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## The Economics of Intellectual Property Rights in Developing Countries

Lessons from a Literature Review

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Conventional economic theory asserts that inefficient markets result from a product or service for which there are no ready substitutes being provided by a single seller (i.e. a monopoly). An inefficient outcome is defined as one that does not maximise the welfare gains to society. This is often evident in monopolistically competitive markets; even more so in outright monopolistic markets. A monopolist usually restricts output – and consumer choice – and charges a price higher than would occur in a competitive situation.<sup>1</sup> Excessive profits are maintained because other competitors do not enter the market, due to some market barrier to entry or because of ineffective regulation.

Typical examples of barriers to entry include the legal prohibition on refuse removal by anyone but municipalities, and government-generated monopolies in fixed-line telephony (Telkom) and aviation (South African

Airways). Over time, the longer the (unregulated) monopoly exists, the greater the costs to society.

These considerations are also reflected in the regulation of intellectual property (IP), as there is a need to balance the needs of innovators (protection from competition at the design level) with the broader society's welfare considerations. Typically, governments grant exclusive (monopoly) rights temporarily to the owner of a new invention or innovation in exchange for the release of the inventor's knowledge/invention to the public within a specified time period. This allows the innovator to charge consumers higher prices (i.e. monopoly prices) for the product than would otherwise be the case if competitors were legally permitted to duplicate the protected work. From society's viewpoint, the protected innovator would then earn a higher rate of return on investment than would be the case in a competitive situation.

On the other hand, intellectual property rights (IPRs) give impetus to the production of goods that the public values. Without legally guaranteed protection, free riders are able to duplicate the work of the innovator at a low cost. The innovator's incentives to continue innovating may be muted, as the costs incurred to invent would likely outweigh the personal or firm-level returns. It then follows that weak IPRs reduce the rate of innovation, thereby lowering long-run growth rates and making the society worse off.

Despite the vast literature that exists on IPRs, perspectives on this subject are still sharply divided. Are current IPRs regimes optimal from an innovation point of view, and are the economic costs of granting temporary monopoly pricing powers to innovators understood? How do development considerations feature in the design of IPRs regimes, if at all? What are the key concerns surrounding the issue of IPRs for developing countries? How best can developing countries use IP tools to advance their development strategy?

These are essential questions that policymakers need to address in order to design IP laws and policies that best meet the needs of their countries, as well as to negotiate their positions in bilateral and regional trade agreements in the future.

This paper contributes to the debate by exploring the economic link between IPRs and development. It is intended to contribute to a better understanding of the key policy issues raised by IPRs and their impact on economic development.

The rest of the paper is organised as follows: section 2 provides a brief overview of the IPRs concept, while the sectoral application of IPRs is discussed in section 3. The paper then proceeds by looking at the international institutions and agreements governing IPRs in section 4; this section also assesses the application of IPRs in bilateral and regional trade agreements. Section 5 looks at the concepts of technology and technological progress and their relevance for development, further building on this analysis by questioning whether IPRs are a recipe for development or not. Section 6 draws lessons learnt from the literature review.

## INTELLECTUAL PROPERTY RIGHTS: AN OVERVIEW

According to Bethune, IPRs can be grouped into three major categories, namely: patents, copyrights and trademarks.<sup>2</sup> Patents are granted for inventions that are novel, non-obvious, and can be used or applied in manufacturing or agriculture.

Copyrights protect literary, artistic and musical works; sound recordings; cinematographic films; computer programmes; radio and television broadcasts; satellite transmissions; and published editions; while trademarks give ownership to words and symbols deemed to be unique to a particular business entity. Firms use trademarks as a symbol of product quality.

The three categories of IPRs are briefly discussed below.

### Patents

Patents provide the patentee with the exclusive right to make, use, sell, dispose of and/or import his/her inventions, which may be a product, service or process that provides a new way of doing something or offers a new technical solution to a problem. The objective of protection is to prevent others from making, using, selling, disposing of and importing the patentee's inventions for a limited period.

According to Schneider and Giddings, the degree and duration of patents protection varies widely by sector and product, and is linked to, among other things, variations in demand, market structures, research and development (R&D) costs, social appropriateness, and the nature of the innovative process.<sup>3</sup> For example, it is widely accepted that the optimal duration of patent protection must be at least for a period during which R&D costs are recovered in full, but not so long that society incurs a high price for protected products. Under the Trade Related Intellectual Property Rights (TRIPS) Agreement of the World Trade Organisation (WTO), the duration of protection is 20 years.

Because they protect technologies and products to which developing countries often wish to have access, patents are among the most controversial forms of IPRs. This is particularly true in sectors where the public interest is vast (e.g. HIV/AIDS and antiretroviral drugs). Drug companies have often been accused of taking advantage of their patent rights by charging exorbitant prices for life-saving medicines such as antiretroviral drugs.

### Copyrights

Copyrights give exclusive rights to the authors of the original works. The rights last for the entire life of the author and for a period of 50 years (although in the EU and the US this has been extended to 70 years) after his/her death, provided that the work has not been published or made available to the public in that time.<sup>4</sup> The essence of copyrights is to prevent unauthorised printing, reprinting and publishing of books and writings, artistic and musical works, sound recordings, cinematographic films, computer programmes, radio and television broadcasts, and satellite transmissions. The main objective is to ensure revenue and stimulate more artistic and/or literary work.

However, there are some exceptions to copyright protection, which differ from one country to another. Under the 'fair use' doctrine – allowed under the TRIPS Agreement – countries have the flexibility to choose the sectors and activities where copyrights can be applied. This is undertaken based on educational, scientific and technical advance interests. In this regard, quotation from works is allowed subject to acknowledgement of the author's work.<sup>5</sup>

As with patents, there is a need for balance. Too much protection by copyright may restrict the free flow of ideas on which further progress of ideas and technology depends. For developing countries, affordable access to works/knowledge essential for development such as educational materials and scientific and technical knowledge may be affected by unduly strong copyright rules, especially if they do not incorporate the TRIPS allowance into their national legislation.

On the other hand, artistic/literary works involve investment costs, including training, time, materials, technology acquisition, etc. If other members of the society were allowed to free ride on works without compensating their creators, the incentive to create would be severely hampered.

### Trademarks and geographical indications

Trademarks consist of brand names, slogans and/or logos. They typically identify a service or product of a particular entity or individual and distinguish it from the service and product of another. The aim of protection is to prevent third parties from using identical or similar marks in the sale of identical or similar goods that might confuse customers. Examples include: brand names, e.g. Coca-Cola; slogans, e.g. Nike's, 'Just do it'; and logos, e.g. Nike's 'tick'. They are of material value in marketing and distributing goods and services in that they support a company's claim that its products or services are authentic or distinctive compared with similar products or services of competitors.<sup>6</sup>

Geographical indications (GIs), on the other hand, identify the origin of a product. Usually the product is associated with the particular conditions (such as the weather and soil) of a place. The intention of GIs is to lower the consumers' search costs by removing the confusion created by similar products originating from various locations. It is also important to note that GIs have been used as a leverage in trade negotiations; for example, the terms 'port' and 'sherry' in the wine and spirits trade negotiations between South Africa and the European Union (EU).

Like patents and copyrights, trademarks and GIs offer protection to the innovator to exclusively sell his/her product. As mentioned, the product is made unique by, for example, its place of origin, and this conveys information about the product to the consumer. If consumers view the product as unique, they will be willing to pay a price for the good, thereby compensating the innovator for the cost of developing and marketing the trademark. If free riders were allowed to imitate the product and obtain an unfair advantage, these costs might not be recoverable by the innovators.

Trademarks and GIs offset the market power they may generate by reducing the consumers' searching costs, generating product differentiation by inducing new firms with unique products to enter the market and offering a channel for consumers who aspire to exclusivity in their consumption.

Internationally, the primary area of contention is the production, sale and importation of counterfeit goods that are presented as legitimate goods. While this practice may enhance consumer welfare by providing lower cost alternatives, it also reduces such welfare by increasing confusion, raising search costs, diminishing the value of trademarks, and lowering incentives to maintain product quality and develop new products.

## SECTORAL CONTEXT OF IPRS

All sectors in the economy make extensive use of IPRs. However, the application of IPRs varies from one country to another and from one sector and product to another, and specific sectors and industries largely depend on IPRs for their survival. This section of the paper discusses the application of IPRs in the pharmaceutical, information and communication technology (ICT), entertainment, clothing, wine and spirits, and agriculture sectors.

### Patents in pharmaceuticals

Pharmaceutical firms incur high R&D costs when developing new drugs to prevent and cure diseases. It is relatively easy for other entities to copy the technology used and to replicate and sell products produced in this sector. It is therefore seen as imperative that patent protection should be enforced in order to recover investment returns on inventions in this sector. Moreover, the fact that patents are granted for a fixed period exposes pharmaceutical products to increased competition upon their expiry date. As soon as this happens, all firms are free to produce, market and sell various adaptations of the product.

In order to offset the market power pharmaceutical companies may generate, most countries tend to enforce regulation in the distribution part of the pharmaceutical sector's value chain. For example, in some countries, manufacturers and physicians are subject to revenue limits in an attempt to control prices. In others, patient co-payments systems<sup>7</sup> have been introduced. Danzon argues that the effectiveness of the various regulations in controlling prices is debatable, as they might cause distortions in the market.<sup>8</sup> For example, among the Organisation of Economic and Co-operation Development countries, pharmaceutical prices tend to be lower in countries with extensive price regulations, but these countries have fewer generics and over-the-counter drugs. Viscusi, Vernon and Harington, on the other hand, argue that the market for pharmaceuticals is characterised by inelastic demand.<sup>9</sup> They contend that consumers do not buy drugs according to their preferences – drugs are an unavoidable necessity to cure diseases and are not bought to maximise utility. Furthermore, doctors and pharmacists prescribe which drugs consumers should buy. This explains why prices might be lower in countries with high price regulations, or vice versa.

### Copyrights in the ICT and entertainment sectors

Information and communication is one of the technological fields in which tremendous advances have been achieved in the last two decades. The main sources of innovation in ICT are the software and telecommunications industries, which tend to be concentrated in developed countries. While software products are often manufactured in both developing and developed countries, the companies that design and sell the products capture most of the value by far. Few such companies exist in the developing world.

In ICT, software developers face piracy problems because the high margins between protected software prices and costs of unauthorised duplication create a

large market for pirated programmes. It is estimated that piracy rates tend to be higher in business software than in any other form of recorded media.<sup>10</sup> Illegitimate copies of programmes such as Microsoft's Windows XP are sold over the counter. On a positive note, software piracy can be more easily controlled using programming possibilities that limit the number of copies that can be produced from an original.

Open access software is another ICT phenomenon that has gained increased attention among academics, NGOs and multilateral governance institutions such as the World Intellectual Property Organisation (WIPO) and WTO. Musungu postulates that this type of software is appropriate in academic research, and access to technical and scientific knowledge.<sup>11</sup> Musungu further explains that open access software plays an alternative role to the exclusive IPRs model. Alternatively, the United Nations Conference on Trade and Development-International Centre for Trade and Sustainable Development suggest that developing countries should seize the opportunity to optimally use concepts such as 'fair use' or 'fair dealing, because they provide exceptions to copyright by authorising the use of protected works for libraries and public archives, for example.<sup>12</sup>

As for Internet transmission, views on the applicability of IPRs vary from the opinion of those who believe that IPRs are completely inappropriate, to others who hold that IPRs have evolved over time and that it is nothing new for them to accommodate new technologies, even though there may be problems at first. Enforcing rights is difficult in digital products that may be easily downloadable. For example, users compile their own music disks or videos without paying royalties to any of the original rights holders.

The entertainment industry relies heavily on copyright protection. The industry produces cultural products such as musical and dramatic works and performances, and motion pictures. The exploitation of copyrights forms a very large part of most developed economies. According to Ceballos, approximately 7% of the developed countries' gross domestic product (GDP) can be attributed to the culture and leisure industry, and this figure is increasing over time. Ceballos further asserts that between 65% (in the case of books) and 85% (in the case of recorded music) of the general public are users of cultural IP protected under copyright.<sup>13</sup>

With regard to the motion picture industry, only a few developing countries have large industries (e.g. India, Mexico, Egypt and Nigeria). Yet, many countries have rich traditions that could be used to generate income for performers, artists and the country as a whole. In fact, since most of the world's cultural diversity exists in the developing world, many of these countries have the potential to become major producers of recordings of cultural works and performances such as art, music, drama and dance. However, this industry depends on advanced technology to achieve special effects and sound quality, among other things. It also invests large amounts in talent. Moreover, marketing is costly, as firms attempt to establish quality reputation for differentiated acts and products.

Piracy of recorded films and music is an important concern for copyright lobby groups. These groups often present arguments to the effect that piracy is so rampant that it is threatening the very existence of legal transactions involving intellectual property (IP). Given new technologies (for example, DVD and CD burners and digital data transfer mechanisms over the Internet), a pirated copy of a CD containing music is very close to being a perfect substitute for an original, and

yet can be obtained for a fraction of the price. Pirating firms incur no research costs and free ride on the creativity of performers and producers, allowing such firms to sell duplicates of original movies and records at a fraction of the price that would be supported by copyrights.

The hypothesis that piracy is costing massive amounts of money in lost legitimate trade must be treated with caution, however. This hypothesis is based on the notion that each pirated copy that is transacted represents the loss of a genuine sale. This is an incorrect idea upon which to base an estimate of the loss of genuine trade, as pirated copies are always sold at a lower price than genuine copies. Thus, eliminating the pirated copy does not imply that the user would then purchase a genuine copy. Furthermore, eliminating the option of pirated copies would certainly affect the price at which genuine copies are sold, most probably increasing it further, since legitimate trade would be facing less competition. Hence, we may have reason to believe that eliminating the option of piracy may even reduce the number of genuine copies sold, due to price increases.

Piracy of literary works also exists (photocopying of books), but given the generally low price of original formats, the high cost of copying (photocopying an entire book is a time-consuming activity and can be fairly expensive) and the fact that the pirated version is often a poor substitute for an original, it is generally considered to be less rampant than piracy of musical compositions.

### Trademarks and GIs in the clothing, wine and spirits, and agriculture sectors

The large gap between the market price of legitimate goods and the price of counterfeit goods has created a flourishing market for the latter type of goods. Counterfeit goods are usually sold without authorisation under marks that are identical or confusingly similar to registered trademarks. These trademark infringements are largely practised in East Asian countries such as China, Thailand and Vietnam.

The problem is common in reputable international clothing brands such as Levi, Gucci, Armani and Carvelle, among others. Other sectors where these practices are prevalent include prepared food and beverages; medicines; transport equipment; and industrial machinery such as transformers, heating equipment and construction cranes. This raises serious standards and public safety concerns.

GIs are relevant and important in most wine- and spirits-producing countries such as France, Scotland, South Africa, Australia, the United States (US), Chile, the Russian Federation and Argentina. In many respects, wines and spirits bear a reputation for quality that is attributable to their geographic origin, and thus require some form of protection.<sup>14</sup> The conflict over GIs was the 'bone of contention' in the South Africa–EU trade and development co-operation negotiations between 1996 and 2002, whereby the EU wanted South Africa to remove names such as port, sherry and Nederburg from its wine and spirits list as they were in conflict with similar names in the EU wine-producing member countries.

GIs are also relevant to agricultural products such as coffee, tea, rice and fruits. These products originate largely from developing countries and are differentiated on the basis of trademarks owned by the multinational companies domiciled in developed countries. In this regard, there is no economic benefit from the

distinctive quality of such products flowing back to the countries of origin. It is thus true to say that GI protection for such products is non-existent in developing countries. Therefore, GIs should be seriously considered by the developing countries as a legal means to protect their assets. However, this should be considered in sectors where market success is feasible and the sectors are supported by a realistic industrial policy and trade-enabling infrastructure.

## IPRS IN INTERNATIONAL TRADE

### Multilateral agreements

IPRs affect international trade flows when knowledge-intensive goods move across national boundaries. In recent years, the importance of IPRs for trade has gained more significance as the share of knowledge-intensive or high-technology products in total world trade rose exponentially. This upswing in high-technology products has also been coupled with piracy, counterfeit goods and varying IPRs treatment across nation states. This has also created an added burden for inventors, as they need to patent their inventions in more than one country. To counter these problems and ensure homogeneity with respect to IPRs treatment, the TRIPS Agreement was concluded during the Uruguay Round (1986–94) of world trade negotiations.<sup>15</sup> However, this movement towards harmonisation is not new – it has been going on for over 100 years.<sup>16</sup> According to Pretnar, the initial pillars of the international IPRs system were the Paris (1883) and Berne (1886) Conventions, followed by the WIPO Convention (1967).<sup>17</sup> The former conventions provided for patent, trademark and copyright protection. The WIPO Convention and treaties were intended to update international standards, specifically in relation to the dissemination of digitised material, and to adapt copyright systems to new media.

Furthermore, there have been a number of agreements, treaties and conventions in the field of industrial property and copyrights (e.g. the Patent Co-operation Treaty of 1970 and the Universal Copyright Convention of 1952, administered by the UN Educational, Scientific and Cultural Organisation).

Efforts towards harmonisation are predicated, in part, on the belief that uniform IP laws will encourage innovation, international investment and economic development.

The TRIPS Agreement is the most comprehensive international agreement on IP. The agreement extends beyond the Paris and Berne Conventions, with additional protection and enforcement procedures to safeguard patents, copyrights and trademarks in member countries both internally and at the border, and it defines effective means to settle disputes between members. To this end, the TRIPS Agreement has established common principles for IPRs enforcement and has made minimum standards of IPRs protection mandatory for WTO members.

Despite the positive effects, criticisms of TRIPS remain. Hummel contends that there is scope for further improvement, as the agreement needs to offer protection, registration and enforcement of ‘traditional knowledge’ such as traditional medicines and folklore, which it currently does not cater for.<sup>18</sup> Traditional knowledge, for example, serves as an input into modern industries such as pharmaceuticals,



cosmetics and toiletries, agriculture, and biological pesticides. But as Shah points out, the TRIPS Agreement does not acknowledge and protect indigenous communities' ideas and knowledge.<sup>19</sup> Instead, it provides patent protection to multinational companies who have apparently 'stolen' traditional ideas and knowledge from these communities without acknowledging their contribution.

A major criticism has been that TRIPS – in its current form – does not promote competition and is biased towards protection of the innovator's commercial interests, i.e. profits. Shah argues that TRIPS, by regulating and thwarting imitated products, reduces competition and thereby deprives poorer nations of access to cheaper drugs, for example.<sup>20</sup>

### Bilateral and regional trade agreements

During the past several years, developed countries such as the US and the EU have concluded or are in the process of concluding bilateral and regional trade agreements with developing countries. Some of these agreements include extensive IPRs commitments that surpass those mandated in the TRIPS Agreement. For example, the TRIPS-plus provision in a free-trade agreement between the US and Cambodia states that 'Each party must accede to the UPOV<sup>21</sup> Convention, [and] must extend term of copyright protection in certain cases to 75 yrs from publication or 100 yrs from making'.<sup>22</sup>

The TRIPS Agreement only stipulates 50 years in this regard. The US has replicated these TRIPS-plus provisions in a number of bilateral and regional trade agreements and negotiations with Caribbean, South American, Asian and African countries.

There is a relatively consistent view among economists studying IPRs that the interests of countries with respect to standards of protection vary depending on the level of development and other characteristics of the country adopting such protection. Although developed countries have a rightful interest in the IP standards of their trading partners (especially developing countries), they should ensure that their IP standards expectations in bilateral and regional trade agreements take into account the level of development and technological capacity of their trading partners. For example, with regard to the protection of pharmaceutical patent holders, developed countries' excessive IP standards might threaten to cause harm to the interests of poor populations in developing countries.

The current Doha trade negotiations have put development as the central objective. This provides a critical platform for both developed and developing countries to reconcile the development interests of developing countries and the commercial interests of international companies domiciled in developed countries in IP policy.

Furthermore, the appropriateness of IPRs standards differs from one country to another and from one sector to another. According to Abbott, IP standards negotiated by the US reflect the general rules of application and sparsely reflect the balancing interplay among the rules, their limitations and exceptions.<sup>23</sup> For example, Abbott states that 'this is of special importance in areas such as public health regulation where incomplete familiarity with the flexibility inherent in the US system may lead its trading partners to conclude that restrictive implementation of IPR standards is required'.<sup>24</sup> It is also important to note that even within the US, IP

regulations recognise and endeavour to strike a balance between the commercial interests of IPRs holders and consumers' concerns with provisions for limitations and exceptions to general IP principles.<sup>25</sup>

The implementation of these extensive IP standards also poses a major challenge. Varying capacity between developed and developing countries to create and manage the legal system may lead to disparity in the way standards are implemented. This should serve as a lesson for developing countries when negotiating to cautiously assess whether the capacity of their domestic policy and regulatory framework will permit them to balance their interests. Otherwise, it is unwise to accede to commitments that will strain domestic capacity and that may lead to the application of rules in a more restrictive manner than the agreement requires.

Moreover, bilateral and regional trade agreements (especially those containing TRIPS-plus provisions) pose a potential risk in that they could undermine the multilateral IP system by limiting the use by developing countries of the flexibilities and exceptions that they are guaranteed under the TRIPS Agreement. This should be guarded against.

## INNOVATION VERSUS DEVELOPMENT

How IP protection affects innovation, technology transfer and economic development depends not only on the countries involved, but also on the industry concerned and the product itself. This section looks at the role of technology in development and reviews the debate over whether IP protection is a recipe for development.

### The role of technology in development

Science and technology are at the heart of economic growth and development. Different schools of growth theory have all recognised the essential role of technological progress and its effect – knowledge – in sustaining the growth process and increasing the level of per capita income.

Technology is broadly defined as the way in which inputs to the production process are transformed into outputs (goods and services). It is basically a pool of technical knowledge and it can take place through, for example, invention and innovation, and the adaptation of pre-existing, but new-to-the-market technology. Moreover, technology can be embodied in capital goods (and is thus directly measurable) or in human capital (and captured as tacit knowledge that can or cannot be codified). It is thus, in practical terms, very difficult to measure technology, and, as such, technology is not entered as an independent input in empirical studies on sources of economic growth. Ideas and knowledge are not quantifiable.

The relative efficiency with which goods and services are produced, given the factors of production (i.e. capital, labour, land and natural resources) is called technological progress. This is sometimes called total factor productivity (TFP). TFP also captures other factors such as government policy and institutional changes, variations in capacity utilisation or other inefficiencies, or efficiencies not due to technology.

TFP has been used at both the macro and micro levels. Firstly, at the macro

level, the concept of TFP has been used to determine the contribution of technological progress to both economic growth and development. A number of empirical studies have used the concept of TFP to analyse income gaps or long-term growth and its impact on development. For example, the World Bank's *Global Economic Prospects* report found that a large part of the differences in per capita income and development levels between rich and poor countries is explained by differences in TFP.<sup>26</sup> The reports shows that, although the gap between lower- and upper-middle-income countries has narrowed over the past decades, upper-middle-income countries employ four times as much technology, whereas lower-middle-income countries only employ twice as much technology.

On the other hand, empirical research on the East Asian countries such as the Republic of Korea, Taiwan, Singapore, Malaysia and Thailand found that technological progress played a lesser role in the growth and development of these countries. Instead, the strong growth and development over the past four decades was largely attributed to capital accumulation. Šimurina and Tica further point out that one of the components attributed to the fast growth of the East Asian countries is the social capability (e.g. entrepreneurship, learning, etc.) to absorb and master foreign technology.<sup>27</sup> Government policies ensured that this capability was in place once technology was available for transfer. Šimurina and Tica argue that, in such conditions, technology plays a major role in growth and development. However, if such a threshold is not present, effective technology transfers are unlikely to take place. This conclusion has major implications for sub-Saharan Africa. With the exception of IPRs to protect health and safety, it is difficult to see how they could be useful elsewhere except as a device to attract investment. But enforcement costs may outweigh any (probably marginal) benefits that they may deliver.

At the micro level, TFP is used at the industry and firm levels to determine the factors that increase the TFP of the whole economy or of industrial firms in different sectors. A study by Martin and Mitra estimates that technological progress has been faster in agriculture than in manufacturing in 50 countries (both developing and developed), with productivity boosted four times in the former sector than in manufacturing over the period 1967–92.<sup>28</sup> The role of ICT in particular in increasing TFP has also been widely and extensively studied.<sup>29</sup>

There are, however, limitations to the concept of TFP as a measure of technological progress and its impact on growth and development. Firstly, TFP does not reflect the welfare contributions of technology that does not have an immediate impact on GDP.<sup>30</sup> The World Bank states that technological advances that reduce the cost of public services (such as water and sanitation systems, immunisation, and malaria prevention) may have little impact on recorded income in the short run. However, these cost-saving innovations may positively improve the quality of life in the long run, for example, 'as improved child health eventually pays off in terms of greater adult productivity'.<sup>31</sup> TFP does not capture this.

With regard to the impact of IPRs on technology, a number of econometric studies point to little conclusive evidence regarding the positive impact of IPRs on technology inflows.<sup>32</sup> In particular, Correa concludes that there is no evidence to suggest that increased protection of IPRs in developing countries will lead to more opportunities for accessing the latest technologies, or that the local rate of innovation will increase.<sup>33</sup> While the availability of IPRs reduces the risk for potential

transferors and may encourage formal modes of transfer (such as licensing), the increased power that IPRs give leaves it within title holders' discretion whether or not to transfer the technologies that they possess, and to determine the price and other conditions thereof.

Empirical research on the East Asian economies (Japan, the Republic of Korea and Taiwan) suggests that relatively weak IPRs protection encouraged technological learning during the early industrialisation phase.<sup>34</sup> The experience of the Republic of Korea's technological development shows that during the implementation of the country's catch-up strategy, foreign technology transfer played a vital role in building the existing knowledge base of Korean firms.<sup>35</sup>

However, Schneider and Giddings argue that weak IP protection is generally associated with low foreign direct investment (FDI) and low quality of the transferred technology. They point out that new technologies have eased the process of copying, counterfeiting and pirating, and this has undermined the value of innovation.<sup>36</sup> These issues have been at the core of debates among nations, prompting multinational IP treaties and the creation of world standards of protection.

### Are IPRs a recipe for development?

Proponents of IPRs strongly argue that IPRs are necessary to stimulate economic growth, which, in turn, contributes to poverty reduction. By stimulating invention and new technologies, they will stimulate local production, promote domestic and foreign investment, facilitate technology transfer, and improve the well-being of the society. These proponents take the view that there is no reason why a system that works for developed countries could not do the same in developing countries. Their main concern about economic development and IP protection is that weak protection will limit FDI. Rather than lose new technology to a competitor in a country where an investor has no recourse to infringement (i.e. lack of legal right to obtain reimbursement from a free rider), an international company may choose to keep technology safe in the country of origin, or invest elsewhere.

From the literature surveyed, there is little empirical evidence to support such an hypothesis. Several surveys undertaken by Mansfield have shown that while multinational corporations are concerned about the level of IP protection in developing countries with investment potential, this concern is just one of a host of concerns.<sup>37</sup> Furthermore, Sherwood attests that multinational firms base their decisions on factors such as the country's per capita income, corporate taxation levels, business environment and the openness of the economy, among others.<sup>38</sup> Sherwood also contends that multinational firms' decisions differ from one sector to another. For example, food and transportation industries are less concerned about protection than chemical and pharmaceutical industries. Furthermore, Park and Ginarte found that while countries with higher income levels have stronger IPRs, there is no clear pattern in growth rates.<sup>39</sup>

Opponents of IPRs argue that they do little to stimulate invention in developing countries, because the necessary human and technical capacity may be absent. By raising prices, IPRs regimes fail to benefit poor people who cannot afford the products, even if such products are developed. IPRs regimes limit the option of technological learning through imitation, often cited as important in Japan's and

now China's technological catch-up. Opponents further assert that IPRs allow foreign firms to drive out domestic competition by obtaining protection and to service the market through imports rather than domestic manufacture.

Chin and Grossman claim that it is in the developing countries' best interest to free ride. They assert that copying and improving on existing technology that has been invented in more wealthy countries has been an important engine of growth in developing countries.<sup>40</sup> Evanson supports this claim by pointing out that developing countries such as Taiwan, the Republic of Korea, Hong Kong, Singapore, Brazil, Mexico and Thailand have made significant progress in economic development through imitation over the past 30–40 years.<sup>41</sup>

In evaluating these opposing arguments, it is essential to consider the diversity of developing countries in respect of their social and economic circumstances and technological capabilities. Altogether, more than 60% of the world's poor live in countries that have significant scientific and technological capabilities, and the great majority of them live in China and India. Both countries, along with several other smaller developing countries, have capacity in a number of scientific and technological areas, including, for instance, space, nuclear energy, computing, biotechnology, pharmaceuticals, software development and aviation. By contrast, 25% of poor people live in sub-Saharan Africa (excluding South Africa), mainly in countries with relatively weak technical capacity. It is estimated that China, India and Latin America together accounted for nearly 9% of worldwide research expenditure, but sub-Saharan Africa accounted for only 0.5%, and developing countries other than India and China for only about 4%.<sup>42</sup>

Thus, developing countries are not all the same. Their scientific and technical capacities, social and economic structures, and inequalities of income and wealth vary from one country to another. Policies to address their development needs will vary accordingly. The same applies to policies on IPRs. Policies required in countries with a relatively advanced technological capability where most poor people happen to live, for instance India or China, may well differ from those in other countries with a weak capability, such as many countries in sub-Saharan Africa. The impact of IPRs policies on poor people will also vary according to socioeconomic circumstances. Therefore, the appropriateness of IPRs will differ from one country to another, and possibly from one sector to another.

IPRs can play an important role in stimulating R&D investments only where absorptive capabilities already exist, provided that the compliance costs do not exceed the benefits. But in countries that lack absorptive capabilities, innovation is likely to remain, at best, underdeveloped in the face of greater protection. In fact, one strong argument against advocating that developing countries free ride on the technological strengths of industrialised nations is based on the notion that tacit components of technological knowledge are often more important than having the technology itself. In most cases, it is not sufficient simply to implement the technology in question – complementary know-how is required.

Kim suggests that if adequate protection and enforcement of IPRs are genuinely intended to enhance development, policymakers should seriously consider differentiation of IPRs regimes in line with their countries' level of economic and technological development.<sup>43</sup> In this regard, developing countries should strengthen their absorptive capacity with a long-term vision to identify relevant technology

available elsewhere, strengthen their bargaining power in transferring technology on more favourable terms, incorporate that technology quickly once it is transferred, imitate and produce creatively, and eventually generate their own IPRs

However, it is just as possible that IPRs can be an obstacle to development insofar as their application directly imposes limits on access to ideas, restricts the policy space needed to build social capabilities, places a heavy burden on development budgets, increases the potential for anti-competitive activity and reduces technology flows to the poorest countries. Although these problems may not be immediately felt in low-income economies as IPRs are tightened, because innovation is a cumulative process linked to continuous learning at various levels of society, it would be misleading to conclude that they are absent.<sup>44</sup>

## LESSONS LEARNT

It is well established that the capacity to generate, assimilate, disseminate and effectively use knowledge is crucial for sustainable growth and development, since knowledge forms the basis of technology innovations. For developing countries to seize opportunities, this implies that they will have to harness those innovations and the knowledge that comes with them. But mastering technology is not enough; it must be complemented by government policies to develop the relevant sectors – by providing incentives and building national institutional capacity for knowledge creation and diffusion.

Empirical research has shown that for those developing countries that have acquired significant technological and innovative capabilities, this has generally been an association with ‘weak’ rather than ‘strong’ forms of IP protection in the formative period of their economic development. The Commission on Intellectual Property Rights in its 2002 report concurs with this conclusion by pointing out that in technologically weak low-income countries, high IP protection is not a significant determinant of growth and development. On the contrary, rapid growth and development is more often associated with weaker IP protection. The report further attests that in technologically advanced developing countries, there is some evidence that IP protection becomes important when a country reaches upper-middle-income status in its stages of development.<sup>45</sup>

What is also clear from the literature review is that simply strengthening and enforcing IPRs will not be sufficient to induce much more innovation and technology transfer. If this were the case, then large countries with high growth rates but weak IPRs regimes would not have received large foreign investment inflows in the past, and even now. This includes many of the East Asian and Latin American economies that have received the bulk of such flows. Experience from these countries suggests that IP protection is one of a number of factors influencing multinational companies’ decisions to transfer technology to or to invest in a particular country. Therefore, the effects of IP protection are dependent on its interrelationship with the effects of other factors such as the size of the domestic market, per capita income, the legal and regulatory environment, infrastructure, and the macroeconomic stability of the country.

Furthermore, the international IP regime should recognise the scientific and

technology capacity, and the social and economic diversity of developing countries. As such, an optimal IPRs system would recognise this diversity and would thus vary from one country to another and from one sector to another within these countries. According to Gadbow and Kenny, IPRs in developing countries may reflect different culture-specific goals regarding the trade-off between knowledge dissemination and incentives for innovation. For example, Indian law on patenting favours basic needs such as food and medicinal products, and therefore applies weaker protection in order to maintain low-cost products.<sup>46</sup>

## ENDNOTES

- 1 The important caveat here is a so-called natural monopoly. In some industries, technology or scale may necessitate a single provider (this provider usually needs to be tightly regulated). In these cases, more than one provider necessarily reduces each provider's output, necessarily increasing the costs of all providers, and in turn reducing potential welfare gains to society.
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