

WILL MALAYSIA BENEFIT FROM STRONGER INTELLECTUAL PROPERTY PROTECTION VIA TRIPS?*

Rokiah Alavi
International Islamic University
Gombak, Malaysia

By the year 2000, Malaysia and other developing country members of the WTO are expected to comply with the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement. Developing countries are being told that there are substantial benefits to be gained by adopting higher standards of intellectual property rights (IRPs) protection. It is claimed that this will provide greater incentives for local innovation, attract more foreign R&D activities, attract FDI into skilled and technology-intensive industries and facilitate the transfer of technology. However, developing countries remain skeptical. This paper begins by discussing the extent to which Malaysia has complied with the TRIPS provisions. It subsequently evaluates to what extent Malaysia may expect to see the claimed benefits from compliance. The paper closes with a discussion on policies and measures that might be undertaken if Malaysia hopes to capture more fully the potential benefits of the TRIPS agreement.

Negara-negara membangun termasuk Malaysia perlu memenuhi tuntutan yang dipersetujui di dalam perjanjian TRIPS (Trade Related Aspect of Intellectual Property Rights) pada tahun 2000. Agenda utama perjanjian ini adalah mempertingkatkan dan menyamakan taraf perlindungan yang diberikan kepada harta intelek di seluruh dunia. Pertubuhan Perdagangan Dunia (WTO) mendakwa bahawa negara-negara membangun akan menikmati banyak faedah sekiranya mereka mempertingkatkan taraf perlindungan yang diberikan kepada harta intelek. Kesan positif yang didakwa ini termasuklah peningkatan insentif untuk membuat kajian dan inovasi di dalam negara; menarik pelaburan asing ke dalam industri yang berintensifkan pengetahuan dan teknologi; serta mempertingkatkan usaha-usaha pemindahan teknologi. Walaubagaimanapun, negara-negara membangun masih sangsi akan kemungkinan mereka menikmati faedah-faedah yang didakwa ini.

* This is a revised version of the paper presented at the Conference on the Role of Law and Legal Institutions in Asian Economic Development 1960-1995, Erasmus University, Rotterdam, The Netherlands, 1-4th November 1998. I would like to thank the Ministry of Science, Technology and the Environment for granting fund to undertake this research. Thanks are also due to an anonymous referee of this journal for useful suggestions.

Kertas kerja ini ingin mempertengahan serta mengkaji sejauhmanakah Malaysia akan meraih faedah-faedah daripada TRIPs seperti didakwa di atas. Tiga perkara penting akan dipertengahan didalam kertas kerja ini.: pertama, taraf perlindungan harta intelek di Malaysia, serta masalah-masalah yang berkaitan dengan pelaksanaannya. Kedua, faedah dan peluang yang akan diperolehi oleh Malaysia daripada usaha mempertingkatkan taraf perlindungan harta intelek. Akhirnya, artikel ini mengusulkan dasar-dasar yang patut dilaksanakan oleh kerajaan untuk menentukan faedah daripada perjanjian TRIPs dapat diraih sepenuhnya.

INTRODUCTION

The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) came into force on 1 January 1995, and is an integral part of the WTO Agreement. Intellectual property rights were a major topic for negotiations in the Uruguay Round of Multilateral Trade Negotiations. The TRIPs Agreement is the most far-reaching international instrument ever negotiated on intellectual property rights. It establishes minimum universal standards globally through the strong enforcement mechanism established in WTO (WHO, 2000:3).

The advocates of TRIPs argue that higher protection would encourage local innovation and research and development (R&D) activities, improve the investment climate, encourage foreign direct investment (FD) and enhance technology transfer necessary for industrialisation in a particular country. Despite these arguments by the developed countries, many developing countries have shown little interest in increasing the strength of IPRs protection and have been sceptical about TRIPs. Siebeck (1990:1) gave two reasons for this resistance. First, protection of IPRs is seen as a prerogative of technologically advanced countries. Second, developing countries fear that providing protection to IPRs (which are mainly owned by foreigners), would deprive them of the benefits of technological advances that are taking place in the industrial countries. Furthermore, stronger IPRs protection would mean higher costs in terms of royalty payments and administrative expenditure. Many developing countries also believe that a stronger IPRs regime may hinder the diffusion of technology, through patent non-use and other abuses of monopoly power.

Malaysia is one of the signatories of the TRIPs Agreement in 1995. The government was convinced then that Malaysia would benefit from strengthening the IPRs standards, particularly because Malaysia is an open economy and highly dependent on foreign investment. Relevant measures were taken to strengthen, improve and review IPRs legislation and its related aspect of enforcement, particularly after signing the TRIPs Agreement. In fact, Malaysia has very high standards of IPRs protection in the region.

But will Malaysia benefit by upgrading the IPRs standards? Will stronger IPRs protection attract more FDIs? Will it encourage foreign investors to improve the quality of technology transfer? And, will foreign investors be drawn to locate their R&D activities in Malaysia with these changes? What are the underlying factors that need to be addressed first to ensure that the benefits and opportunities from strengthening IPRs legislation are reaped fully? What should the government do besides changing the laws to maximise the potential gains from upgrading the laws? These are some of the questions that have been raised since the TRIPs Agreement was signed, and the intention of this paper is to address these questions in the context of Malaysian economy.

The following discussion presents the developments and changes in the IPRs legislation, particularly after Malaysia signed the TRIPs Agreement. It is useful to know to what extent Malaysia is committed to comply with the provisions under the TRIPs Agreement as it would reflect the strength of IPRs protection in the country.

COMPLIANCE WITH THE TRIPS AGREEMENT

The areas of intellectual property that TRIPS Agreement covers are: copyright and related rights (i.e. the rights of performers, producers of sound recordings and broadcasting organisations); trademarks including service marks; geographical indications including appellations of origins; industrial designs; patents including the protection of new varieties of plants; the lay-out designs; patents including the protection of new varieties of plants; the lay-out designs of integrated circuits; and undisclosed information including trade secrets (WIPO, 1996). Developed country Members had a one-year transition period; they have to comply with all the provisions of the TRIPS Agreement by 1st January 1996. For developing countries, the general transitional period is five years. They have to comply by 1st January 2000. For those countries on the United Nations list of least-developed countries the transition period is eleven years.

Malaysia has complied with most of the provisions under the TRIPS agreement. Areas that require changes or formulation of new legislation are under review with the assistance of the experts from the WTO and WIPO. Table 1 compares the TRIPS Agreement standards and the existing Malaysian intellectual property protection legislation.

Table 1: Malaysia's General Position on Norms and Standards of TRIPS Agreement

DE FACTO TRIPS STANDARD*	MALAYSIA'S POSITION**
Patents - Members shall comply to provisions of Paris Convention (1967). - A minimum patent duration of 20 years from filing. - The term of protection is counted from the date of filing. - Extension of the protection of a patented process to the products directly obtained by that process. - No discrimination against certain fields of technology or against foreign inventions. - Use of compulsory license only in exceptional cases. Biotechnological - excluded from patent protection. May be: plant and animals other than micro-organisms, and essentially biological processes for the production of plants and animals, other than non-biological and micro-biological processes. Plant varieties should be protected either by patents and/or an effective <i>sui-generis</i> system).	Patents - The requirement of TRIPS provisions on Patents are generally covered by the Malaysian Patents (Amended) Act 1993. - A minimum patent duration of 15 years from date of grant. Amendment will be made. - The term of protection is counted from the date of grant. Amendment will be made. - Same - Reservations against Israel (Malaysia does not have diplomatic relations with Israel). There are efforts to resolve this matter. - The compulsory licensing provisions in the Patent Act is under consideration to meet the requirement of Article 31 of the TRIPS agreement. - There are reservations on the issue relating to the protection of plant and animal varieties. Discussion on protection for plant varieties is in progress to decide on whether to protect them through the amendment of the Patents Act or through enactment of a specific law on Plant Varieties.
Trademarks Members shall comply with the provisions of the Paris Convention (1967).	Trademarks Trade Marks (Amended) Act 1994 complies with the provisions of the Paris Convention.

• Services marks to be protected in the same way as marks distinguishing goods. • Well-known marks to be protected as well. • Cancellation of a mark on the grounds of non-use cannot take place before three years of uninterrupted non-use has elapsed, unless valid reasons based on the existence of obstacles to such use are shown by the trademark owner. • Initial registration, and each renewal of registration, of a trademark shall be for a term of no less than seven years. The registration shall be renewable indefinitely.	• The provisions on service marks are well covered by the amendment of the Act in 1994, which provides for registration and protection of service marks. • There is no provision for well-known mark in the Malaysian act, but consultations are going on with WIPO on how to recognise the well-known mark. It will be incorporated in the Act once approved by the Parliament. • Same. • Same.
Copyright • Members shall comply with Articles 1 through 21 of the Berne Convention (1971). • Computer programmes (software) are to be protected under Copyright laws as literary works which can be protected for at least 50 years. • Compilation of data or other materials, whether machine readable or in other forms, which by reason of the selection or arrangement of their contents constitute intellectual creations shall be protected under copyright law. • The authors of computer programmes and cinematographic works are provided with an exclusive rental rights. • Producers of phonograms shall enjoy the right to authorise or prohibit the direct or indirect reproduction of their phonograms. Broadcasting	Copyright • The Copyright (Amended) Act 1990 complies with the provisions of the Berne Convention (1971) as well as TRIPS agreement. • Computer programmes (software) are protected under the Copyright Act. • Compilation of data is also protected under the Act. • The Act also provides for rental rights to all eligible works. • Malaysia has always accorded protection to producers of sound recordings and broadcasts under the copyrights law.

organisations shall have the right to prohibit the following acts when undertaken without their authorisation: the fixation, the reproduction of fixation, and the re-broadcasting by wireless means of broadcasts, as well as the communication to the public of television broadcasts of the same. • Performers shall also have the possibility of preventing the following acts when undertaken without their authorisation: the broadcasting by wireless means and the communication to the public of their live performance. • Term of protection shall be no less than 50 years.	• Malaysia is not a party to the Rome Convention and therefore performers are not protected under the current act. However, Malaysia is in the process of coming up with a legislation for the protection of performers. • Same.
Geographical Indications • Geographical indications which identify a good as originating in a particular territory, or a region or locality in that territory, where a given quality, reputation or other characteristics of the good is essentially attributable to its geographical origin. There is a special law for Geographical Indications. • The registration of a trademark which contains a geographical indication shall be refused or invalidated. • Additional protection for geographical indications for wines and spirits - still being negotiated under TRIPS.	Geographical Indications • Malaysia does not have a specific law on this. There are ongoing consultations with WTO and WIPO.
Industrial Designs • Independently created industrial designs that are new or original shall be protected. Designs that are not new or original may be protected provided if they do not significantly differ from known designs or combinations of known designs features. • Each member shall ensure that requirements for securing protection for textile design, in particular in regard to any cost, examination or	Industrial Designs • Industrial designs protection in Malaysia is currently accorded by virtue of registration under the Registered Designs Act 1949 of United Kingdom. • Malaysia is in the process of promulgating a law on industrial designs which generally conforms with the Paris Convention and TRIPS

pu
in
ot
be
in
co
• A
pr

Layou

• Pr
int
ac
Ar
of
Int
Int
• Pr

• Pro
cor
• Co
inf
• Us
exc

Source
Source
Wijk, J
WIPO
Annex
Source
Unpub
Domes
Hafisa
from th
on The
1995, F
Intervie

As we
laws
Agree
looking
the Mi
legisla

publication, do not unreasonably impair the opportunity to seek and obtain such protection. Members shall be free to meet this obligation through industrial design law or through copyright law. • A minimum total duration of protection of at least ten years.	Agreement.
Layout-Designs of Integrated Circuits • Protection to the layout-designs of integrated circuits is provided in accordance with Articles 2 through 7, Article 7 and paragraph 3 of Article 16 of the Washington Treaty on Intellectual Property in respect of Integrated Circuits. • Protection term of 10 years • Protection covers also equipment containing a protected chip • Compensation in case of innocent infringement • Use of compulsory licence only in exceptional cases.	Layout-Designs of Integrated Circuits • Malaysia does not have specific law to cover this subject matter though part of it can be protected as artistic works under the Copyright Act or under Industrial Design Act. • Malaysia would not have any problem complying with the agreement.

Source:

Sources on TRIPS Standards:

Wijk, J.V. and Junne, G. (1993)

WIPO (1996), "Agreement on Trade-Related Aspects of Intellectual Property Rights", Annex 1C

Sources on Malaysian Position:

Unpublished notes on Trade-Related Aspect of Intellectual Property Rights, Ministry of Domestic Trade and Consumer Affairs, Malaysia.

Hafisah Mustaffa (1995), "Malaysia's Perspective on the TRIPS Agreement - The View from the Malaysian Government", paper presented at WIPO/ASEAN National Seminar on The Agreement on TRIPS and Its Implications for Business Enterprises, July 27-28 1995, Kuala Lumpur.

Interview with officers at the Ministry of Domestic Trade and Industry, Malaysia.

As we can see from Table 1, the standards of the Malaysian intellectual property laws are at comparable levels relative to the stipulations of the TRIPS Agreement, except for a few areas. The Malaysian government are seriously looking into this matter and a TRIPS Working Committee has been formed in the Ministry of Domestic Trade and Consumer Affairs to come up with new legislation on:

1. Plant Varieties
2. Layout-Designs of Integrated Circuits
3. Geographical Indications
4. Performers Rights
5. Neighbouring Rights.

In addition, a number of changes and amendments to the existing legislation is in progress to ensure compliance with the TRIPS Agreement. They are as follows:

1. amendment to the Patents Act - the term of patent protection will need to be amended to 20 years from the filing date, instead of 15 years from date of grant, as provided under the Malaysian Patents Act.
2. amendment to the Trademarks Act to include protection for well-known marks.

THE PROSPECT OF MALAYSIA BENEFITING FROM STRONGER IPRS PROTECTION

The stronger intellectual property rights protection demanded by the TRIPS is expected to benefit developing countries in three major areas: (1) stimulate foreign investment inflow; (2) enhance technology transfer; and (3) increase the chances of multinational companies (MNCs) relocating their R&D activities in the host country. In the following three sections, each of these claimed benefits of TRIPS will be examined in the context of the Malaysian economy.

Stimulate Foreign Direct Investment

The importance of FDIs in economic growth needs no further deliberation because the positive relationship between these two variables has been evident for many developing countries. Malaysia's high economic growth since the 1970s has been mainly attributed to FDIs and the government has successfully created a conducive investment climate for foreign investors. Policies and incentives to attract foreign investors have been consistently formulated, reviewed and changed over time to be consistent with the changes in criteria and the type of facilities needed by foreign investors. In recent years, a policy that has been identified as being important in attracting FDIs is the strengthening of IPRs protection, particularly for the knowledge-based and technology-intensive industries.

Theoretically, a system with strong IPRs protection would attract more investors because the owners of a particular technology, product or service would have their rights protected, and their apprehension about potential copying, pirating and illegal sale of their product will be alleviated. This ensures a stable and predicable climate for investors.

However, empirical evidence on the impact of the level of IPRs protection on the volume and composition of FDIs has been ambiguous. Frischak (1989:17) reasons that this is due to the fact that the criteria to invest in a particular country is overshadowed by other considerations, particularly the overall economic environment of the country. A report by the United Nation (1993:3) suggests that the main factor explaining FDI flows is the economic environment prevailing in a particular country (i.e. cost conditions, market size, levels of human capital and infra-structural development and broad macro-economic conditions). Regulations in areas such as remittances, price controls and IPRs has not been considered a major influence in most investment decisions in the literature on investment determinants (UNCTC, 1990:5).

In fact, some analysts say that there is no relationship at all between intellectual property protection and increase in FDI inflows. Penrose (1973: 768-785), for example, found that patent protection has no great importance as an inducement or obstacle to foreign investment. Lall and Streeten (1977: 68) argue that the existence of patent protection does not, except indirectly as a sign of goodwill towards private enterprise, by itself attract foreign capital. In the case of Canada, a major technology importer, Firestone (1971) found patents played no great importance in the decision of foreign investors to invest there.

However, Primo Braga (1990:72) pointed out that the difficulty of measuring the impact of IPRs and the fact that this impact is often felt at the micro level should warn against simple judgements of this issue. In addition, it is important to note that intellectual property rights do not have the same importance and effects in different industries. In a survey comprising 94 major United States firms in six industries (chemicals including drugs, transportation equipment, electrical equipment, machinery, food and metals), Mansfield (1994) found that the perceived effects of IPRs on FDI were heavily dependent on the type of investments involved. For investments in sales and distribution outlets, only about a fifth of the firms reported that intellectual property rights protection was of importance. For investment in rudimentary production and assembly facilities, less than a third said that such protection was important. But for investment in facilities to manufacture components or complete products, about half said it was important. And for investment in research and development facilities, about four fifths said it was important.

Hence IPRs play a more important role in investment decisions relating to manufacturing and research and development facilities for high-technology creating firms involved in computer software, integrated circuits, pharmaceuticals, or biotechnology (Mansfield, 1994). Thus, in many innovative industries, the industries of the future, levels of IPRs protection probably play an important role in attracting foreign direct investment. For the computer software industry, an OECD study mentions the lack of software protection as a major disincentive to FDI (OECD, 1989). A study by UNCTAD on transfer of technology points out that investment in new technologies (computer programmes, integrated circuits and biotechnological inventions) and their diffusion hinges to a large extent on the type of protection they are granted (UNCTAD, 1986:2).

In Malaysia, intellectual property protection has not been considered as an important factor by foreign investors until recently. This is not surprising because foreign investment has so far been concentrated in simple assembly-type processes, and was mainly concerned with exploiting local resources and the lucrative domestic and export markets (Jomo, 1993; Rasiah 1995a). The strength of intellectual property protection, therefore, has never been an issue or a basis for investing.

Foreign investment largely went into electrical and electronics; paper products, printing and publishing; chemicals and chemical products; and non-metallic mineral products (see Table 2). These industries largely manufacture components or complete products with the help of basic imported production technology. Electrical and electronics industries for example produce radio, television sets, semiconductor and other electronics components, cables and wires and office computing and accounting machinery. The chemical and chemical sub-sector on the other hand mainly manufacture industrial gases, synthetic resins and basic industrial chemical industries to cater for the local industrial needs. Apparently, protection of intellectual property rights have an insignificant influence in determining foreign investment inflow into this type of industries.

Table 2: Approved Foreign Investment in the Manufacturing Sector, 1992-1996
(RM million)

INDUSTRY / YEAR	1992	1993	1994	1995	1996
Electrical and Electronic Products	1,579.50	2,304.80	6,339.50	3,151.80	13,061.90
Paper, Printing and Publishing	182.9	1,092.70	209.3	346.6	4,184.80
Chemicals & Chemical Products	1,608.30	2,489.70	3,533.40	2,900.10	3,342.20
Non-Metallic Mineral Products	974.6	2,131.50	2,472.90	4,045.50	3,338.00
Natural Gas	5,740	-	-	-	2,137.00
Petroleum Refineries/Products	10,531.00	3	475	708.2	1,575.60
Basic Metal Products	2,636.70	1,788.20	2,162.60	3,441	1,194.80
Transport Equipment	384.5	1,072.30	877	1,414.70	1,183.40
Fabricated Metal Products	278.8	179.1	676.6	556.8	971.6
Wood and Wood Products	644.2	643.7	2,269.40	1,874.20	822.6
Machinery Manufacturing	514.1	105.5	464.1	312.6	577
Textiles and Textile Products	1,335.50	894.7	1,315.60	634.9	479.5
Plastic Products	660.3	225.2	640.2	427.6	382.1
Food Manufacturing	352.3	423.6	548.8	499.4	376.2
Rubber Products	119.5	89.7	151.8	171.2	241.1
Furniture and Fixtures	74.5	123.1	254.2	237.6	155.3
Miscellaneous	92.7	93	125.6	69.8	122.1
Scientific & Measuring Equipment	6.8	26.5	53	4.6	61.6
Beverages and Tobacco	51.7	35.4	338.3	6.8	29
Leather and Leather Products	7.2	31	8	65.7	21.8
TOTAL	27,775	13,753	22,915	20,869	34,258

Source: Malaysian Industrial Development Authority (MIDA), unpublished

However, the recent launching of Multimedia Super Corridor (MSC)¹ in August 1996, warranted a stronger intellectual property rights protection in attracting foreign investment to Malaysia. The total number of companies that have applied for MSC status as at March 30th 1998 was 195² and the number of companies that have their applications approved is 118. Out of this 118 companies, 48 are local

¹ MSC is one of Dr. Mahathir's ambitious projects. The MSC is designed to provide four key elements which will determine its success: top-class physical infrastructure with intelligent cities within an attractive living environment; the world's best soft infrastructure in support of cyber laws, policies and practices; next generation telecommunication networks with a five-gigabit international gateway; and a one-stop super shop, the Multimedia Development Corporation (MDC) to facilitate participation and partnerships (Malaysian Business, May 1, 1998).

² Malaysian Business (1998), May 1, p.30, Table 2

(41 per cent), 27 joint-ventures (23 per cent) and the remaining are fully owned by foreign investors (36 per cent). New cyber laws and cyber policies were formulated specifically to attract investment of these information technology based companies in the MSC project. These new legislation include³:

1. the Digital Signatures Act to facilitate electronic commerce in the areas of digital contracts, digital signatures, cyber payments and intellectual property protection;
2. the Computer Crimes Act which aims to clearly define cyberfraud, unauthorised access, interception, illegal use of computers in crime and provide special rights of interception to law enforcement agencies;
3. the Copyright Amendment Act, 1997 which aims to guarantee full copyright protection for multimedia works;
4. the Telemedicine Act which spells out who are qualified to practise telemedicine and the associated legal liabilities for misconduct;
5. the Electronic Government Act which will guide the implementation of electronic government as a flag application;
6. a Multimedia and Communication Act.

Intellectual property protection is expected to play a more significant role in the future development of industrialisation in Malaysia. This is because the First Industrial Master Plan (IMP), 1986-95, Second IMP (1996-2005) and the Seventh Malaysia Plan (1996-2000) have laid emphasis on science and technological advancement and the importance of technology-based industrialisation. Policies and strategies have been formulated to stimulate FDI into technology-based industries such as microelectronics, advanced materials, biotechnology, information technology and communications and environment and energy related industries. Enhancing technology transfer and strengthening domestic capabilities in these industries are also given priority. Given such concerns, intellectual property rights would likely play a significant role in the future, because IPRs is considered as an important factor in investment decisions relating to manufacturing and research and development facilities for high-technology creating firms.

Enhancing Technology Transfers

The advocates of intellectual property protection who argue that it could improve technology transfer in the developing countries claim that technology owners do not have an incentive to transfer their propriety knowledge to countries with weak intellectual property rights systems. This is because they fear of the potential for 'piracy'. The need for a developing country to be more

³ Malaysian Business, May 1, 1998

aware of the potential role of intellectual property protection in attracting foreign technology through licensing has been pointed out by Frischtak (1989). He suggests that in a competitive global trading environment, it is indispensable for a developing country to revise its regulatory environment, including its intellectual property regime, so as to attract foreign expertise of the kind most beneficial to it.

Research on the importance of intellectual property protection in encouraging foreign technological transfer in Malaysia is totally absent, and this surely is another critical area that needs a detailed study. Available evidence on technology transfer in Malaysia suggests that MNCs have been an important source of technology transfer primarily in areas related to production and processes (Narayanan and Lai, 1996). Technology transfer agreements (TTAs) has been the prime formal source of technology transfer to Malaysia (Rasiah and Anuwar, 1997: 62). Between 1975-1995, 2431 TTAs were approved by the government (see Table 3). Technical assistance and know-how agreements contributed more than half of the TTAs. Licensing, trademarks and patents agreements became significant only since the mid-1980s and its importance has increased since then. Out of 697 TTAs signed between 1990 to 1995, 138 were for licences and patents and 41 agreements were for trademarks. In the same period, most of these technology inflows went into electrical and electronics products (32 per cent), chemical and chemical products, including pharmaceutical (13 per cent), transport equipment (14 per cent), fabricated metal products (5 per cent) and non-metallic mineral products (5 per cent)⁴.

Evidence shows that patents had played an insignificant role in determining the effectiveness of TTAs in developing countries. One of the reason for this is due to limitations in the patent system itself. An essential condition for the grant of a patent is that the patent description must disclose the invention in a manner sufficiently clear and complete for the licensee to make it useful for their operational purposes. Patent documents are an important means of obtaining information on state-of-the-art industrial technology. A survey among multinational companies reveals that published specifications are the most important source of technical information, compared to technical conferences and meetings, academic and trade journals, fairs, exhibitions and the like (Wijk and Junne, 1993).

But the existing patent system provides avenues for patentees not to disclose their technological know-how completely or to reserve essential information on operational aspects (Wijk and Junne, 1993). The relevance of patent protection in technology transfer is limited not only because of the weaknesses in the

⁴ Malaysia (1996), *Seventh Malaysia Plan 1996-2000*, Tables 13.1 and 13.2, pp.427-8.

patent system, but also because the patent itself has not been regarded as an important criteria in transferring technology to developing countries. Lall (1976: 9) suggests that in the context of LDCs, patent protection is not particularly significant in promoting technology transfers. According to him, a large number of industries do not seem to bother with patenting at all, and the transfer of their technology is totally unrelated to the patent system. However, Kirim (1983) pointed out that patents may, in some cases, be the basis of licensing agreements which are contracted for the purpose of the transfer of the licensor's technology. But, the objective of patenting (and other IP laws) in technology transfer agreements can be manipulated. In their study on the impact of patenting on the behaviour of technology supplying firms in the pharmaceutical, chemical and electronics industries in the UK, Taylor and Silberton (1973:113-114) note that 'many industrialists (they) consulted said quite categorically that the main purpose of licensing is the exchange of know-how, with patents a minor consideration added in the small print at the end of an agreement to lend an extra security to the contract'.

Table 3: Number of Technology Transfer by Type of Agreements, 1975-1995

Agreement Type	75	76	77	78	79	80	81	82	83	84
Joint Venture	6	6	4	7	8	14	22	14	14	17
Technical Assistance and Know-how	27	30	21	48	54	57	64	48	61	71
License, Trademark and Patent	1	5	0	4	4	4	8	8	7	1
Management	12	7	7	11	13	13	6	10	13	10
Turnkey and Engineering	0	0	0	0	0	5	5	4	4	6
Services	12	5	1	12	3	6	7	2	7	2
Others	0	0	0	0	5	15	19	8	25	12
Total	58	53	33	82	87	114	131	94	131	119

Agreement Type	86	87	88	89	90	91	92	93	94	95
Joint Venture	9	11	11	15	15	11	7	7	3	3
Technical Assistance and Know-how	50	53	67	77	84	103	101	108	66	40
License, Trademark and Patent	33	30	44	53	36	37	26	58	36	22
Management	10	5	7	12	5	6	2	2	1	1
Turnkey and Engineering	1	0	1	0	1	1	0	1	6	1
Services	1	1	2	12	6	4	4	9	5	5
Others	9	10	18	29	8	3	0	0	11	7
Total	126	110	150	198	155	165	140	185	128	79

Source: Malaysian Industrial Development Authority (MIDA), unpublished data

Furthermore, it is found that patent protection provided to foreigners serves solely to protect the patentee's market (Vaitsos, 1972). It also been found to give patentees the power to abuse licensing agreements, e.g. by export restrictions (Sell and Mundkowski, 1979:566). This is indicated by the fact that a large percentage of patents granted to foreign investors are not effectively used in production⁵. Katz (1973:67-69) found that local utilisation of foreign patents in developing countries is rather small. In his empirical research in Argentina, Katz reported that out of 102 patents granted, only 15 were actually under exploitation, 29 covered current imports and the remaining 58 patents were not under present exploitation. A certain fraction of those 58 patents were 'abandoned', i.e. maintenance fee had not been paid regularly to keep them 'active', while yet another fraction was presently being kept active either for future utilisation or for the protection of future imports. This is clearly in contrast with the US data, where 50-60 per cent of US granted patents are commercially exploited (UNCTAD, 1975). Katz therefore remarks that the role

⁵ Developing countries have strongly argued against the non-working of patents stating that if a patent is only used for import purposes, foreigners can exercise monopoly power over the protected market (Wijk and Junne, 1993). The early patent system provides for working obligations where the patent must be exploited within the country of grant, and importation of patented products itself not a ground for forfeiture. However, revisions to the Article 5A of the Paris Convention since 1911 resulted in several changes in its working obligation clause. An apparent modification is where protection is granted to patented imported products, and since then there was a progressive weakening of the patents working requirement in the Paris Convention. Developing countries raised concerns about the importance of imposing more stringent working obligations on foreign patent holders. They argue that importation of patented products does not constitute the working of an invention (see Wijk and Junne, 1993: 24-25). Industrialised countries, on the other hand, argue that it may be uneconomical for a company to exploit its patent in all countries where the patent is recognised. They perceive that prevention of the unauthorised copying of a patented product or process in the importing country as one of the core functions of the patent. Therefore they asserted that the definition of *working* a patent also includes importing the product.

of patents as instruments of import protection is quite apparent in Argentina. He further pointed out that whereas in the developed countries patents acted as the provider of an incentive to inventive activity, in developing countries it merely supported the overall investment strategy of multinational firms which started local operations with very low vertical integration.

In Malaysia, foreign patents constitute a large proportion of the total number of patent applied and granted (see Table 4). Between 1986 to 1998, foreigners owned 96 per cent of total patents applied and 97 per cent of total patent granted. This is considered very low compared to patent ownership in the developed countries. In 1986, residents in Japan owned 86 per cent of total patent granted, in the US 54 per cent of total patents granted owned by its residents while in West Germany, 65 per cent of its local residents owned the patents. Even in Thailand the figure was much higher, at 31 per cent⁶. However, there is no information available on the level of usage of foreign patents in Malaysia, but there is a high possibility that a large proportion of Malaysian patents are not being used in the local production process.

Table 4: Patent and Utility Innovation Applications Received and Granted
(1st October 1986 to 31st July 1998)

Country/Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
<i>Applications</i>													
Malaysian (%)	11.1	2.2	4.5	4.5	4.0	4.4	6.7	6.9	6.2	4.4	4.0	2.8	3.1
Foreign (%)	88.9	97.8	95.5	95.5	96.0	95.6	93.3	93.1	93.8	95.6	96.0	97.2	96.9
Total Number of Patents	262	3266	1620	1887	2305	2427	2410	2882	3587	4177	5575	6451	3584
<i>Granted</i>													
Malaysian (%)	-	-	0	8.3	3.9	2.8	0.9	1.1	1.3	1.7	4.4	6.6	3.5
Foreign (%)	-	-	100	91.7	96.1	97.2	99.1	98.9	98.7	98.3	95.6	93.4	96.5
Total Number of Patents	-	-	6	132	518	1050	1134	1284	1629	1753	1801	789	407

Source: Calculated from statistics obtained from the Ministry of Domestic Trade and Consumer Affairs, Malaysia.

Research findings show that the tendency for MNCs to use licensing and patents as a means of exploiting their knowledge abroad is positively related to the extent of their overseas R&D (see Kumar, 1995). Technology transfer through affiliation with MNCs can pave the way to a mature technological base in the host-country provided the transfer also includes substantial R&D capabilities

⁶ WIPO Industrial Property Statistics, 1986.

(Narayanan and Lai, 1996). Thus, for an effective transfer of technology in the appropriate and priority sectors, Malaysia has to ensure MNCs are attracted to locate their R&D activities in the country.

Encouraging MNCs R&D Activities

There are several key reasons for MNCs to locate their R&D activities abroad. Mansfield, Teece and Romeo (1979) in a study on 55 US and middle Atlantic firms, found that the proportion of overseas R&D to be positively related with proportion of subsidiary sales, negatively related with exports, and positively with firm size. Zejan (1990) found the size of the market and per capita income have a positive and significant influence on affiliate R&D. Other factors which may encourage overseas R&D include the need for product or process adaptations for specific markets, cost rationalisations, and appropriation of knowledge from technological activities of rival firms (Kumar, 1995). The interesting point to note here is that MNCs tend to locate R&D in other countries that are well advanced in the fields they operate in so as to benefit from the knowledge spillovers, or to simply keep track of the activities of their competitors. This is particularly so for advanced technology enterprises. R&D investment in biotechnologies and microelectronics in the US by European and Japanese enterprises, the US chemical enterprises investing in R&D in Germany, and European and US companies investing in semiconductors development in Japan are cases in point (Kumar, 1995:8). Dunning (1988) argued that US MNCs were likely to invest heavily abroad in R&D in the sectors where they were confronted with major international rivals whose home countries were sources of innovative activity. These R&D investments would be directed to the most technologically advanced countries in the world.

The relative strength of intellectual property protection available in a country may be a factor in determining the overseas R&D activity by MNCs. However, the effect of intellectual property protection on the location of R&D facilities may depend on the type of R&D that is conducted. If the MNCs are interested in locating their advanced technology in R&D or if they are keen to invest abroad in R&D to develop a new product for the overseas market, then the strength of intellectual property protection in the host country would be a matter of concern. But, if overseas R&D is directed to local adaptations and providing other support to local production of MNCs, then intellectual property regime may not be of much consequence for its location.

Mansfield (1994) reported that IPRs protection would have a considerable effect on how much US investors will invest in facilities to manufacture components and complete products as well as R&D facilities. He found that the

importance of products patents and trademarks is well established for the pharmaceutical industry. This is supported by the UNCTC (1990:4) report that for pharmaceutical TNCs, the location of investment in R&D and the synthesis of active ingredients seems to be more dependent upon intellectual property protection than in investment in the finishing level of generic drugs. For other branches of the chemical industry, Mansfield found that the protection of "know-how" is often the main concern, and patents have a lower relevance (except for some process patents). For textiles and clothing industries, industrial designs are the predominant form of IPRs, while patents and know how are almost irrelevant.

In relation to MNCs' R&D activities in developing countries, critics argue that substantial changes in intellectual property protection are unlikely to change this situation, given the economies of scale associated with R&D activities, the importance of scientific facilities and manpower, and the close relationship between R&D with productive and marketing activities. Furthermore, most R&D activity undertaken by MNCs continues to be highly concentrated in their countries of origin or in other industrialised countries, particularly in high-technology fields. Patel and Pavitt (1991) found that technological activities of large corporations were largely concentrated in home countries and not yet globalized considerably. Furthermore, any tendency to decentralise R&D activities will occur primarily among the industrialised countries themselves.

Studies show that MNCs' R&D investment in Malaysia is scarce. Abibullah et al. (1994) found that out of 40 foreign electronics firms in Malaysia, only six had R&D facilities and 25 firms used their R&D results directly. Of these 25 firms, 87 per cent drew on research conducted in their parent plants abroad while only 3.2 per cent relied on local research institutions. MASTIC (1994) survey on R&D expenses in the manufacturing sector in Malaysia in 1992 reported that out of RM246.3 million R&D expenditure in that year, 49 per cent was incurred by foreign firms. R&D investment by MNCs was concentrated in the electrical and electronics, and chemical sectors. They constituted 91.4 per cent of total R&D expenditure in the electrical and electronics sector, while in the chemical industry they contributed 86.7 per cent (see Table 5).

Ind
Elec
Tra
Foo
Rub
Tex
Che

Note:

Source

Howe
techn
Japan
activi
devel
was t
invol
that
reeng
their

Table

STA
Ope
Mai
Qua
Proc
Imp
Mot
Des
Proc
Equ

Note:

Table 5: R&D Expenditure in Selected Manufacturing Industries, Malaysia, 1992 (RM million).

Industry	Local	Foreign	Total
Electrical/electronics	9.7	102.7	112.4
Transport Equipment	82.0	0.0	82.0
Food	14.8	1.3	16.1
Rubber	1.2	1.4	2.7
Textiles	0.4	0.4	0.9
Chemicals	1.9	11.7	13.5

Note: foreign - foreign ownership exceeding 50%;

local - local ownership exceeding 50%.

Source: Malaysia Science and Technology Information Centre, MASTIC (1994), *1992 National Survey of Research and Development*, Ministry of Science and Technology, Malaysia

However, R&D of MNCs does not involve the development of new products or technology, and neither does it involve advanced technological activities. The Japanese firms in Malaysia, for example, were found to be averse to R&D activities in important areas of the production such as product or equipment development, design and moulding (Narayanan and Lai, 1996). Process R&D was the most widely reported formal innovative activity reported in a survey involving 82 electronics firms in the country in 1993 (Rasiah 1995). He noted that where product R&D was involved, foreign firms were participating in reengineering mature technologies, especially in improving products and raising their functional capacities.

Table 6 Stages of Technology Transfer in Japanese Firms (%)

STAGE	THAILAND	MALAYSIA	SINGAPORE
Operation	78.7	75.0	63.2
Maintenance	57.4	54.2	57.9
Quality Control	46.8	58.3	47.4
Production Management	21.3	25.0	47.4
Improve Technology	6.4	12.5	21.1
Moulding	6.4	8.3	5.3
Design	8.5	-	10.5
Production Development	4.3	-	-
Equipment Development	2.1	-	5.3

Note: Figures represent proportion of respondent firms reporting the full transfer of the indicated expertise. Source: Yamashita (1991)

Yamashita (1991), in a study of technology transfer by Japanese firms in Thailand, Singapore and Malaysia, also reported that a large proportion of Japanese affiliates had fully transferred activities related to operations, maintenance, production management and quality control - all being aspects of either production or process technology. However, when it comes to R&D-related aspects, such as product or equipment development, or design or moulding, the proportion of firms claiming they had fully transferred the associated expertise falls dramatically (see Table 7).

Table 7: R&D Expenditure and Educational Enrolment in Science and Technology in NICs

Country	Year	Total R&D (as % of GDP)	All Science and Technology Subjects (% of Population)	Engineering Only (% of Population)	Vocational Training (% of Population)
Malaysia	1992	0.37	0.15	0.07	0.17
Thailand	1987	0.03	0.16	0.09	0.80
Japan	1988	1.9	0.43	0.37	1.17
Korea	1992	1.9	0.96	0.58	1.93
Taiwan	1993	0.9	0.92	0.68	2.12
Singapore	1992	0.6	0.90	0.60	0.40 (1980)

Source: Lall (1996)

We can safely conclude here that, given the nature of R&D conducted by MNCs R&D in Malaysia, a more stringent intellectual property protection regime via TRIPS may not have much influence in encouraging R&D relocation. It would be useful to note Dunning's (1988) view that MNCs tend to invest heavily abroad in R&D in the sectors where they were confronted with major international rivals whose home countries were source of innovative activity. Thus, TRIPS will have a significant impact in attracting R&D investment in advanced technology and development of new production techniques and products, only when Malaysia itself has the capabilities to break through world technological frontiers.

CONCLUSION

The level of intellectual property legislation in Malaysia is comparable to that of in the developed countries. However, Malaysia is still far behind relative to the developed countries in terms of its enforcement. Being an open economy and highly dependent on foreign direct investment, Malaysia realised that having

high standards of intellectual property protection is a positive step towards a more dynamic development of its economy. Therefore, compliance to the provisions of the TRIPS Agreement has been considered a priority with the Government, and serious efforts are being made to enhance intellectual property rights legislation and its related aspect of enforcement. Malaysia has complied with most of the provisions of the TRIPS Agreement. Areas that require changes or formulation of new legislation are under review with the assistance of the experts from the WTO and WIPO. The costs of the compliance with the TRIPS Agreement are expected to be very high, and will include financial burden of maintaining an efficient and knowledgeable enforcement bodies, paying out higher royalties for the use of technology and information, higher prices for goods and services, and consequently, a greater pressure on the balance of payments.

However, the benefits of having high standards of intellectual property protection can exceed the costs if Malaysia is able to make use of the legislation in such a way that it works in its favour. The immediate effect of stronger IPRs protection is to increase inflows of FDIs, while the long-term effect is the development of technological capacity in the country. However, intellectual property protection has not been considered an important factor in attracting FDIs, enhancing technology transfer, promoting R&D activities of MNCs in the country, or in stimulating local technological innovations thus far.

FDI inflows into the country would have a significant impact on the development of skill- and technology-based industries only if it is accompanied by a transfer of R&D activities by MNCs. At present, R&D activities and technology transfer to Malaysia is very limited. However, this is not because of weakness in the IPRs but due to the lack of indigenous technological innovation, insufficient supportive research, and the lack of complementary facilities and manpower. In order to encourage the transfer of R&D and to promote foreign investment into advanced technology areas, Malaysia must itself have internationally competitive and commercially profitable technological capabilities.

Strengthening the IP rights protection may not be the answer yet to solve the problem of the lack of local technological activities in Malaysia. What is important at this stage is to improve the education system, research facilities, and to encourage more local R&D activities. Problems and constraints faced by local innovators either in technical, financial or other aspects of innovation must be resolved as an immediate priority. Without having these supportive resources and facilities in place, it would be naive to assume that the mere strengthening of IPRs protection would result in all its claimed benefits.

REFERENCES

Abibullah S. et. al. 1994, *Pemindahan Teknologi Dalam Industri Elektronik di Malaysia*, Kuala Lumpur: Dewan Bahasa dan Pustaka.

Dunning J.H. 1988, *Multinationals, Technology and Competitiveness*, London: Unwin

Firestone, O.J. 1971, *Economic Implications of Patents*, Ottawa: University of Ottawa Press

Frischtak C.R. 1989, "The Protection of Intellectual Property Rights and Industrial Technology Development in Brazil", World Bank Industry Series Paper No.13, Washington D.C.: The World Bank

Hafisah Mustaffa 1995, "Malaysia's Perspective on the TRIPS Agreement - The View from the Malaysian Government", paper presented at WIPO/ASEAN National Seminar on The Agreement on TRIPS and Its Implications for Business Enterprises, July 27-28 1995, Kuala Lumpur

Jomo K.S. (ed.) 1993, *Industrialising Malaysia: Policy, Performance and Prospects*, London: Routledge

Katz, J.M. 1973, *Patents, The Paris Convention and Less Developed Countries*, Centre Discussion Paper No.190, Economic Growth Centre, Yale University, New Haven

Kirim, A.S. 1983, *Do Patents really Block Industrial Development in LDCs? A case Study of Abandoning Patents in the Turkish Pharmaceutical Industry*, Development Studies Occasional Paper No.24, School of Development Studies, University of East Anglia, United Kingdom

Kumar N. 1995, *Intellectual Property Protection, Foreign Direct Investment and location of Overseas R&D Activities by Multinational Enterprises*, paper prepared for research project at UNU/INTECH on Foreign Direct Investment, Technology Transfer and Export-Oriented in Developing Countries, unpublished

Lall, S. 1976, "The Patent System and the Transfer of Technology to Less Developed Countries" *Journal of World Trade Law*, pp. 1-16

1996, "Technology Policy and Challenges", paper presented at the Conference on Globalization and Development: Lessons for the Malaysian Economy, Faculty of Economics and Administration, Kuala Lumpur, August 12-13

Lall S. and Streeten P. 1977, *Foreign Investment, Transnationals and Developing Countries*, Boulder: Westview Press

Malaysia, Ministry of Domestic Trade and Consumer Affairs, unpublished data, various years

Malaysia 1996, *Seventh Malaysia Plan 1996-2000*, Kuala Lumpur: National Printing Department

Mansfield E., D. Teece and A. Romeo 1979, "Overseas Research and Development by US-Based Firms", *Economica*, Vol. 46, pp. 187-196

Mansfield E. 1994, *Intellectual Property Protection, Foreign Direct Investment and Technology Transfer*, International Finance Corporation Discussion Paper No.19, Washington D.C.: World Bank

MASTIC 1994, *National Survey of Research and Development*, Ministry of Science and Technology, Kuala Lumpur

MIDA (Malaysian Industrial Development Authority), unpublished data, various years

Narayanan, S. and Lai, Y.W. 1996, "Towards a More Mature Technological Base: R&D in Malaysian Electronics", paper presented at the 21st Federation of ASEAN Economic Associations (FAEA) Conference, Bangkok, November 23-24th

OECD 1989, *Economic Arguments for Protecting Intellectual Property Rights Effectively*, Paris

Patel P. and K. Pavitt 1991, "Large Firms in the Production of the World's Technology: An Important Case of 'Non-Globalisation'", *Journal of International Business Studies*, Vol. 22, No.1, pp.1-22

Penrose E.T. 1973, "International Patenting and Less Developed Countries", *Economic Journal*, pp.768-785

Primo Braga C.A. 1990, "The Developing Country Case For and Against Intellectual Property Protection" in), *Strengthening Protection of Intellectual Property Protection in Developing Countries*, see Siebeck W. (ed.)

Rasiah R. and Anuwar A. 1997, "Governing Industrial Technology Transfer in Malaysia" in Ishak Yusoff and Abd. Ghaffar Ismail (eds.), *Malaysian Industrialisation: Governance and Technical Change*, Bangi: Penerbit University Kebangsaan Malaysia

Rasiah R. 1995, "Institutions and Innovations: Technological Learning in Malaysia's Electronics Industry", paper prepared for conference on "Innovation Networks: East Meets West", Sydney 30-31 August

Rasiah R. 1995a, *Foreign Capital and Industrialisation in Malaysia*, London and New York: Macmillan and St Martin's Press

Sell A. and Mundkowski M. 1979, "Patent Protection and Economic Development: Some Results of an Empirical Analysis in the Pharmaceutical Industry in Latin America", *International Review of Industrial Property and Copyright Law*, Vo.10 No.5, pp.565-572

Siebeck W. (ed.) 1990, *Strengthening Protection of Intellectual Property Protection in Developing Countries*, World Bank Discussion Paper No.112, Washington D.C.: World Bank

Taylor, C.T. and Silberston, Z.A. 1973, *The Economic Impact of The Patent System*, London: Cambridge University Press

U.N. 1993, *Intellectual Property Rights and Foreign Direct Investment*, New York: United Nations

UNCTAD 1975, *The Role of Patent System in the Transfer of Technology to Developing Countries*, New York, TD/B/AC.11/Rev.1

UNCTAD 1986, *Periodic Report 1986: Policies, Laws and Regulations on Transfer, Application and Development of Technology*, United Nations

UNCTC 1990, *New Issues in the Uruguay Round of Multilateral Trade Negotiations*, United Nations

Vaitsos C. 1972, "Patents Revisited: Their Function in Developing Countries", *Journal of Development Studies*, October, pp.71-97

WHO 2000, "WTO Multilateral Trade Agreements and their Implications on Health - TRIPs", WHO Regional Office for South-East Asia, New Delhi

Wijk J.V. and Junne G. 1993, *Intellectual Property Protection of Advanced Technology - Changes in the Global Technology System: Implications and Options for Developing Countries*, UNU/INTECH Working Paper, No.10

WIPO 1996, "Agreement on Trade-Related Aspects of Intellectual Property Rights", Annex 1c, unpublished

Yamashita S. 1991, "Economic Development of the ASEAN Countries and the Role of Japanese Direct Investments", in S. Yamashita (ed.), *Transfer of Japanese Technology and Management to the ASEAN Countries*, Tokyo: Tokyo University Press, pp.3-22

Zejan M.C. 1990, "R&D Activities in Affiliates of Swedish Multinational Enterprises", *Scandinavian Journal of Economics*, Vol.92, No.3, pp.487-500