The Functioning of Patent Monopoly Rights in Developing Countries: In Whose Interest?

Executive Summary

Advocates of strong international protection for patents argue that developing countries would gain from increased flow of trade, investment and technology transfer. This paper questions this view by examining both the functioning of patents in the developing economies in the past and current structural trends in the world economy in these areas.

The historical research reveals no positive links between a strong patent regime and foreign direct investment (FDI) and technology transfer.

Current trends are largely limited to exchanges amongst the industrialised countries and, to some extent, the newly industrialised economies. While increased North/South trade flows are expected, negative consequences are possible.

Purpose: From the 1950s to the 1980s, and indeed as far as back as the mid-nineteenth century, the literature is replete with analyses and empirical findings on the functioning of the patent system in developing economies (peripheral economies). The overwhelming conclusion is that the theoretical reasoning justifying the system was inapplicable to developing economies and the empirical data showed that it operated to the disadvantage of these economies.

TRIPs Agreement: The new regime enshrined in the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) (Annexed to the Agreement Establishing the World Trade Organisation) has strengthened the rights of the patent monopoly holder and facilitated the internationalisation of the monopoly.

Official pronouncements are full of promises about the supposed benefits that a strong patent system would bring to developing countries. Yet, recent analyses and those from the past disprove these expectations.

One of the issues which developing countries have advanced, including at the Seattle Ministerial Meeting, as a condition for further negotiations in the WTO, is a review of the TRIPs Agreement, which include changing aspects that have negative consequences on developing countries, particularly protection of plant varieties, food products and pharmaceutical products.

Basic Questions: Two basic questions are posed: 1. Will the supposed benefits for developing countries from a strong patent system be realised? and 2. Given that the patent system did not benefit the developing countries before, then what has changed to allow greater benefits to flow to the South as a result of the new patent regime?

Historical Experience: The discernible point is whether there are similarities in emerging trends in the utilisation of the patent system in the developing countries. It is not the intention to do an exhaustive review of the historical literature, but rather to focus on the major arguments and empirical findings.

It is much too early to gather empirical evidence of effects of the TRIPs Agreement in developing economies. However, one can discern emerging trends from an examination of the structural and systemic environment within which the patent system is being institutionalised.

In Sum: The first section of the paper outlines the structural changes in the world economy that gave impetus to the demand by industrialised countries for stronger intellectual property protection at an international level, and the strategies that were adopted to achieve this end. The theoretical justification for having strong patent protection and critiques of these positions are discussed.

The paper then focuses on structural trends in the world economy in the areas which official wisdom have identified as the conduits through which the supposed benefits to be derived from a strong patent regime would flow to developing countries: trade, investment and technology transfer.

The question of what benefits can be expected for developing countries underpins the discussion, and the control of negative impacts is linked to competition policy. Finally, conclusions and policy considerations are drawn.

BRIEFING PAPER

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Demands for Stronger Patent Protection

The case for stronger patent protection became urgent because new technologies are increasingly being embedded in the final product that is sold, such as software or life forms that are genetically modified, e.g. plant varieties. Imitation or copying is easy once the competitor has the technical capability.

An examination of trade flows between 1983 and 1987 showed that trade in intellectual property as embodied in goods grew substantially and rapidly, leading to significant potential for infringement. The risk to the innovator is increased by the fact that research and development (R&D) costs have increased phenomenally while the life cycle of new products is shorter, given the increased rate of innovation in recent years. This is especially the in the chemical sector, including pharmaceuticals.

Given the nature of new technologies, multinational enterprises are finding it more efficient to dis-aggregate aspects of the production chain, and even the production process, spreading different aspects across the globe geographically, based on location conditions that give comparative advantage.

Moreover, manufacturing of products has fallen in value in the product chain, and is being increasingly moved to developing countries, while industrialised countries retain the service dimensions of manufacturing. In today's economy, marketing and distribution are also high value-added segments of the product chain, relying heavily on information technology linked to telecommunications and telematics. Electronic commerce is rapidly changing the form of retail trade globally.

Table 1 gives an outline of the product chain and services linked to each component of the product chain. Column 3 of the Table identifies the technological input that bestows competitive advantage to firms. It is the aggressive provision of services using knowledge-intensive, state of the art protected technologies all along the product chain that provides the highest value-added profit margins.

This knowledge and skills advantage is exploited through economies of scale, utilising the endowed human resource in various locations to maximise profits.

Concomitant with the increase in innovation in industrialised countries, intellectual property laws were upgraded in these countries to meet the need for legal protection of new products that were not covered by the old laws, such as software, integrated circuits, and products of bio-genetic engineering.

In the negotiation of the TRIPs Agreement, industrialised countries insisted on inclusion of new areas of intellectual property protection that were reflected in their domestic laws. Table 2 cites some examples of this influence of the TRIPs Agreement.

The reason for this was that during the 1980s, multinational enterprises were constrained in fully utilising the globalisation strategy because there were different levels of protection of intellectual property across the globe. Intellectual property protection is a matter of national jurisdiction so that even if full protection is provided in the home country, this does not extend to foreign countries.

Where such laws existed in developing countries, they were largely inherited from the colonial era, and many had not been revised since prior to the Second World War. Those that had been revised aimed at weakening patent protection in reaction to the detrimental effects of patents in developing economies.

Table 1: Most Profitable Components of Product Chain

Stages	Product Chain	Service/Inputs into Product Chain (high value added)	Technology Cluster/Competitiveness
Pre-Production	Idea	Professional consultancy Research on market needs (Research and Development)	Software (SPSS)
	Design-Engineering	Professional consultancy in computer-aided design (CAD) Computer Software in design engineering	Micro-chip technology Large-scale integrated systems: Expert System (computer evaluates and learns - self-correcting)
Production	Production Processes	Material: biotechnology - new materials Labour: highly skilled computer literate technicians, Capital Goods: robotics-computer-aided manufacturing (CAM); Management: quality control/flexible production systems; Services: accountancy, cleaning, maintenance, etc.	Bio-genetic engineering in plastics, composites and advanced ceramics (continuing R&D), transgenic crops; Computer numerically controlled (CNC) machinery (allows judgment of self measuring adjustment); Systems Design Software
Post-Production	Products	Information needs to allow 'Just in time' production that would reduce storage costs Continuous market intelligence on product needs to allow quick response through flexible production systems	Telematics (computer linkages through telecommunications) CNC machinery Telecommunications through satellite transmissions
	Marketing	Communication to market through promotion, e.g. advertising direct selling Public relations - exhibition, seminars, etc. catalogue shopping	Heavily reliant on telecommunications via satellite
	Distribution	Quick communication for orders and shipping documents Efficient land, sea and air transport Efficient means of affecting payments	Fax/e-mail/e-commerce Telematics Computerised systems for transport bookings and delivery Financial flows through telematics
	Sale to Final Consumer	Financing (credit cards) E-commerce Control of distribution	Computerised banking services Satellite/telecommunications Courier services

To fully utilise the globalisation strategy, multinational enterprises required a minimum standard of intellectual property protection in host countries, in order to register their patents and have legal recourse if rivals imitated their technologies without paying royalties.

It is precisely because of this drive to internationalise the use of those products or processes of cutting edge technologies but to secure the profits for the innovators that it became necessary to internationalise the legal framework that had been developed in the industrialised countries over the last two decades.

By succeeding in getting intellectual property included on the agenda of the Uruguay Round of Negotiations of General Agreement on Tariffs and Trade (GATT), they changed the conditions of the negotiations, and achieved their objective.

The TRIPs Agreement

The TRIPs Agreement prescribes a minimum level of protection that must be adopted in all member countries. Under the Paris Convention for the Protection of Industrial Property, which came into force in 1884 and has been revised several times (the latest version is the 1967 Stockholm Revision), members were obliged to give national treatment to foreigners, i.e. no less than that given to nationals.

Apart from that, each nation state had autonomy to decide on the scope and depth of protection given under the patent system. At the beginning of the 1980s, around 50 countries in the world did not recognise patent protection for pharmaceutical products. For instance, both Argentina and India provided legal protection for processes to develop pharmaceutical products, but the not the products.

Developed countries, led by the US, were extremely concerned about losses to their companies that arose from imitation of their leading edge technologies, particularly by the Asian newly industrialised economies. They wanted a widening of the scope of intellectual property rights, strengthening of the rights, and enforcement of the law.

Developing countries, by contrast, wanted a weakening of the monopoly right, and were hostile against widening the scope of intellectual property protection to include plants and animals, plant varieties, micro-organisms and products of biotechnology, and making all innovations patentable, including pharmaceuticals.

However, instead of negotiating to revise the Paris Convention to take development needs into consideration, they found themselves fighting to maintain *status quo*. For as negotiations proceeded, industrialised countries were reforming their domestic patent law to provide protection for new technologies that were not covered by the existing patent law (see Table 2), and demanding the same level of protection in other countries.

After 17 years, negotiations at the World Intellectual Property Organisation (WIPO), which administered international intellectual property agreements since 1974, had reached a deadlock, and in an ingenious move, the US succeeded in getting the inclusion of all aspects of intellectual property in the Uruguay Round agenda, and shifting the negotiations from the WIPO to the GATT.

This happened in spite of the fact that according to the Ministerial Declaration of Punta del Este (a city in Uruguay where the eighth and final round of negotiations of the GATT started), "These negotiations shall be without prejudice to other complementary initiatives that may be taken in the WIPO and elsewhere to deal with these matters."

The TRIPs provisions swing the balance in favour of the monopoly holder and diminished her/his responsibilities to the society. Table 3 gives the example of compulsory licensing, which (compulsory license) can be granted to a firm to a patent being held by another firm on grounds of public interest, to illustrate the shift in favour of the monopoly holder.

There was strong resistance by developing countries in the GATT negotiations on the points that had caused deadlock in the negotiations in WIPO. However, they were persuaded to concede on these negotiating points in return for concessions by industrialised countries in the areas of agriculture, textiles and clothing.

In reality, while the forum of the GATT provided for trade-offs against other interests, developing countries did not even have the full benefit of positive reciprocity. Instead, through bilateralism and unilateralism, the US cornered them into conceding negotiation points outside the negotiations. Bilateral treaties secured the upgrading of intellectual property laws in several countries (e.g. Bolivia, Chile, Indonesia, Mexico etc), and threats of trade sanctions under Section 301 of the US Trade Law ensured the capitulation of the giants (the Asian newly industrialised economies, Brazil).

In the final analysis, through the TRIPs Agreement, the industrialised countries achieved their objective of making trade and investment safer for the multinational enterprises. The accompanying ideational support for the TRIPs Agreement was that developing countries would benefit from strong intellectual property protection. What, then, is the theoretical reasoning supporting this position.

Table 2: New Developments in us Intellectual Property Law That were Included in the TRIPs 1994

Year	US Law
1980	US Supreme Court ruling that genetically-engineered micro-organisms are patentable even though living organisms[a]
1984	Semi-conducts Chip Protection Act 1984. It protects original "mask works"
1985	Patenting of Plant Varieties allowed[b]
1987	USPTO extended patent protection to non-naturally occurring non-human multi-cellular living organisms
1988	First transgenic animal patent issued to Harvard University of the Onco-mouse
1988	Patent Process Amendment Act-to link protection of process to product so as to prevent import of products manufactured through illegal use of process patent offshore.
1993	Biotechnology Patent Protection Act-permits biological process patents if composition of matter novel.

[a] Diamond v Chakrabarty, Patent upheld because DNA sequences are not normally found in the same organism. The decision recognised that a naturally occurring material might be prepared in a novel, non-natural form or used in a non-obvious way to render the material patentable.

[b] UPOV 1991 allows the same specie to be protected both under plant breeders rights and patent law

Theoretical Justification

The proponents of the patent system are supported by a well-developed theoretical justification for strong patent protection. The problem is that much of the reasoning is based on the assumption of the system operating in economies that facilitates innovation through the enabling market and industrial capacity. They are not valid when applied to most developing economies.

There are two basic justifications for patents, which underpinned the various arguments: individual justice, and economic policy.

According to the former, the individual has a natural property right in her/his ideas and society has a moral obligation to protect that property right. The other reasoning based on individual justice was that the individual should be rewarded for services (inventions) that are useful to society by receiving a monopoly privilege to the rewards to be derived from its exploitation.

On the other hand, the arguments used currently to support strong intellectual property protection are based on economic pragmatism. At the same time, there is a greater emphasis today on the flows between the countries on the improved stock of knowledge that results from strong intellectual property protection.

More recent proponents of this view warn that countries with low intellectual property protection will not attract a high level of investment and thereby benefit from transfer of technology since owners of intellectual property rights would be unwilling to invest without the requisite protection.

Others go further to argue that multilateral enterprises are even reluctant to export to such countries and refuses to license legitimate distributors – they ignore the markets with weak intellectual property protection. Such markets would tend to be flooded with inferior illegitimate products.

However, even during the early days of patent protection there were heated debates, within the societies where the innovation took place, about the extent to which a patent monopoly was justifiable.

It was argued that in order to invent, individuals built on the knowledge generated by others, which was reflected in the technology at the given time. Because the inventor drew freely on ideas of others, the invention is nothing more than a next step in a continuum. S/he cannot therefore claim 'natural' exclusive right to the idea.

This argument is currently being put forward by developing countries in respect of protection of indigenous knowledge, plant varieties, and farmers' rights. They argue that the raw material used to create new varieties and genetically engineered plants are dependent on farmers' contribution to the preservation of diversity in varieties and creation of land races.

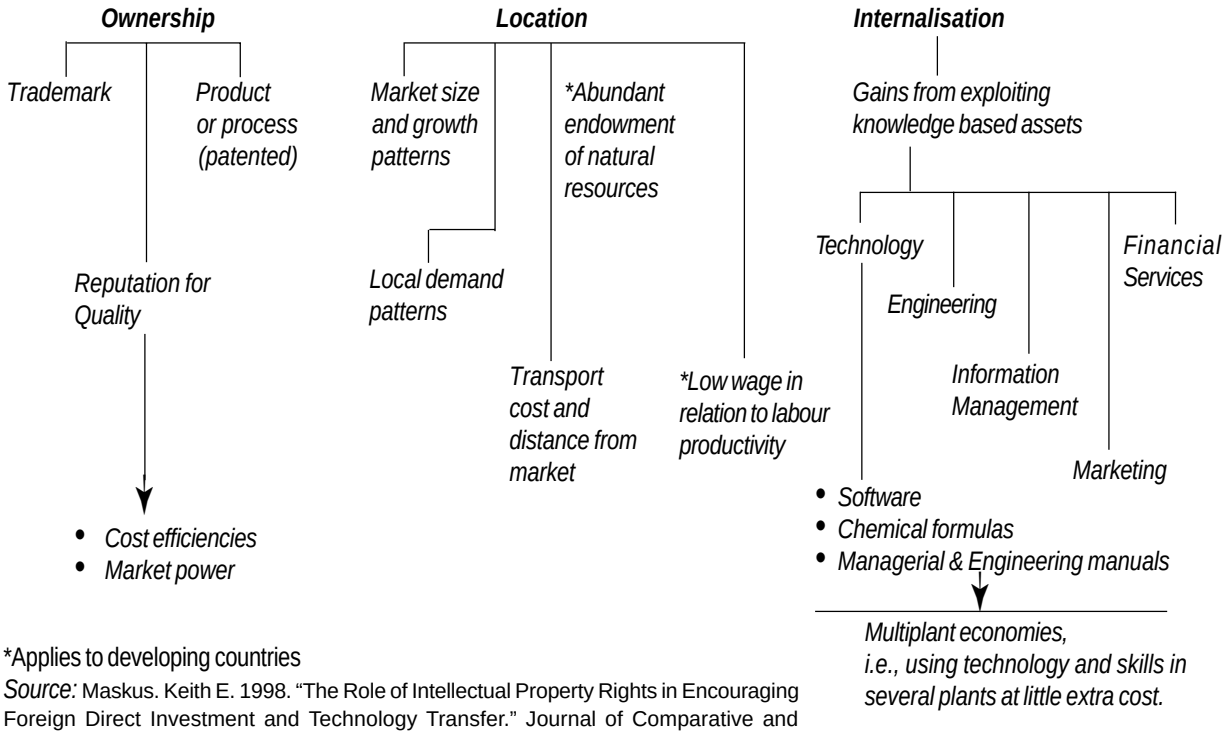
There was also objection to the reasoning based on the reward for services rendered. The validity of the disclosure theory has been questioned given that it is nearly impossible to keep important inventions secret for very long.

Another argument is that the disclosure theory cannot justify the extension of the monopoly right to other countries since once the disclosure takes place, it becomes public knowledge everywhere.

Finally, there is the argument for the need for the monopoly right in order to encourage inventors and multinational enterprises. Since salaried employees today create most inventions, the drive to invent is closely linked to the innovation process and usually resides in big multinational enterprises.

The more popular argument, therefore, is that multinational enterprises would not introduce innovation or encourage research without the protection of a patent monopoly. There is the argument that the absence of a monopoly system leads to a race for inventions, which destabilises the economy by shortening the life span of an innovation. Early obsolescence occurs in the face of further innovations by competitors and profit potential is not realised. This leads to a waste of resources.

Table 3: Determinants of FDI
The Ownership/Location/Internalisation Paradigm (OLI)



*Applies to developing countries

Source: Maskus. Keith E. 1998. "The Role of Intellectual Property Rights in Encouraging Foreign Direct Investment and Technology Transfer." Journal of Comparative and International Law.

The counter argument to this is that the race for innovation fuels economic growth in the capitalist system. However, the very fact that there is a race for innovation is a function of competition in a free market, and one can argue that this is in itself an incentive to innovate, whether protection is available or not.

Developing countries have been concerned that access to new technologies would be more costly since ownership resides largely in multinational enterprises. They point to the fact that in the past most developed countries chose not to protect intellectual property as a development policy, so as to allow their firms to imitate foreign technology.

Indeed, the Austrian law of 1810 focused on the natural right to imitate, while US law explicitly offered patents for inventions brought into the US that originated in other countries.

What, then, can one expect for developing countries? Optimists promise that flows of foreign direct investment, transfer of technology, and increase in trade would result from compliance with the intellectual property standards of the TRIPs Agreement.

Evidence from the Past/Prognosis for the Future

The theory is that a strong intellectual property regime is supposed to encourage invention and innovation. It follows, therefore, where strong patent protection is offered, the registration of patents in those countries should reflect a high level of local inventions.

Current trends in the structure of ownership of patents worldwide show that firms from industrialised countries overwhelmingly dominate registrations. The same was true of past ownership patterns.

The UNCTAD (the United Nations Conference on Trade and Development) study of 1974 revealed that nationals of developing countries held no more than one percent of the world stock of patents and that some 90-95 percent of patents registered in developing countries belonged to foreigners. This trend continued.

The share of foreign patent holders in a given country is a good overall indicator of foreign penetration as well as technological dominance. The prognosis is that this trend will continue, since it requires more than the security of strong patent protection to stimulate innovations.

Industrial societies have a history of innovation, and enabling industrial infrastructure and technical know-how for production, receptive markets, and risk-taking entrepreneurs who are challenged by the fierce competition within their own economies and with other industrial economies.

Moreover, innovation of global commercial worth has become the province of multinational enterprises. Most developing countries, and small economies in particular, do not have that enabling environment. These societies are without a foundation of experience and expertise in technological creation, without an economy and society that has the purchasing power to challenge its creative elements, and with the level of human resources trained in engineering and science at a fraction of what obtains in industrial societies.

A moot question, then, is how did the Asian newly industrialised economies develop a capacity to innovate. They did this by using the imitation strategy. It is precisely because of this success, and the accompanying challenge to the industrial societies, which made the TRIPs Agreement necessary.

So, for most developing countries, the patent system will not provide a trigger for significant innovation and commercial success in the future. This may not be the case for other types of intellectual property, such as copyrights, though potential in that area is threatened by technological developments in the music industry, particularly electronic commerce.

Policy Links

IP Protection and FDI

A key argument made by advocates of strong global intellectual property rights is that intellectual property (IP) protection would lead to increased foreign direct investment (FDI). An examination of key characteristics and associated trends in current FDI flows provides insights into how important are patent protection in inducing investment flows to developing countries.

The primary motive to invest directly in a foreign country is to gain efficiency by utilising ownership, location or internalisation of advantages. Another feature of current FDI is the linkage to marketing, distribution and financial services.

For most developing countries, selection for flows of FDI is based on the product fragmentation strategy and is dependent on an abundant endowment of natural resources or low wage in relation to labour productivity.

It has been observed that an investor would choose FDI above licensing of technology in a weak intellectual property rights regime since control of the technology would remain internal to the firm. This observation challenged the argument that strong IP protection is needed to attract foreign investment.

Furthermore, intellectual property regime in a country is only one of many factors that a multinational enterprise takes into consideration when deciding whether to invest. Nor is it the most important factor, except in knowledge-intensive industries, chemical industries and those using bio-technologies, all of which are exploited through horizontal investment in high income industrialised countries.

Indeed, in the absence of strong patent protection, FDI flourished in several countries and this claim is supported by empirical evidence. In recent years, China is the destination of the largest amount of FDI in the developing world. Given the promise of lucrative business in the large Chinese market, investors choose to risk the weak IP protection by retaining control of the technology through FDI.

By contrast, the lack of FDI in African countries indicates the declining ability of poor economies to attract investment. Kenya, for instance, has strong IP protection, but little FDI flows and poor growth rates.

It means, essentially, that the most competitive, cutting edge technologies would not be available to these countries except where they are embodied in products that can be traded at arm's length.

IP Protection and Technology Transfer

Unlike FDI, there are clear policy links between licensing of cutting edge technology in foreign countries and the strength of the IP protection regime. For countries that have the enabling infrastructure and capacity to absorb technologies, it is therefore important to have strong IP protection regime for technology transfer to occur.

There are possibilities for standarised technology transfer to developing countries when the enabling supporting environment is available. The sectors targeted in emerging economies currently are manufacturing, electrical equipment, food and agricultural processing, and banking and finance.

There is a hierarchical structure to the types of

countries that are recipients of technology transfer, with advanced industrialised countries having the best conditions to absorb technologies, while intermediate (emerging) economies may be acceptable to some degree of transfer, given their greater technical capacities.

However, poor countries do not have the pre-requisite conditions for technology transfer in the areas that would confer greatest competitiveness in the global economy.

Moreover, even in the case of emerging economies, several concerns with respect to strong IP protection regime and technology transfer have been raised. Not only did technology transfer not occur in the cutting edge areas, but also, technologies that were utilised were largely standarised or even obsolete in the home countries.

Another cause for concern is the risk of abuse of monopoly power by the IP holder. There are several modalities through which such abuse occurred, such as insufficient disclosure, patent pooling, cross licensing, and restrictive business practices.

The empirical evidence over the last five decades show that multinational enterprises indulged in patent pooling, by creating a basket of these rights in order to facilitate cooperation between different owners or interests.

Restrictive business practices have been and continue to be a part of the modus operandi of multinational enterprises in developing countries where scrutiny is less stringent.

What is disturbing is that the prohibition of abuse of IP monopoly is not generally evident in the laws emerging in developing countries.

IP Protection and Trade

Those who advocate strong IP protection in national economies reason that trade in the products which embodies latest technologies is important for improving performance in developing countries, and therefore critical to competitiveness.

It is argued that there would be an increased inflow of goods and services that are products of high technology because of the minimising of theft that enforcement of IP law will encourage.

That may not necessarily be true, it being a function of price and purchasing power. Many consumers in developing countries may be able to afford the imitation, but not the protected good.

To maximise the development opportunities which such trade should foster, developing countries should have technology policies that steer the choice of products to be imported in a direction that would contribute to human resource and infrastructural development with a targeted industrial policy for production of goods and services.

At present, this is left largely to individual choice, but information is imperfect, and a plan is needed to influence choices towards a developmental goal.

Conclusion and Policy Considerations

The very circumstances in which the TRIPs Agreement was created reveal whose interests were being served. The industrialised countries, led by the US, masterminded the whole process.

An examination of the theoretical justifications for strong patent protection revealed not only their inappropriateness when applied to developing economies, but also internal inconsistencies even when applied to industrialised countries.

A strong patent regime is supposed to encourage innovation within the society, but it is found that the know-how, sophisticated market demand, and enabling industrial infrastructure and human resource requirements are largely absent in developing economies.

The conduits through which benefits are supposed to flow to developing economies, as articulated by proponents of the system, are FDI, technology transfer, and trade. The findings are that little FDI linked to strong IP protection can be expected in most developing countries.

The review of the historical literature shows that registration of patents in developing countries were largely by multinational enterprises and were used to block competition by rivals, or to import patented products into a monopoly market.

Strong patent protection may well lead to increase of trade, and availability of frontier-line products, which would surely raise the level of sophistication in the economy and society.

Developing economies should adopt measures to prevent and control the abuse of patent monopoly power, particularly in licensing agreements.

Multinational enterprises are now requiring open and predictable investment environments. This would include good governance rendering political stability, economic growth, flexible labour markets, and adequate labour skills.

Therefore, the next area of competition amongst these economies for attracting foreign investors would be the larger policy mix guiding economic activities, most importantly, competition and investment policies and regulations.

Developing economies need to identify specific areas of technologies, linked to specific sectors, where they may have capability or can create the enabling receptive environment and be able to integrate into the technological cycle before obsolescence sets in.

Finally, developing economies must put in place the necessary pre-requisites to evaluate the effects of the patent system in the coming years. There are serious inadequacies and flaws in the data collection for the purposes of economic evaluation, not least among them being the fact that resident foreign firms are counted under domestic registrations.

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