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Patents – The Dream and the Reality for Developing Countries

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The importance of technology and innovation in national development has been long recognized by economists. Technological change should lead to sustained growth – a phenomenon seen in Europe since the 18th century and even more in the United States and Japan since the 20th century.

However, technology and innovation, while being important in improving competitiveness, does not by itself guarantee economic growth and development. Of the public policies required to ensure competitiveness, the role of intellectual property rights (IPR) is emphasized. A strong IPR regime would it is believed, encourage inventors and entrepreneurs to develop new technologies as it provides them with an opportunity to share in the rewards of successfully exploiting the technology. It will also, we are told by developed countries, promote foreign direct investment (FDI) and technology transfers from developed to developing countries.

Although the concept of IPR is not new, the hype on IPR has increased since the TRIPS (Trade-Related Intellectual Property Rights) Agreement was signed in 1994. Most developing countries were compelled to revise their Intellectual Property (IP) laws to conform to TRIPS.

The area of IPR which would be of interest to scientists is patents and the dream which the new IPR regime offered to developing countries was that strong IPR would bring with it greater research collaboration with developed country institutions, technology transfer, the ability to protect their own research findings and better exposure to the world market. How far has this succeeded as far as developing countries are concerned?

If we take the Asian region while patenting has increased it has mainly been in foreign patents. Singapore for instance granted 4442 patents in 2010 of which 369 were to residents, the figures for Malaysia were respectively 2177 and 204, for Indonesia 2117 and 219, for Sri Lanka 504 and 220, for Pakistan 238 and 20, for India (2009/2010) 6168 and 1725 and for Bangladesh (2009) 131 and 28 patents.

Statistics from national intellectual property offices are often not comparable because their standards may vary. However, inventors who believe their products have a reasonable market potential will attempt to patent it in countries other than their own, especially the US. The number of patents granted by the US Patent Office to inventors from a particular country may therefore indicate how successful the country is in innovation. The average number of patents granted by the US to foreign nationals during 2006-2010 show that India averaged 688, Singapore 449, Malaysia 157, Thailand 26.6, Sri Lanka 2.8, Pakistan 2.2 and Bangladesh 0.2. Apart from Republic of Korea and Taipei with respective averages of 8037 and 6742, only six countries, China, India, Singapore, Hong Kong, Malaysia and Brazil among developing countries averaged over 100 patents. Only six more countries, South Africa, Mexico, Argentina, Saudi Arabia, Thailand and Philippines averaged over 20. Among the countries in transition, only the Russian Federation with 201 averaged over 100 and three others, Hungary

with 59.8, the Czech Republic with 47.4, Poland with 37.8 and Bulgaria with 23.8 averaged more than 20 patents.

The data suggests that very few countries have been able to successfully make use of the patent system. The Republic of Korea and Taipei had embarked on industrialization long before WTO and TRIPS. The South East Asian countries had liberalized their economies decades before the South Asian countries and most were able to win the confidence of transnational corporations and attract FDI into their countries. But for most of the developing world, the dream has remained a dream and changes in IPR have neither impacted positively on science, technology and research nor contributed to the exploitation of research for national development.

The failure of developing countries to achieve the dream can be ascribed to the absence of strong National Innovation Systems (NIS). Many spend very little of their GDP on education with Sri Lanka's expenditure of only 2.1% of its GDP on education in spite of education being free even at the tertiary levels compares badly with 3.7% by India and 4.2-7 % by South East Asian countries. The Gross Expenditure on R & D as a proportion of GDP (GERD/GDP) is too low in developing countries. Sri Lanka's 0.14% is slightly more than half of Thailand's 0.24% and much less than Malaysia's 0.7%, India's 1%, Singapore's 2.2% and Korea's 2.6%. Most of the R & D in developing countries is channeled through government institutions with private expenditure on R & D (PERD) being a low 0.01% of GDP in Sri Lanka, 0.1% in India, 0.5% in Malaysia, 1.3% in Singapore and 2% in Korea. The influx of FDI into South East Asia and the positioning of research units in these countries have given an impetus to private sector R & D investment. Very few developing countries have been able to attract substantial quanta of FDI.

Most developing countries have neither mechanisms nor the intermediary institutions necessary to commercialize research. Since most of them do not have a culture of IP protection, they are weak in human resources in IP. The high cost in terms of developing country incomes, of enforcing IPR abroad and of patenting other than for home country filing, makes IPR a luxury for most developing country scientists and institutions. This is particularly true as very few of patents granted by both developing and developed countries ultimately earn money.

Even in the US, more than two thirds of patents remain unlicensed. Of those licensed, few are commercialized and still less earn the high royalties necessary to offset research expenditure. Only 1% of the approximately 2000 inventions licensed by Stanford University, ranked 10th among US Universities in licensing income has generated total royalties of more than $ 1 m. Academic research is estimated to give returns of around 3% of research expenditure but the averages is often distorted by extremely high earnings from a single sale of a pharmaceutical patent. The world average of income from R & D is only 1.7 % of R & D expenditure.

The present emphasis given to IPR has generated unwarranted expectations in developing countries. The misplaced goal of aggressive pursuit of IPR and revenue generation have fuelled mistrust between researchers and other stakeholders including fellow scientists, industrialists and conservationists and may even have hindered the progress of research.

Politicians and lawyers have been nurtured into believing the myth that all research should lead to patents and that all patents should result in commercialization, royalties and rapid recovery of R & D investment through technology transfer. When this is impossible for US Universities, what chances are there for developing country universities and research institutes? Moreover, the high cost, in developing country terms, of broad IPR protection and associated costs of technology transfer may make net earnings relatively modest.

The effect of the emphasis on IPR has been to prevent developing countries making a realistic assessment on whether a particular set of research findings would be better placed in the public domain to produce social benefits for the community at large. The new IPR regime places pressure on scientists to patent no matter what, without regard to whether patenting is actually necessary. The modern IPR system permits much more to be patented today, given the expansion of patent eligible areas and growing pressure on intellectual property offices to adopt a more liberal attitude. Scientists working in public institutions can also make use of these pressures and patent inventions, which may not be worth patenting at no cost to themselves, to score brownie points with politicians and administrators.

If developing countries are to exploit Intellectual Property for national development, they should first establish a strong NIS but even so given the performance of economically much stronger countries, they must not build unrealistic expectations. Dreamers have to some day face up to reality.