the USA congregated in counties with more effective patent enforcement. They also find that 42 percent of the “great inventors” changed occupation following their first major patent, in order to reap the returns from their inventions. These results suggest the importance of the profit motive for innovation, and that IPRs may have provided that inducement.

It is important, however, to interpret such evidence carefully. Firstly, their study does not consider the impact of international recognition of IPRs (since this was not U.S. policy at the time). Secondly, if we were to consider what the effect of international recognition of IPRs would be, it must be noted that the U.S. was, and is, very close to, or on, the world technological frontier.<sup>14</sup> This is important because, if a country is far behind the frontier, it

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<sup>12</sup> Chang (2002) *Kicking away the Ladder: Development strategy in historical perspective*. Anthem Press.

<sup>13</sup> Kahn and Sokoloff (1993) “Schemes of practical utility”: Entrepreneurship and innovation among “great inventors” in the United States, 1790-1865. *The Journal of Economic History*, 53, 289-307.

<sup>14</sup> The term ‘world technological frontier’ has been given a variety of technical interpretations, often to fit the modelling approach of particular authors. For an interesting example, see Parente and Prescott (2006). In this article, the concept refers more widely to the degree of sophistication and dispersion of technologies in the

can catch up through technological importation. Recognising patents from other countries therefore hinders catching up. This additional social cost increases with distance from the frontier. Their results therefore pertain only to a *national* IPRs regime, and can only be stretched so far as to say that protection of intellectual property may encourage innovation on, or near, the frontier, where there is no catching up to do. For countries far behind the frontier, such as today's LDCs, the social cost of international recognition of IPRs may be substantial.

The magnitude of catching up distinguishes the policy question for today's LDCs from the experiences of technological pioneers. Still, Chang's (2002) historical account of the catching-up strategies employed by the later developers among NDCs notes that patent enforcement was very negligent, often resulting in the patenting of imported technologies. In many countries, including Austria, Britain (before patent law reform) and France, patenting of imported technologies was explicitly permitted, and in some cases even actively encouraged, through the poaching of skilled labourers for the instruction of the domestic labour force. For instance, Henry VII pursued such a policy during the early development of the British woollen industry. Textiles were later an important sector in the industrial revolution, and Britain subsequently became the leading textile manufacturer in the world (Chang 2002). Furthermore, chemical and pharmaceutical substances were often not patentable, and in Switzerland remained so as late as 1978. IPRs only started to gain international recognition with the signing of the Paris Convention of the International Union for the Protection of Industrial Property in 1883, and subsequent extensions and revisions right through the middle of the 20<sup>th</sup> century, leading up to the negotiation of TRIPS in 1994.

### **What has changed?**

Clearly, the main theoretical argument for IPRs does not reflect the strategies historically employed by NDCs to catch up to the world technological frontier. In fact, industrial policy in NDCs was to *not* recognise foreign IPRs. If the policy recommendation to strengthen IPRs is to be reconciled with historical experiences, one must argue that there is something fundamentally different between the developing countries of the past and present that undermines the old successful policies.

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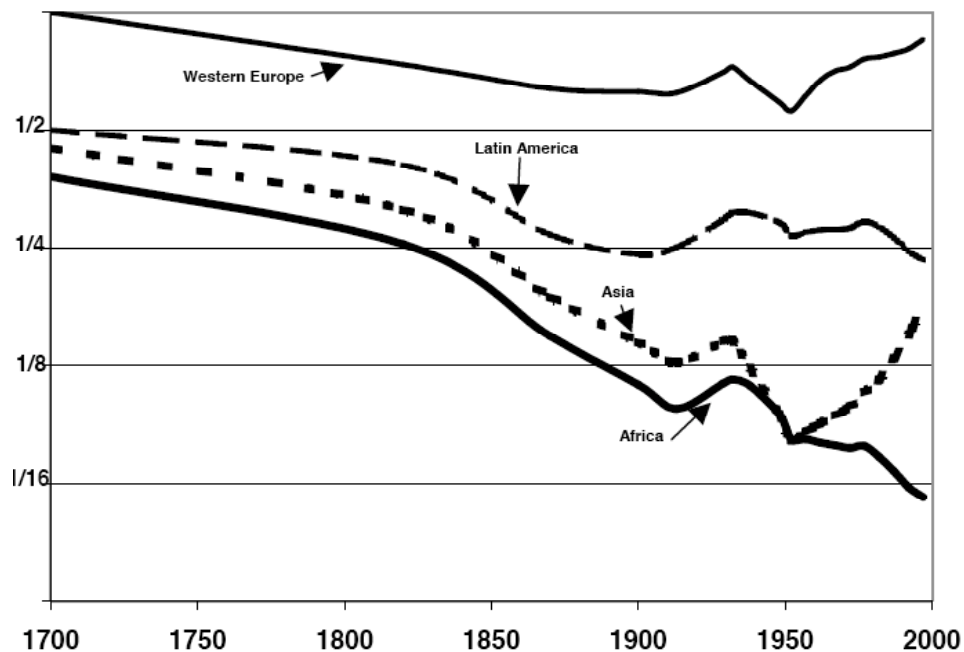
technologically most advanced countries, since the core arguments of are better understood if a more holistic interpretation is adopted.

We note three particularly stark contrasts between the LDCs and NDCs at comparable levels of economic development that might explain this discrepancy: (i) LDCs are currently much further from the world technological frontier than NDCs were in the 18<sup>th</sup> and 19<sup>th</sup> centuries. (ii) Trans-national corporations (TNCs) account for much more of the productive activity in developing countries. (iii) The level of institutional development is much higher in today's LDCs. Do these differences imply that the successful lax IPRs regimes of the past are no longer effective for promoting economic development?

Firstly, NDCs in the 18<sup>th</sup> and 19<sup>th</sup> centuries were much closer to the world technological frontier than today's LDCs. Indicative of this fact is that current LDCs have a much smaller fraction of the per capita income of the world leaders today than almost any time in the last 300 years (figure 1). This means that for NDCs, the main source of innovation were *new* ideas. For today's LDCs, however, *existing* ideas is a much greater source in relative terms. This is further suggested by observing that more recent theoretical discussions of IPRs take as given that *imitation* is the main source of technological progress in LDCs (e.g. Akiyama and Furukawa, 2009). By importing existing ideas from around the world, they will be able to catch up quicker. This difference between NDCs and LDCs, therefore, provides strong cause for *not* internationally recognising IPRs.

**Figure 1: Evolution of International Incomes 1700-1990**

(Fraction of Leader)



*Source: Parente and Prescott (2006)<sup>15</sup>*

Secondly, the strong presence of TNCs in LDCs implies that the international recognition of IPRs protects these corporations. Being active in many markets, TNCs run a higher risk of competition from local copycats. The argument, then, is that weak IPRs would discourage the large scale innovation that TNCs conduct, and encourage wasting resources to try to hide their technology from local competition, thereby raising the price to consumers. On the other hand, competition from local copycats can improve consumer welfare by undercutting monopoly prices. For LDCs, it is more likely that the reduction in incentives for TNCs to innovate is outweighed by the increased capacity for catching up and the lower prices. Moreover, international recognition of IPRs for the purpose of providing incentives for the more costly innovation undertaken by large TNCs would simultaneously provide excess protection for the great majority of less costly innovation. This imposes an additional social cost, which is disproportionately large in the least developed countries. Hence, the strong presence of TNCs in today's LDCs provides a weak basis for international recognition of IPRs.

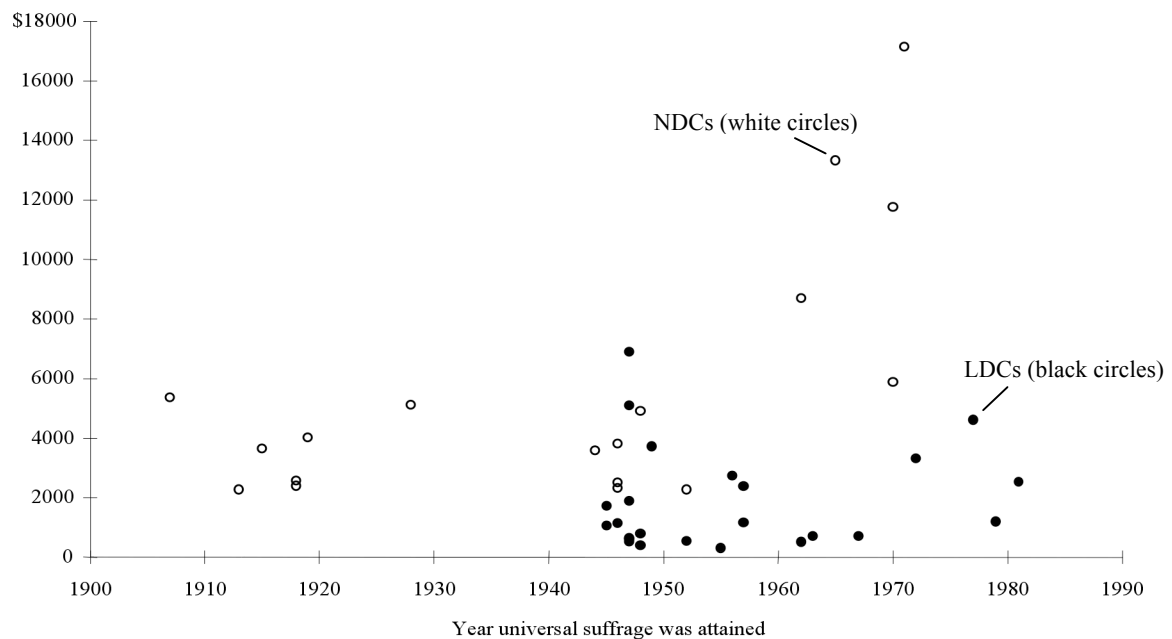
Thirdly, across a wide spectrum of institutions, including universal suffrage, independent central banks and judiciaries, property-rights regimes, limited liability corporate structure, bankruptcy law, competition law, financial disclosure requirements, and social welfare, today's LDCs (at comparable levels of income per capita) are far ahead of the where the NDCs were in the 18<sup>th</sup> and 19<sup>th</sup> centuries (Chang 2002). Figure 2 illustrates the case of universal suffrage – perhaps the most quintessentially modern institution – for 43 countries (18 NDCs, 25 LDCs). Although LDCs have achieved universal suffrage later, they have generally done so at earlier stages of economic development than did the NDCs. Since these modern institutions make copycats more likely to succeed, adding IPRs to the set of modern institutions may actually encourage innovation.

**Figure 2: GDP per capita in year of attaining universal suffrage**

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<sup>15</sup> Parente and Prescott (2006), What a Country Must Do to Catch Up to the Industrial Leaders, in Balcerowicz and Fischer, *Living Standards and the Wealth of Nations*, MIT Press, pp. 17–40. This graphic is copied from an electronic version available online <https://netfiles.uiuc.edu/parente/Parente%20and%20Prescott%20Catch-up.pdf>.

(1990 international dollars)



Source: Own figure. Data reported in Chang (2002).

Yet, creating these incentives within the economy does not detract from the fact that they are far behind the technological frontier to begin with. If the pool of existing ideas represents a sufficiently important source of innovation, LDCs can develop faster by copying innovations from around the world. International recognition of IPRs prohibits both technological importation and *independent discovery*. “Reinventing the wheel” is an expression often used to describe a waste of resources, but compare this with the waste implied by a society being denied access to the wheel, even though the wheel has already been invented elsewhere. Or, even if it independently discovers the wheel, would be allowed to use it only if it pays royalties to some other country (by definition, a country likely to be closer to the frontier than itself). Thus, while institutional differences between today’s LDCs and NDCs in the 18<sup>th</sup> and 19<sup>th</sup> centuries may provide grounds to implement national IPRs regimes, they do not seem to justify international recognition of IPRs.

### Is TRIPS a four-letter word?

The two main elements of TRIPS are the ‘national treatment’-principle and the international standard for IPRs regimes. The analysis in this paper suggests that there may be greater scope for encouraging *national* IPRs regimes in today’s LDCs than were historically enforced in

NDCs. However, it is difficult to defend international recognition of patents. This discussion highlights that the success of international recognition of IPRs, as a policy to promote economic development, depends crucially on the position of a country relative to the world technological frontier. For late developers, the main effect of such policy is likely to prevent catching up. Akiyama and Furukama (2009) argue that at relatively high levels of intellectual property protections, recognising IPRs internationally is unlikely to produce much additional incentive to innovate, and the effect of blocking technological transfer will dominate. The ‘national treatment’-principle in fact cuts off the already well-trodden path to economic development used by many NDCs in the past. Since the distance from the world technological frontier is an important determinant of whether international recognition of IPRs will be successful in promoting economic development, a broad-brushed push for a ‘national treatment’-style principle does not promote economic development. In fact, it appears as if it would act contrary to this objective. We must therefore ask one final question: What is the motivation for maintaining it?

Clearly, one can only speculate here, but there are at least two possible answers. The first is that TRIPS were not a set up as part of an agenda to promote economic development. Although the United Nations Conference on Trade and Development (UNCTAD) was established in 1964, significant ‘development-friendly’ modifications only began appearing in the TRIPS agreement with the declarations of the Doha round in 2001.<sup>16</sup> National governments now have greater powers to make use of parallel import arrangements and compulsory licensing when TRIPS would otherwise have conflicted with issues related to public health. Though, this cannot be interpreted as a principle decision. If the underlying principle was that development takes precedence over intellectual property protection, then clearly the ‘national treatment’-principle should be dropped altogether, or at least weakened much further. While not diminishing the importance of this consideration for public health, it must be recognised as pragmatic concession to forces such as the UNCTAD working to promote a more development-oriented agenda. This answer is therefore not satisfactory, since it does not identify the resistance to removing the ‘national treatment’-principle.

The second answer, perhaps for the more conspiratorial, is that institutions have been ‘hijacked’. IPRs can be used to encourage innovation, but those who become powerful on the

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<sup>16</sup> More can be read on the WTO website (URL provided in references).

back of their inventions may use that power to protect their interests (Chang 2007).<sup>17</sup> For example, Stiglitz (2006) writes about how a cartel based around a US patent for ‘self-propelled four-wheeled vehicles’ in 1895 attempted to suppress competition from Henry Ford (never mind that a German patent had already been granted for an early automobile design). Although the attempt to abuse IPRs failed that time, it is disquieting to see how a regime used to encourage innovation, can be used for the exact opposite purposes. IPRs are blunt and forceful instruments that can be wielded both to encourage and thwart innovation. With both historical and theoretical arguments suggesting that the ‘national treatment’-principle does not promote development, one can only wonder whether TRIPS is another example of IPRs hijacked to protect past innovators. The occasional granting of *retroactive extensions* of IPRs, which clearly does not promote future innovation, only serves to further strengthen suspicion.<sup>18</sup>

Then, is TRIPS a four-letter word? Is it a bad word in the context of promoting development? With regards to the ‘national treatment’-principle, there does appear to be reason for thinking this. International recognition of IPRs may be useful in a very limited number of cases where the costs and rewards of innovations are extraordinarily high, and more is gained by treating them as exceptions rather than rewriting general policy to accommodate them. However, under the continuing urgings of UNCTAD the development agenda is slowly being reclaimed by developing countries. Though the Doha round has hardly been an unfettered success (and often proclaimed a failure), it does provide a glimmer of much needed optimism with regards to TRIPS. One can call the public health concession insincere, but it amounts to the first recognition that sometimes development goals must take precedence over intellectual property protection, and that is surely a reason for hope. Even so, future discussions of IPRs regimes must recognise that the relationship to development depends on the distance from the world technological frontier. Since this is a question of the prevailing historical circumstances, the historical context cannot be separated from theoretical considerations. The expanded intellectual framework developed in this article suggests that historical conditions are in fact an integral part of the theoretical argument.

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<sup>17</sup> Chang (2007) *Institutional change and economic development*. United Nations University Press.

<sup>18</sup> Curious readers may be interested to read about the infamous example of the U.S.A. Copyright Term Extension Act of 1998.