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Are stronger intellectual property rights an obstacle or a condition for international technology transfer?

- An analysis on the effects of the TRIPS
Agreement

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Contents

SUMMARY	4
ABBREVIATIONS	6
1 INTRODUCTION	7
1.1 Background	7
1.2 Purpose	8
1.3 Delimitations	8
1.4 Method and material	8
1.5 Outline	9
2 TRANSFER OF TECHNOLOGY	10
2.1 Introduction	10
2.2 Transfer of technology on the international agenda	11
2.2.1 Drafting a code of conduct	11
2.2.2 Multilateral Environment Agreements (MEAs)	13
2.2.3 The adoption of the TRIPS Agreement	14
2.3 Methods for technology transfer	17
2.3.1 The assignment	17
2.3.2 The license contract	17
2.3.3 The know-how contract	18
2.4 Channels for transfer of technology	18
2.4.1 Market-mediated mechanisms	18
2.4.2 Non-market mechanisms	19
3 THE ROLE OF INTELLECTUAL PROPERTY RIGHTS	21
3.1 The rationale for intellectual property rights protection	21
3.2 The human rights approach	23
3.3 Limitations on intellectual property rights	23
4 THE TRIPS AGREEMENT AND TECHNOLOGY TRANSFER	25
4.1 General remarks	25
4.2 TRIPS provisions on technology transfer	26
4.3 Implementation issues and concerns	28
4.4 Is the TRIPS Agreement an effective tool for technology transfer to developing countries ?	29
4.4.1 TRIPS provisions problematic	29
4.4.2 Compulsory licensing under the TRIPS Agreement	31
4.5 Transfer of environmentally sound technologies (ESTs)	33
4.6 Communication from the member countries to the TRIPS Council	35
5 AN OBSTACLE OR A CONDITION ?	38
5.1 General remarks	38

5.2	North - South perspectives on intellectual property rights and technology transfer	39
5.3	Intellectual property rights promote technology transfer	41
5.4	Intellectual property rights hinder technology transfer	44
5.5	The way forward	47
6	CONCLUSION	51
	BIBLIOGRAPHY	53

Summary

This thesis analyses whether intellectual property rights promote or restrain technology transfer to developing countries and what effect the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement have on technology transfer to developing countries.

Technology transfer is traditionally used as a means to increase the technological knowledge of countries, and there have been many attempts to establish a functional instrument for technology transfer to developing countries. The implementation of the TRIPS Agreement will result in that the international intellectual property rights system will be strengthened. Developing countries have expressed concern that this global strengthening could result in a reduction of technology transfer. These concerns are justified since it could be more difficult to use certain channels of technology transfer, such as imitation and compulsory licensing. The developed countries have further not effectively used art 66.2 of the agreement which stipulates that countries shall provide incentives to national enterprises and institutions for the purpose of promoting technology transfer to least-developed countries.

The developed countries asserted during the negotiations of the TRIPS Agreement that stronger intellectual property rights would have a positive effect on technology transfer to developing countries because companies would be more willing to transfer technology to a country which offers effective intellectual property rights protection. However, there is no empirical evidence that completely support this statement. Studies on the issue have shown that intellectual property rights are especially important for investment decisions by chemical and pharmaceutical companies, but there are also industries which consider intellectual property rights to be of less importance. That companies consider the effectiveness of intellectual property rights of the recipient countries is understandable; they naturally want a reward for their research work. However, the availability of intellectual property is not the only factor which is important for companies' investment decisions. Companies also pay attention to other factors of the recipient country, for instance the infrastructure, the availability of skilled workforce and the capacity of the buyer to absorb technology. Nevertheless, stronger intellectual property rights will undoubtedly enhance the technology owners' control, and they can accordingly deny access to their technologies, charge higher prices or impose conditions for the technology transfer.

It can be asserted that intellectual property rights do not become an important factor for technology transfer until the country has developed a technological base. Since developing countries often lack the possibility to buy expensive technologies, they use technology transfer channels such as copying and reverse engineering to get access to technology. Therefore it

seems that weak intellectual property rights are more related to development for countries with limited assets and a weak technological base than strong intellectual property rights. The availability of intellectual property rights restricts technology transfer in the beginning of the industrialization process when a country uses imitation. Stronger intellectual property rights can thus in this situation be an obstacle for technology transfer.

Abbreviations

BIT	Bilateral Investment Treaty
CBD	Convention on Biological Diversity
CFC	Chlorofluorocarbon
CIPR	Commission on Intellectual Property Rights
CTE	Committee on Trade and Environment
DSB	Dispute Settlement Body
DSU	Dispute Settlement Understanding
EC	European Communities
ECOSOC	United Nations Economic and Social Council
EST	Environmental Sound Technology
FDI	Foreign Direct Investment
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
ICESCR	International Covenant on Economic Social and Cultural Rights
MEA	Multilateral Environment Agreement
MNE	Multinational Enterprise
NAFTA	North American Free Trade Agreement
NIEO	New International Economic Order
PCT	Patent Cooperation Treaty
R&D	Research and Development
TBT	Agreement on Technical Barriers to Trade
TNC	Transnational Corporation
TRIMS	Agreement on Trade-Related Investment Measures
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCTAD	United Nations Conference on Trade and Development
UNCTC	United Nations Centre on Transnational Corporations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
WIPO	World Intellectual Property Organization
WTO	World Trade Organisation

1 Introduction

1.1 Background

It is generally recognised that access to technology is of major importance for a country's development, and since the 1970s attention has been on how to increase technology transfer to developing countries. The need for developing countries to get access to technology has been observed in international agreements and attempts have also been made to create a code of conduct for technology transfer.

Since the developing countries often lack the financial capability to buy technologies, they have throughout the years used different forms of copying products protected by intellectual property rights, to get access to technology. Due to weak intellectual property rights these countries have been able to perform different forms of imitation without any legal consequences. However, to use weak intellectual property rights as a means to get access to technology is not a new occurrence. In the past the developed countries, when in the process of developing, deliberately used ineffective intellectual property rights to get access to technologies created in other countries.

The adoption of the TRIPS Agreement implied that the international intellectual property rights system would be strengthened and partly harmonized. The TRIPS Agreement contains further provisions on technology transfer and it is specifically called upon the developed country members to provide incentives to national enterprises and institutions for the purpose of promoting technology transfer to least-developed countries.

During the negotiations of the TRIPS Agreement the developing countries expressed concern that stronger intellectual property rights protection would decrease technology transfer. The developed countries asserted, on their part, that stronger protection would increase technology transfer since enhanced intellectual property rights would make them more willing to invest in developing countries. Yet, the developed countries have not effectively used the provisions in the TRIPS Agreement that promotes technology transfer. On the contrary, the developed countries have used the obscurities of the Agreement to limit the developing countries access to technology.

The awareness of the difficulties with the TRIPS Agreement has reinforced the questions how to increase technology transfer to developing countries and how intellectual property rights affect technology transfer.

1.2 Purpose

The purpose of this thesis is to investigate what effect the adoption of the TRIPS Agreement and the strengthening of intellectual property rights have on technology transfer to developing countries. There are two main questions to be answered in this thesis:

1) What effect does the TRIPS Agreement have on technology transfer? Is this agreement the right solution for transfer of technology to developing countries, or does it make it harder for them to get access to technology?

2) Do intellectual property rights as such promote or restrain technology transfer to developing countries?

1.3 Delimitations

The issue of intellectual property rights, technology transfer and developing countries covers many aspects. This essay focuses on the TRIPS Agreement's effect on technology transfer to the developing countries and on the comprehensive impact of intellectual property rights on internalized and externalized channels for technology transfer.

There are more than 80 international instruments which contain provisions on transfer of technology. Additionally there are sub regional and bilateral agreements and also national laws on the subject.¹ Only the most important agreements and instruments have been included for the purposes of this thesis.

1.4 Method and material

The method for this thesis is both descriptive and analytical. Research has been carried out at the Raoul Wallenberg Institute human rights library and on the Internet.

The thesis is mainly based on books and articles. Technology transfer is an economic transaction and therefore has economic studies on the issue been analysed. Documents from the World Trade Organization (WTO) bodies and material from the United Nations Conference on Trade and Development (UNCTAD) has also been used.

¹ Compendium of International Arrangements on Transfer of Technology: Selected Instruments, preface, p. 3

1.5 Outline

In chapter 2 a definition of the components of transfer of technology is provided and a background on the steps taken internationally concerning the transfer of technology to developing countries is given. A brief description of the main methods and channels for transfer of technology is also given.

In chapter 3, the role of intellectual property rights is discussed.

In chapter 4, the role of the TRIPS Agreement concerning the transfer of technology will be analysed. The relevant provisions and the implementation difficulties are presented. A discussion on the effectiveness of the provisions is made and examples of country experiences with the TRIPS Agreement are given. Finally the communication of the TRIPS member countries to the TRIPS Council is presented.

In chapter 5, a discussion is made whether stronger intellectual property rights protection hinders or promotes international technology transfer. The divergent approach towards technology transfer and intellectual property rights of the developed and the developing countries is also presented.

Chapter 6 contains a conclusion.

2 Transfer of technology

What is transfer of technology and how does it occur? These are two questions that will be discussed in this chapter. The historical background of technology transfer to developing countries will also be presented.

2.1 Introduction

The concept of technology transfer includes quantities of complicated transactions and therefore it is useful to give a summary definition on the subject. The definition below found in the Oxford Dictionary of Business defines the term of transfer of technology.

Technology transfer: *“the transfer of technological knowledge to a third party, which often occurs when a patent holder grants a license to another firm to use a technology, process, or product. In many instances this transfer takes place between countries, when a firm establishes an overseas subsidiary or grants a license to a local producer. It is therefore a means by which countries gain new technology or update their existing technological base, enabling them to build up their industrial infrastructure”*.²

This gives a comprehensive description of the subject but it is important to mention that there is no universally agreed definition of technology transfer.³ Different definitions are found in international instruments that contain provisions on technology transfer and there are also several scholars that have provided their own definitions for the term. For example, Keith Maskus who has made several studies on transfer of technology sees transfer of technology as *“any process by which one party gains access to a second party’s information and successfully learns and absorbs it into his production function”*.⁴ While there is no exact definition, scholars have agreed upon the fact that a technology transfer definition clearly should state that the technology transferred must be absorbed in the country.⁵

There has been nothing stipulated about the definition of technology from a general point of view. Definitions of technology are established in international instruments covering technology transfer. For instance, in the United Nations Conference on Trade and Development (UNCTAD) code of conduct, technology is described as *“systematic knowledge for the*

² A Dictionary of Business, Oxford University Press, 2002. Oxford Reference online, Oxford University Press. <http://www.oxfordreference.com/views/GLOBAL.html>

³ D’Amato and Long, p. 41.

⁴ Maskus, *Encouraging international technology transfer*, UNCTAD/ICTSD Capacity building project on intellectual property rights and sustainable development, December 2003, p. 3.

⁵ D’Amato and Long, p. 41.

*manufacture of a product, for the application of a process or for the rendering of a service”.*⁶

2.2 Transfer of technology on the international agenda

2.2.1 Drafting a code of conduct

Since the 1970s there has been a recurrent matter in the international debate regarding the promotion of technology transfer to developing countries. The United Nations General Assembly adopted in 1974 a Declaration on the Establishment of the New International Economic Order (NIEO). The adoption of this declaration emphasized the developing countries vulnerability towards crises in the world economy at that time. The declaration stated that the future success of the international community was dependent on all countries and that cooperation between them was a mutual goal and also a duty. The NIEO established as one of its principles the promotion of transfer of technology to developing countries and asserted that those countries should get access to the modern science and technology in order to help them develop.⁷

The principle was further stated in the General Assembly’s resolution on the Programme of Action for the Establishment of a New International Economic Order, which asserted that all efforts should be made to develop a code of conduct for technology transfer.⁸ Negotiations on an international code of conduct started in the 1970s under the United Nations Conference on Trade and Development (UNCTAD) but ended in 1985 due to disagreements between the parties. The developing countries wanted to exclude clauses in technology licensing agreements, which could be used to take advantage of their weaker positions in the negotiations. The most important issue for the developed countries during the negotiations was competition. They wanted any clauses that unnecessarily limited effective competition to be adjusted.⁹

Due to the increased role of transnational corporations (TNCs) in the 1970s the United Nations Economic and Social Council (ECOSOC) ordered a “Group of Eminent Persons” to evaluate TNCs impact on development. The work of the group led to the establishment of the United Nations Centre on Transnational Corporations (UNCTC), which had the objectives to enhance the understanding of the effects of TNCs in developing countries, to secure international arrangement on TNCs and to increase all countries ability to negotiate internationally. The commission’s work included among other

⁶ UNCTAD series, p. 5.

⁷ Declaration on the Establishment of a New International Economic Order, Resolution 3201 (S-VI), 1 may 1974.

⁸ Programme of Action on the Establishment of a new International Economic Order, Resolution 3202 (S-VI), 1 may 1974.

⁹ UNCTAD series, p. 22,52.

things, studies on foreign direct investment (FDI) and technology transfer to developing countries. The primary task of the commission was to create a Code of Conduct on Transnational Corporations but the code was never completed since the negotiators failed to reach consensus and in 1993 the UNCTC was dissolved and its work transferred to UNCTAD.¹⁰ It was never clearly established if the UNCTAD and the UNCTC codes of conduct were to be legally binding for the parties, presumably this was never the intention of the developed countries.¹¹

The creation of a code of conduct also became an issue during the negotiations on the Law of the Sea and attempts were also made to revise the Paris Convention for the Protection of Industrial Property in favour of the developing countries. These efforts were not successful because the developed countries considered it to be wrong to share their technology while a contrary opinion was expressed by the developing countries.¹²

The importance attached by developing countries to industrialize by gaining access to technology was formulated in the World Intellectual Property Organization (WIPOs) Licensing Guide for Developing Countries, which was adopted in 1977.¹³ The developing countries aspirations were repeated in the preamble to WIPO's Model Law for Developing Countries on Inventions that was drafted in 1979. The Model Law suggested that a transfer of technology patent should be established so it would be more attractive for patent owners to work their inventions in developing countries.¹⁴

These events confirm that the importance of technology transfer to developing countries was recognised, but that critical divergences that existed between the states made it difficult to reach a mutual solution on the issue.

Until the 1980's the attention was focused on the companies and on the technology transfer process. Although the transfer of foreign technology still is regarded as important, the focus now has shifted towards the recipient country's capacity to absorb and adapt technology. This change is due to country experiences which have shown that the capacity to absorb technology is of crucial importance for the technological development of

¹⁰ UNCTC webpage, <http://unctc.unctad.org/html/home.html>. Last visited on 14 January 2005.

¹¹ Day Wallace, p. 1086.

¹² Blakeney, p 159.

¹³ WIPO's Licensing Guide for Developing Countries reads: "Industrialisation is a major objective of developing countries as a means to the attainment of higher levels of well-being of the peoples of such countries. The advancement of science and the development of technological base are essential conditions of industrial growth. The development of a technological base in a developing country depends on the existence of indigenous technical capacities and the acquisition of selected technology from abroad."

WIPO publication No. 620(E), 1977.

¹⁴ Blakeney, p. 15,157.

countries, and it is now generally admitted that technology transfer from abroad should be regarded more as a complement to this process¹⁵

2.2.2 Multilateral Environment Agreements (MEAs)

Despite the failure to reach agreement in the negotiations of an international code of conduct, the question concerning technology transfer to developing countries remained in the international debate. For instance, many multilateral environment agreements (MEAs), which were concluded in the 1990's, contain provisions on technology transfer. These agreements recognise the necessity of transferring environmentally sound technologies (ESTs) to developing countries, which they need in order to attain a sustainable development.

The United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit, held in 1992 in Rio de Janeiro resulted in the adoption of five environmental agreements. One of them was Agenda 21, which is a non-binding programme of global action for sustainable development. Agenda 21 establishes in chapter 34 that the availability of technological information and transfer of ESTs are essential for sustainable development in developing countries.¹⁶ Chapter 34 also contains provisions on activities for the promotion of transfer of ESTs, but state also that the terms for transfer of technology shall be mutually agreed upon and that the need to protect intellectual property rights shall be considered. Another agreement that was adopted during the Earth Summit was the United Nations Framework Convention on Climate Change (UNFCCC), which in art 2 states the objective to stabilize the concentration of greenhouse gas in the atmosphere. This agreement also includes a provision that promotes transfer of ESTs to developing countries.¹⁷

An additional agreement that was signed was the Convention on Biological Diversity (CBD), which states in art 1, among its objectives, the conservation of biological diversity, the sustainable use of its components

¹⁵ Roffe and Tesfachew, *“Revisiting the technology transfer debate : lessons for the new WTO Working Group”* . BRIDGES, ICTSD, Vol. 6, no.2, February 2002.

¹⁶ A definition of ESTs is found in paragraph 34.1:” environmentally sound technologies protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes”. Art 34.2 defines ESTs in the context of pollution: “process and product technologies “that generate low or no waste, for the prevention of pollution. They also cover “end of the pipe” technologies for treatment of pollution after it has been generated”.

¹⁷ UNFCCC states in its art 4.5 that countries “.....shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties....”

and fair sharing of the benefits from the use of genetic resources, including access to genetic resources and transfer of relevant technology. The article further asserts that all rights over those resources and technologies must be taken into account.¹⁸ Art 16 of the convention holds that access to and transfer of technology are essential for sustainable development and that transfer of technology to developing countries “*shall be provided and/or facilitated under fair and most favourable terms*”.¹⁹

The aftermath of the Earth Summit led to the adoption of the Kyoto Protocol, which was signed in 1997. The aim of the protocol is to reduce greenhouse gases in industrialised countries by 2012. This protocol also contains an obligation to promote, facilitate and finance technology transfer to developing countries.²⁰

2.2.3 The adoption of the TRIPS Agreement

The Uruguay Round held by the General Agreement on Tariffs and Trade (GATT) took place from 1986 to 1994 and resulted in the Agreement Establishing the World Trade Organization (the WTO Agreement). At the same time several additional agreements were adopted as annexes to the WTO Agreement. These agreements were among others, the General Agreement on Trade in Services (GATS), the Agreement on Trade-Related Investment Measures (TRIMS), and the Agreement on Technical Barriers to Trade (TBT), which all contain provisions that affect technology transfer to developing countries.²¹

¹⁸ CBD art 1.

¹⁹ Art 16.1 of the CBD reads: “1. Each Contracting Party, recognizing that technology includes biotechnology, and that both access to and transfer of technology among Contracting Parties are essential elements for the attainment of the objectives of this Convention, undertakes subject to the provisions of this Article to provide and/or facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment.

Art 16. 2 reads: “Access to and transfer of technology referred to in paragraph 1 above to developing countries shall be provided and/or facilitated under fair and most favourable terms, including on concessional and preferential terms where mutually agreed, and, where necessary, in accordance with the financial mechanism established by Articles 20 and 21. In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights.....”

²⁰ Kyoto Protocol art 10(c): All parties shall: “cooperate in the promotion of effective modalities for the development, application and diffusion of, and take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies, know-how, practices and processes pertinent to climate change, in particular to developing countries...”

²¹ See for instance GATS art IV (1) (a) that state that negotiation which would increase the participation of developing countries in world trade should be held aiming at “the strengthening of their domestic services capacity and its efficiency *inter alia* through access to technology on a commercial basis”.

In the preamble to the TBT it is stated that members: “Recognizing the contribution which international standardization can make to the transfer of technology from developed to developing countries” and TBT art 11 state that members shall grant to the developing

Through an initiative by the industrialised countries and especially by the United States, intellectual property rights and trade became an issue under the Uruguay Round. The negotiations during the Round led to the adoption of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which was signed in 1994 together with the WTO Agreement and its annexes.²²

The TRIPS Agreement is regarded as the most extensive international instrument established on intellectual property rights since the creation of the Paris and Berne Conventions in the 1880's.²³ The agreement covers all forms of intellectual property rights, such as copyright and related rights, trademarks, geographical indications, industrial designs and patents. It is a minimum standard agreement and accordingly the member countries are allowed to use stronger intellectual property rights protection in their national laws.²⁴ An important aspect of the Agreement is that it contains provisions concerning enforcement of intellectual property rights, which allows the right holder to take actions against infringement.²⁵ Additionally it is regulated that disputes under the Agreement shall be forwarded to the WTO dispute settlement procedure. A procedure under the WTO Dispute Settlement Body (DSB) begins with consultation under the Dispute Settlement Understanding (DSU), and if the parties cannot reach conciliation the complainant member can ask the DSB to establish a panel to resolve the matter. If the DSB panel find that a member has not complied with the rules of the Agreement, this member must follow the DSBs recommendations. If the member does not follow the recommendations, the complainant member can be authorised by the DSB to use trade sanctions against the member, which has failed to comply with the recommendations.²⁶

All member countries to the WTO must adjust their national intellectual property right laws in order to correspond with the provisions of the TRIPS Agreement. The effect of this implementation is that the protection of intellectual property rights in many WTO member states will be enhanced. The increased global strengthening is also due the pressure from the United States on many countries to increase their intellectual property rights protection and the regional trade agreements with provisions on intellectual

countries technical assistance on mutually agreed terms, and that priority shall be given to the needs of the least-developed country members.

²²Blakeney, p. 1-3, 6-7.

²³ Ibid, preface.

²⁴ TRIPS, preface and art. 1 "...Members may, but shall not be obliged to, implement in their law more extensive protection than is required by this Agreement, provided that such protection does not contravene the provisions of this Agreement."

²⁵ Art 41.1 stipulates: "Members shall ensure that enforcement procedures as specified in this Part are available under their law so as to permit effective action against any act of infringement of intellectual property rights covered by this Agreement, including expeditious remedies to prevent infringements and remedies which constitute a deterrent to further infringements..."

²⁶ Matthews, p. 88.

property rights. Examples are the bilateral investment treaties (BITs) established by the United States, the NAFTA Agreement and the agreements between the European Union and other countries.²⁷

During the TRIPS negotiations the developing countries expressed concern about the effects that the strengthening of intellectual property rights can confer on technology transfer and on prices on pharmaceutical and agricultural products.²⁸ This concern is due to that the TRIPS Agreement will make it possible for the member countries to threaten users of imitation with trade sanctions. Imitation is a channel for technology transfer which has been widely used by developing countries as a means to get access to technology. Strengthened intellectual property rights, as conveyed by the TRIPS Agreement, will restrict this channel for technology transfer since countries must increase their enforcement concerning intellectual property rights. The intellectual property rights owner can further exclude others from using, selling and importing the product and can impose high prices, which thus diminishes access to technology.²⁹ The developed countries asserted on their part that stronger intellectual property rights would increase companies' will to invest in developing countries.³⁰

At the fourth WTO Ministerial Conference held at Doha, Qatar from 9 to 14 November 2001, the issue of technology transfer was discussed. It was decided that a Working Group should be established to investigate the relationship between trade and transfer of technology. The Working Group should examine how to increase technology transfer to developing and least-developed countries and make recommendations which were to be reported at the Fifth Session of the Ministerial Conference, which was held at Cancún, Mexico, from 10 to 14 September 2003.³¹ Recommendations from the developing countries presented during the conference emphasized, among other things that the focus should be on an examination of the WTO provisions related to technology transfer with a view to making them operational and meaningful. The developed countries on their part asserted the danger in coercing the private sector to give away its technology since this could diminish technology transfer by companies.³²

The Doha Ministerial Decision on Public Health affirmed that the provisions of article 66.2 of the TRIPS Agreement, which calls upon the member countries to transfer technology, are mandatory and this was reaffirmed in the Doha Ministerial Decision on Implementation-Related Issues and Concerns. This decision further established that the TRIPS council shall put in place a mechanism for ensuring the monitoring and full implementation of the article. It was also decided that developed-country members should hand in prior to the end of 2002 detailed reports on the

²⁷ Maskus, 2000, p. 1-2, 4-5

²⁸ Gervais, p. 14.

²⁹ UNCTAD Policy Discussion Paper, p. 14, 85-86

³⁰ Matthews, p. 109.

³¹ WT/MIN(01)/DEC/1, para. 37..

³² Cancún WTO Ministerial 2003, briefing note.

practical functioning of art 66.2, which were to be reviewed in the TRIPS Council and be updated by Members annually.³³ Given that some of the developed countries reports had been submitted just prior to or in the course of the countries meetings at the end of 2002, it was decided that the country delegations should get the opportunity to comment on them during the meeting on 18-19 February 2003. Consultations during this meeting led to the adoption of a draft decision on the implementation of Article 66.2 of the TRIPS Agreement by the Council.³⁴ This decision clarified the obligations conferred on the developed countries under art. 66.2, and is an important step towards the full implementation of the article.

2.3 Methods for technology transfer

Technology transfer can take place by commercial or non-commercial means. Commercial transfer of technology occurs between the owner of the rights of the invention, the transferor, and the transferee, which is the company or the person who buys the rights. The most important legal methods for commercial technology transfer are through an assignment, a license contract or a know-how contract.³⁵

2.3.1 The assignment

An assignment occurs when the owner of the rights of an invention, in this situation named the assignor, sells all the exclusive rights without any limitations to another party, the assignee. The concept of assignment is also used for the exclusive rights of other industrial property rights, for instance industrial designs, trademarks and utility models.³⁶

2.3.2 The license contract

A licence is an authorization by the owner of an invention, the licensor, to a person or company, the licensee, to use a part or parts of the exclusive right of the invention. The license system is also applicable to exclusive rights on other forms of industrial property. The license is given for a specific country and for the duration of the patent right, which are 20 years from the filing date for members to the TRIPS Agreement. The licence gives the licensee the right to use a process, make or use a product or to make a product by a process, which is included under the patent. The licence contract can contain conditions for the granting of license such as a delimitation of areas where the product can be sold.³⁷

Many countries also have legal requirements on the form of an assignment or a licence contract in their patent or commercial laws and it can also be

³³ WT/MIN(01)/DEC/2, para 7.

WT/MIN(01)/17

³⁴ IP/C/M/39.

³⁵ WIPO Intellectual property handbook, p. 172.

³⁶ WIPO Intellectual Property Handbook, p. 172-173.

³⁷ Ibid, p. 172-174.

required that the assignment or the licence contract must be registered in a patent office. An additional requirement can be that central governments have to examine the instrument of assignment or the license contract for approval.³⁸

2.3.3 The know-how contract

The know-how contract is a document that is separate from the license contract. Provisions of know-how can also be included in the contract; this is common for license contracts concerning inventions, trademarks and industrial designs. The know-how can be forwarded in tangible fashion, which could be for instance documents, photographs or blueprints, also known as technical information or data. The intangible form of know-how could be an explanation by an engineer of the supplier to an engineer of the recipient how a process works or the training of the recipient's personnel.³⁹

2.4 Channels for transfer of technology

2.4.1 Market-mediated mechanisms

Transfer of technology occurs through several channels, but there are a number of channels that are considered to be the most important. Keith Maskus divides these channels in two groups, market-mediated mechanisms, which imply that a formal transaction has occurred, and non-market mechanisms, which occur without any transaction.⁴⁰

Keith Maskus also describes market-mediated mechanisms as intentional technology transfer.⁴¹ An example is *trade in goods and services* where capital goods such as chemicals, machines and software are exported, and by being put into the production increases the productivity. Another important channel is *foreign direct investment (FDI)*, which takes place when multinational enterprises (MNEs) transfer technological information to their subsidiaries in other countries. The third channel is *licensing of technology*, which occurs when a firm gives permission to another firm, unrelated or within the firm, to use its technology that is protected by intellectual property rights. The licensing can also be non-voluntary, which will be the case if a government decides to grant a compulsory license. Finally there is the *joint venture arrangement*, which is the cooperation between companies who contribute with different assets to carry out a mutual plan of action.⁴²

³⁸ Ibid.

³⁹ Ibid, p.175.

⁴⁰ Maskus, 2003, p. 15.

⁴¹ Maskus, 2000, p. 137.

⁴² Maskus, 2003, p. 15-16.

All these mechanisms work interdependently since companies may want to use different mechanisms in their aspiration to get the highest profit possible.⁴³

2.4.2 Non-market mechanisms

The non-market mechanisms occur without any formal agreement and are many times performed with no compensation to the patent owner. Developing countries have frequently used these channels to get access to technology since they often lack the economical capacity to buy intellectual property rights.

An example of non-market mechanisms is *imitation*, which is when a firm uses the technological secrets or product design of another firm without compensating the owner. A form of imitation is counterfeiting, which is to make a competing product under another's trademark. Maskus asserts that counterfeiting is a way to use a recognised trademark and not an effective mechanism for absorbing technological information. Therefore counterfeiting is not an important channel for technology transfer.⁴⁴ Similar to imitation is *reverse engineering*, which is to dismantle a product, for instance an engine, analyse its composition and create a competing product. This procedure is more complicated and usually more costly than imitation.⁴⁵

A further example is for rival firms to *study patent applications*, learn from them, and to create products or processes that does not trespass the application. There have been discussions whether or not this form for technology transfer is a good alternative since the know-how necessary for the working is not included in the patent application. Engineers from other firms may have difficulties to understand the technological information if the know-how is missing, with the result that the transfer will not be that successful.⁴⁶

A final example is *temporary migration* by technical personnel, students and scientists from developing countries to universities and conferences in developed countries, which later return home with their new skills.⁴⁷

All channels for technology transfer mentioned above are linked to *technology spillovers*. These are benefits such as increased productivity, cost reduction and enhanced product quality, which does not necessarily only go to the technology owner. A company may have to introduce its

⁴³ Ibid, p. 16.

⁴⁴ Ibid, p. 17-18.

⁴⁵ Maskus, 2000, p.136.

⁴⁶ Maskus, 2003, p. 17-18.

⁴⁷ Ibid.

know-how to its suppliers and this information could spill over and be absorbed by competing companies using the same supplier.⁴⁸

Non-market mechanisms of course increase the technological knowledge but it is questionable if that knowledge is enough to make effective use of new inventions. As mentioned above, the patent document does not contain all the knowledge that is necessary for the working of the invention, and for the invention to be put into practice. It is therefore necessary to buy the exclusive rights, the know-how or the permission to use the invention to achieve the best possible results. A patent symbolizes an exclusive right which is granted and which allows the inventor to decide to what extent others can use, sell or make the invention. Without the authorization from the patent owner others cannot use the invention.⁴⁹

On the other hand, these channels have throughout the years played an important part in the industrialization of countries. The developed countries deliberately used scarce or no patent laws when they went through their industrialization process. An example is Switzerland, which allowed patenting inventions abroad but because they did not have any patent laws their copying of foreign inventions could occur without any consequences. Many developed countries did not introduce patents for pharmaceuticals and chemical substances until the last period of the 20th century. For instance, France and West Germany did not introduce patent protection for these products until 1967 and chemical substances were not protected in the Nordic countries until 1968.⁵⁰

The nowadays-developed countries also used reverse engineering and imitation and other forms of copying to increase their technological knowledge. The global strengthening of intellectual property rights conveys that these mechanisms will be restricted, making it more difficult for developing countries to catch up.⁵¹ The developing countries today are thus restricted from using the same channels for technology transfer as the developed countries did in the beginning of their development.

Although imitation is regarded as illegal and wrong, these mechanisms can create incentives to innovate. To copy a CD will probably not lead to increased learning and innovation, but reverse engineering, for instance, demands knowledge to understand the composition of a product. This process accordingly leads to increased technological knowledge which can create incentives to innovate.⁵²

⁴⁸ Maskus, 2003, p. 19-20.

⁴⁹ WIPO Intellectual Property Handbook:Policy, p. 17, 172.

⁵⁰ Khor, 2001, p. 205-206.

⁵¹ Correa, 2000, p. 19.

⁵² UNCTAD Policy Discussion Paper, p. 46.

3 The role of intellectual property rights

To protect what you have created is fundamental for humans and so are the interests of the society to take part of technological progress and of cultural life. Intellectual property rights serve as a protection system for creations but its founding has throughout the years been questioned. In this chapter the rationale behind the intellectual property rights system will be discussed and mention will also be made of established limitations conferred on intellectual property rights.

3.1 The rationale for intellectual property rights protection

The awareness and importance of intellectual property rights have increased rapidly during the recent years. This is due to the increased technological development, which is strongly connected with the existence of intellectual property rights. The advanced modern technology has become global and more available to humans. Another significant reason is the economic value of intellectual property rights; especially the economic power of patents and trademarks has grown fast.⁵³

The concept of intellectual property rights is old; for instance, in Europe, patent protection can be traced all the way back to the Middle Ages. The argument for patent protection at that time was that it would have a positive effect on the industrial development, and through the centuries many countries introduced intellectual property laws in their legal systems. The establishment of intellectual property rights systems had both its proponents and its opponents and from the middle of the 19th century intellectual property rights had become a controversial issue. There were discussions about the removal of patent protection, a debate very much affected by thoughts of free trade.⁵⁴

Fritz Machlup describes four arguments for the protection of intellectual property rights that was asserted during the end of the 19th century. These arguments are still used today in the intellectual property rights debate. The first argument is the *natural law theory*, which was developed during the French Revolution in Continental Europe. The proponents for this argument consider that an invention first and foremost is the property of the creator and the society must protect the inventor from infringement of his rights. The second argument is the *reward by monopoly theory*, which emphasize that the society must reward the inventor for his creative contribution in resemblance with the invention's usefulness. The granting of an interim

⁵³ Koktvedgaard, p. 21, 28.

⁵⁴ Blakeney, p. 149, 150.

monopoly, namely an intellectual property right, carries this out. The third argument is the *monopoly profit incentive theory*, which emphasizes that the disclosure of inventions is necessary for the industrial development, but inventors may be reluctant to disclose their inventions because of the economic risks they take. To make inventors more willing to disclose their secrets the society can increase their economic expectations by granting patents. The final argument is the *exchange for secrets theory*, which claims that the industrial development is hindered if the inventor does not disclose his secrets. The society shall negotiate with the inventor to make him disclose his secret in exchange of patent protection, otherwise the invention may never be known. In this way the society gets hold of important technological progress needed for the future.⁵⁵

Fritz Machlup has also questioned these arguments. The theory that an inventor has a natural right to his invention does not really correspond with the rules and limitations on intellectual property rights, for example the time limit and the compulsory licence. When discussing the reward by monopoly theory it should be mentioned that there is no guarantee that an invention would fully compensate the inventor if he decides to disclose it and apply for a patent. An invention can be considered to be very important for the society, as for instance a technological process, and still not compensate the inventor economically. On the other hand, not so important inventions have provided millions to inventors. The exchange for secrets theory holds that patent protection is necessary to make the inventors reveal their secrets which otherwise would have been unknown for the society. But the situation could be that several inventors had come up with the same idea and it does not seem likely that all of them would have kept the secret. Because of the patent protection, the invention is actually held secret for a specific time of 20 years.⁵⁶

Intellectual property rights are traditionally viewed as compensation to inventors and as an important incentive for innovation. It is often also argued that intellectual property rights promotes FDI and other forms of technology transfer since companies may be reluctant to transfer technology to countries with weak intellectual property rights protection. Because there is no effective protection system available for their technological information, companies fear that they could loose control over technology transferred to these countries. Imitation can be performed in countries with weak intellectual property rights since the imitator does not have to fear consequences for infringement.⁵⁷

Intellectual property rights offer an incentive to inventors to create new information, who otherwise may not be willing to put their effort on something without receiving financial reward. If information were

⁵⁵ Fritz Machlup, “*An Economic Review of the Patent System*”, in Abbott, Cottier and Gurry, p. 231-232, 237.

⁵⁶ Ibid, p. 236-238.

⁵⁷ UNCTAD Policy Discussion Paper, p. 33, 86.

accessible for free the development of new findings would probably decline because then the inventors would not receive compensation for their efforts. Especially R&D that demands a lot of financial assets would be difficult to perform.

The two main outlooks regarding the importance of intellectual property rights protection is the natural law theory mentioned above and the Anglo-American theory which have a utilitarian approach, where intellectual property rights are seen as creating a necessary balance between the creator and the society. The natural law theory was established in the French Declaration of Human Rights and has also influenced other instruments on human rights.⁵⁸ The human rights provisions in these instruments will be reviewed in the next chapter.

3.2 The human rights approach

An important aspect of this discussion is the provision on the right to the protection for ones creations, which are stated in international human rights instruments. Protection for intellectual property as a human right is found in the United Nations Universal Declaration of Human Rights (UDHR) art 27.2 and in the International Covenant on Economic Social and Cultural Rights (ICESCR) art 15(1c).⁵⁹ ICESCR and UDHR also contain provisions on the human rights to take part of scientific development and of cultural life.⁶⁰

Accordingly, there must be a balance between these rights since they both have received protection. The interest of the society to take part of cultural life and technological progress must be considered together with the creators' interest to receive protection for his creations.

3.3 Limitations on intellectual property rights

The owner of an intellectual property right receives the exclusive right to decide to what extent others can commercially use the creation, but this right is limited. The established limitations on intellectual property rights create a balance between the society and the owner of the exclusive right.

⁵⁸ Dessemontet, Geneva conference 2003, manuscript.

⁵⁹ UDHR art 27.2 reads: "Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author". ICESCR art 15(1c) has almost the same wording: "The State Parties to the present Covenant recognize the right of everyone: To benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author".

⁶⁰UDHR art 27(1) reads: "everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits". ICESCR art 15 (1) reads: "the state parties to the present covenant recognize the right of everyone: a) to take part in cultural life" and b) "to enjoy the benefits of scientific progress and its applications".

An important limitation is the limit in time. For instance, copyright protection is durable during the life of the author plus 50 years after the death and patents are protected 20 years after the filing date.⁶¹ Another limitation to the exclusive right, which is especially important in this context, is compulsory licenses which are licenses authorized by a government to itself or third parties without the consent from the patent owner. Art 5A(2) of the Paris Convention allows each member country to grant compulsory licenses in cases where the abuse might result from the exercise of the exclusive rights conferred by the patent, for example, failure to work the invention. Compulsory licenses can also be granted on the grounds of public interest, for instance health issues and public welfare.⁶²

Provisions on compulsory licensing are also included in the TRIPS Agreement.⁶³ Art 31 holds that the government or third parties authorized by the government can use a patented invention without the permission of the right holder if certain provisions in the article are respected. What should be mentioned is that the TRIPS Agreement does not determine the grounds on which governments can grant compulsory licences, but leaves it to each member to decide. It should further be noted that, contrary to the Paris Convention, art 31 of the TRIPS Agreement does not contain any provision allowing compulsory licenses if the patent is not worked in the country.⁶⁴

⁶¹ Copyright: the Berne Convention, art 7 and the TRIPS Agreement art 12. Patents: the TRIPS Agreement art 33.

⁶² WIPO Intellectual Property Handbook: Policy, Law and Use, p. 35.

⁶³ The TRIPS Agreement is only applicable between countries that are its parties. If only one of two countries is party to the TRIPS Agreement it is not applicable. (Vienna Convention of the law of the treaties, art 30.4(b). If both countries are both parties to the Paris Convention and the TRIPS Agreement, the TRIPS Agreement will displace the Paris Convention since it is the latest treaty. (art 30.4 (a), art 30.3 Vienna Convention of the law of the treaties).

UNCTAD-ICTSD Resource Book on TRIPS and Development, p. 33-34.

⁶⁴ WIPO Intellectual Property Handbook: Policy, Law and Use, p. 35.

4 The TRIPS Agreement and technology transfer

The TRIPS Agreement contains provisions that promote transfer of technology but concerns have been expressed regarding the agreements ability to really encourage technology transfer to developing countries. This issue will be analyzed in this chapter.

4.1 General remarks

To begin with, there are some important remarks that need to be emphasized. The first observation has to do with the implementation procedure of the agreement. The developed country members of the WTO were in article 65 of the TRIPS Agreement given a transitional period of one year before they had to apply the provisions of the agreement. TRIPS thus entered into force for developed countries on January 1 1996 and developing countries got an additional four-year period to comply. Developing countries, obliged by the Agreement to extend product patent protection to areas of technology which was not protectable in those countries on the date of application, got until January 1 2005 to apply the agreement on those products. In art 66.1 least-developed countries were given a transitional period until January 1 2006, but were required to apply the provisions in art 3, 4 and 5 which provide rules on national treatment and most-favoured nation treatment. At the Doha Ministerial Conference it was decided that the transitional period for least-developed countries should be extended until 2016 regarding patent protection for pharmaceutical products.⁶⁵

Accordingly, the final effects of the Agreement are obviously difficult to tell at this point since the implementation procedure is not entirely completed.

What also should be taken into consideration is that the effect of the Agreement may not be that decisive since many countries had improved their intellectual property laws prior to 1995, which occurred partly through pressure from the US. There are additionally other international Agreements which also are responsible for the enhanced protection of intellectual property rights. Another important aspect is that the consequences of the agreement certainly will be varied because countries have reached different levels of economic and technological development.⁶⁶

⁶⁵ Declaration on the TRIPS agreement and public health, adopted on 14 November 2001. Document WT/MIN(01)/DEC/2, para.7

⁶⁶ Correa, 2000, p. 24, 27.

4.2 TRIPS provisions on technology transfer

There are provisions in the TRIPS Agreement that promotes technology transfer and also others that indirectly affect the process of technology transfer.

In the preamble to the TRIPS Agreement it is recognized that development is related to intellectual property rights and that least-developed countries have special needs which must be considered to enable them to create a technological base. The fifth preambular paragraph states that members recognize “*the underlying public policy objectives of national systems for the protection of intellectual property rights, including development and technological objectives*” and in the sixth paragraph it is provided that the members recognize “*the special needs of the least-developed country Members in respect of maximum flexibility in the domestic implementation of laws and regulations in order to enable them to create a sound and viable technological base.*” These statements point out the need to pay special attention to the needs and objectives of the developing countries. The preamble holds that there should be a balance between the interests of the developed and the developing countries, between intellectual property and free trade and between the owners of the rights and the interest of the society. The interest of the intellectual property rights owner should not be regarded as contrary to the interest of the society because intellectual property rights protection has a positive effect on the creativity and on the diffusion of creations. The preamble is an important part of the agreement and is regarded as one of the principles that the WTO panels should consider if they find the interpretation of the provisions unclear.⁶⁷

Art 7 states as one of the Agreement’s objectives that intellectual property rights should contribute to the promotion of technology transfer. It reads: “*the protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations*”.

This provision stipulates important principles of the intellectual property rights system, for instance the role of intellectual property rights in the promotion of innovation and for the transfer of technology. These principles shall be used to settle the balance between the rights and obligations. The provision can be used to claim an exception to an intellectual property right if the owner has not observed the obligation to take part of social and economic welfare. It could also be utilized to limit the protection and enforcement of an intellectual property right, which does not promote the

⁶⁷ Gervais, 2003, p. 80-81.

transfer, and dissemination of a technology or the promotion of innovation.⁶⁸

Art 8.1 states that members may “*adopt measures necessary to protect public health and nutrition and to promote the public interest in sectors of vital importance to their socio-economic and technological development*”. Art 8.2 holds further that appropriate measures “*may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology*”. These principles give the member states the right to use measures to protect public health and to prevent the abuse of intellectual property rights, but the effect of these provisions could be limited since both contain the obligation that the measures adopted must be “*consistent with the provisions of this Agreement*”. This means that exceptions that are not specifically anticipated already in the Agreement will not easily be recognized. The principles are instead to be regarded as a ground for explaining actions carried out under art 30, 31 and 40.⁶⁹

Art 40 contains provisions to prevent anticompetitive practices in contractual licences. Art 40.1 reads: “*Members agree that some licensing practices or conditions pertaining to intellectual property rights which restrain competition may have adverse affects on trade and may impede the transfer and dissemination of technology*”. What sort of practices and conditions are not established in the agreement, which implies that the article could be broadly interpreted.⁷⁰ Art 40.2 allows members to specify in their national laws: “*licensing practices or conditions that may in particular cases constitute an abuse of intellectual property rights having an adverse effect on competition in the relevant market*”. The members may further adopt “*appropriate measures to prevent or control such practices,*” provided that they are consistent with the TRIPS Agreement.

Red in the context of art 40.2, art 40.1 gives the member countries the permission to adopt measures to prevent or control licensing practices, which other member countries must respect. However, this permission is limited to some licensing practices or conditions which restrain competition and which may have adverse affects on trade and may impede the transfer and dissemination of technology. This interpretation means that art 40 only is applicable on practices which could damage competition. The damage must thus be the result of a hindrance on competition and must either have had an adverse affect on trade or been an impediment to the transfer and dissemination of technology.⁷¹

Art 66.2 contains a direct request to the member countries to provide incentives to enterprises for the purpose of promoting technology transfer. It reads: “*Developed country Members shall provide incentives to enterprises*

⁶⁸ Ibid, p. 116-117.

⁶⁹ Ibid, p. 121.

⁷⁰ Ibid, p. 281

⁷¹ UNCTAD-ICTSD Resource Book on TRIPS and Development, 2003, p. 19-20.

and institutions in their territories for the purpose of promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base". The governments have accordingly, under the TRIPS Agreement, the responsibility to take the first step in the process of promoting technology transfer. As mentioned in chapter two it was affirmed in the Doha Ministerial Decision on Public Health that this provision is mandatory. Noteworthy is that the article only mentions promotion of technology transfer to the least-developed countries and not to the developing countries,

In art 67 it is stated that developed countries shall offer technical assistance to developing and least-developing countries, it reads"*...developed country Members shall provide, on request and on mutually agreed terms and conditions, technical and financial cooperation in favour of developing and least-developed country Members. Such cooperation shall include assistance in the preparation of laws and regulations on the protection and enforcement of intellectual property rights as well as on the prevention of their abuse, and shall include support regarding the establishment or reinforcement of domestic offices and agencies relevant to these matters, including the training of personnel*". Contrary to art 66.2 this article mentions technical support to both the developing countries as well as the least-developed countries, but also state that the technical and financial cooperation shall be provided on "*mutually agreed terms*".

4.3 Implementation issues and concerns

One of the developing countries' main concerns regarding the adoption of the TRIPS Agreement was that it could lead to decreased access to technology. They feared that the global strengthening of intellectual property rights would make it harder for them to gain access to the modern technology created in the industrialized countries. Technology transfer channels such as imitation and compulsory licences would be restricted. Developing countries have expressed the necessity of increased access to technology from these countries and have claimed that the provisions in the TRIPS Agreement on technology transfer are too weak. They have questioned the implementation part of the agreement regarding art 66.2 that calls upon the developed countries to provide incentives for the transfer of technology and of art 67 that deals with technical assistance.⁷²

In 2001 the British government established a Commission on Intellectual Property Rights (CIPR), which was mandated to investigate how intellectual property rights could function in a better manner for developing countries. The report of the Commission was completed on 12th September 2002. The report discussed among other things the issue of technology transfer to developing countries.⁷³

⁷² Correa, *Review of the TRIPS Agreement: fostering the transfer of technology to developing countries*, Third World Network, 2001, p. 3, 11.

⁷³ CIPR Final Report.

The report asserts that intellectual property rights have important effects on the promotion of invention in the developed countries. It further asserted that it is fundamental for developing countries to develop indigenous technological capacity because these countries would then increase the ability to reduce poverty and improve the economy. To increase the indigenous technological capacity is also important for technology transfer since the national level of technological capacity determines how well technology transfer can take place in practice. The report points out that access to technology are highly important for development. According to the report, the central question remaining is whether intellectual property rights can increase or prevent access to technology by developing countries.⁷⁴

The report establishes that developed countries have not successfully implemented art 66.2 of the TRIPS Agreement and it does not seem that they have taken any extra measures to encourage technology transfer. A problem with the above-cited article is that it only refers to least-developed countries and not to developing countries, a delimitation that appears far too restrictive. The least-developed countries have also less capacity to absorb technology. The report emphasizes that the private sector owns most of the available technology, whereas the TRIPS Agreement is oriented at governments for implementation. Since the TRIPS Agreement deals mainly with the protection of intellectual property rights it is not an agreement meant for technology transfer. The Commission considers for these reasons that the TRIPS Agreement and art 66.2 is not the best place for provisions on technology transfer to developing countries.⁷⁵

4.4 Is the TRIPS Agreement an effective tool for technology transfer to developing countries ?

4.4.1 TRIPS provisions problematic

The TRIPS Agreement has been criticised of being insensitive to the needs of the developing countries and it has been questioned whether this is the right place for placing provisions on technology transfer. It has been argued that there are more appropriate solutions for technology transfer than within the WTO framework.

The provision that has the most direct language for technology transfer in the TRIPS Agreement is art 66.2. The article contains a request to the developed countries to provide incentives to enterprises and institutions in their territories for the promotion of technology transfer to least-developed countries. There are several aspects of this article that have been criticised.

⁷⁴ Ibid p. 11-12.

⁷⁵ Ibid, p.26

As mentioned above, the article was criticised in the CIPR report for excluding a reference to the developing countries. This point has also been made by writers specialized in the field. According to Keith Maskus, art 66.2 state a positive obligation upon the developed countries to provide incentives to encourage technology transfer to least- developed countries. The problem is that this provision does not give rise to any rights or obligations for the developing countries. An additional problem is that the article does not mention intellectual property rights at all. The developed countries can therefore choose which incentives they want to give, which may not necessarily have to be linked to intellectual property rights. Maskus asserts that the article implicitly contains an “effectiveness test” since the purpose of the article will not be fulfilled if it is not used effectively. The article states that the incentives shall be provided for the least-developed countries “*in order to enable them to create a sound and viable technological base*”. According to Maskus, this means that effectiveness is expected from both the developed countries and the least-developed countries.⁷⁶

Carlos Correa has emphasized several problematic aspects of the TRIPS Agreement. For instance, the preamble recognizes the needs of the least-developed countries in order to enable them to create a technological base but does not mention the term technology transfer.⁷⁷ As mentioned above, the preamble to the TRIPS Agreement is important since the WTO panels shall take it into consideration if there are uncertainties regarding the interpretation of the Agreement.

Art 7 of the agreement state that intellectual property rights should contribute to the promotion of transfer of technology. Correa points out that instead of the term “shall” the word “should” is used. He also observes that in art 8, which state that member countries may adopt measures to, for instance, protect public health, goes on to state that such measures should be taken only on condition that they are consistent with the provisions of the agreement.⁷⁸

Art 29 deals with the conditions for patent applications. Here the requirement of disclosure for the granting of the patent is stated. It is often argued that by studying patent applications companies in developing countries could get access to technology created in the developed countries. Correa is sceptical about this channel as a vehicle for transfer of technology because there is no evidence that companies in developing countries are able to effectively use these applications. Many times companies in developing countries do not have the technical expertise necessary to analyse patent applications and the ability to invent new products. The fact that patent agents often provide the minimum information required to get the patent granted also makes it harder to acquire technology from patent applications.

⁷⁶ Maskus, 2003, p.2.

⁷⁷ Correa, manuscript, 2003.

⁷⁸ Ibid.

Correa also points out the problem that the know-how, which is necessary for the working of the patent, is not included in the patent document.⁷⁹

Correa draws the conclusion that the objective of the TRIPS Agreements is to protect technologies and that the agreement was not designed for the purpose of promoting technology transfer to developing countries. The adequate solution to technology transfer is accordingly not within the TRIPS Agreement; instead it is necessary to consider other alternatives.⁸⁰

A further problem with the TRIPS Agreement is the lack of definitions for technology transfer components. Neither the terms technology nor technology transfer is defined in the agreement, which creates uncertainties on their real meaning with respect to the TRIPS Agreement. An additional problem is that technology transfer channels are not mentioned in the agreement. The application of the technology transfer provisions would be facilitated if technology transfer channels, such as for instance FDI and licensing, were included and explained.

4.4.2 Compulsory licensing under the TRIPS Agreement

Art 31 of the TRIPS Agreement allows the member countries to decide on which grounds they can grant compulsory licences. The article stipulates certain conditions that have to be fulfilled for the use of the patent without the authorization of the patent owner. For instance, the proposed user must have tried to obtain authorization from the patent owner. The licence obtained is to be non-exclusive, and the patent owner shall be paid adequate remuneration.⁸¹ As mentioned, art 8 of the agreement permits member countries to use measures necessary to protect public health and prevent the abuse of intellectual property rights that adversely affect transfer of technology. This provision can be invoked as a ground for allowing compulsory licences.

Contrary to the Paris Convention, the TRIPS Agreement does not specifically allow the member countries to grant compulsory license in cases of non-working of the patent. The working of a patent generally implies the making of a patented product or the use of a patented process by the patent owner or the owner of the license. It has also been argued that importation of products is sufficient to fulfil the working requirement. There are countries, which require local working for the granting of the patent. The main purpose asserted for this requirement is that technology transfer will occur more effectively if the invention is also worked in the country granting the patent. However, technology transfer will be more effective if

⁷⁹ Ibid.

⁸⁰ Ibid.

⁸¹ The TRIPS Agreement, art 31(b), 31(d), 31(h).

the transaction is carried out between voluntary parties since compulsory licenses do not include know-how⁸²

During the negotiations on the TRIPS Agreement the US and other developed countries wanted to exclude the possibility to use compulsory license in cases of non-working, which led to a diplomatic solution as established in art 27.1 of the TRIPS Agreement.⁸³ This article establishes the criteria of patentability and prohibits discrimination based on whether the invention is locally produced or imported. It reads: ... *“patents shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced”*.

The interpretation of this provision has been divergent and has revealed the differences between the WTO members' interpretation of their rights and obligations under the TRIPS Agreement. The article has been interpreted to prohibit local working requirements but this is by no means an interpretation that is unanimous. Carlos Correa concludes that the preamble, art 7 and art 8 establish that the promotion of technology transfer is an objective of the TRIPS Agreement, and that this promotion could be guaranteed to some extent through compulsory licences granted for non-working.⁸⁴ Compulsory licences can thus function as a channel for technology transfer. If this possibility to transfer technology were limited, it would mean that the objective of the Agreement was not considered. Interpreted as prohibiting compulsory licensing in cases of non-working, the TRIPS Agreement would make it more difficult for developing countries to get access to technology.

The issue of non-working under the TRIPS Agreement was brought up in 2001 when the US filed a complaint against Brazil under the WTO Dispute Settlement Body (DSB). The complaint concerned art. 68 of Brazilian industrial property law, which required that a patented invention must be worked in the country otherwise the invention should be subject to compulsory license. The article also states that compulsory licences should be granted if a patented invention was not manufactured in Brazil or if the patented process was not used in Brazil. The article further required that if the patent owner decided to work the invention only by import, parallel import of the invention would be allowed. The process began in 2000 when US approached Brazil with a request to discuss the issue, but the parties could not agree upon a mutual decision. The US thus requested that a panel should be set up under the DSB regarding the compatibility of Brazilian law and the provisions in the TRIPS Agreement. The US asserted that art 27.1 prohibited local working requirements and that art 28⁸⁵ could be invoked to

⁸² WIPO Intellectual Property Handbook, p. 35-36.

⁸³ Correa, 2003, manuscript.

⁸⁴ Correa, 2000, p. 90-91.

⁸⁵ Art 28 reads: 1. A patent shall confer on its owner the following exclusive rights:

(a) where the subject matter of a patent is a product, to prevent third parties not having the owner's consent from the acts of: making, using, offering for sale, selling, or importing⁸⁵ for these purposes that product;(b) where the subject matter of a patent is a process, to

prevent third parties from selling or importing a product without the owner's consent. The Brazilian law was, according to US, not in conformity with these provisions and was discriminatory towards US owners of patents filed in Brazil.⁸⁶

Brazil held on its part that art 68 was consistent with the provisions of the TRIPS Agreement. It asserted that the US claim would have a negative impact on other developing countries that were implementing the TRIPS Agreement. The US had additionally not been able to present any damages caused by the Brazilian provision. Brazil contended that art 204 and 209 of the US patent code was actually similar to the Brazilian law. The US patent law demands that small business firms and universities were to manufacture their invention in US and also required local working of inventions that were owned by the government and its agencies.⁸⁷

The US complaint was influenced by the pharmaceutical companies and received criticisms since Brazil had used its law to get hold of HIV/AIDS retroviral for patients. The US finally withdrew the complaint on the condition that Brazil would not proceed with their complaint regarding the US patent law. The parties also agreed that Brazil should approach the US before they invoked their provisions concerning compulsory licences. The settlement became well received by the international community but it was observed that the obscurity of the provisions in the TRIPS Agreement sooner or later would lead to similar disputes.⁸⁸

This example demonstrates the divergent interpretation of TRIPS provisions that the member countries read out. The text of the agreement needs undoubtedly to be clarified in order to prevent similar conflicts in the future. It is also an example on how the developed countries are trying to interpret the TRIPS Agreement in favour of their own interest, not considering the problems and the need of the developing countries.

4.5 Transfer of environmentally sound technologies (ESTs)

Developing countries need technology to improve their industry and their technological base, but the access to technology is crucial for other reasons as well. An example is the need of developing countries to get hold of ESTs, which they must acquire to be able to meet obligations stated in MEAs. The

prevent third parties not having the owner's consent from the act of using the process, and from the acts of: using, offering for sale, selling, or importing for these purposes at least the product obtained directly by that process. 2. Patent owners shall also have the right to assign, or transfer by succession, the patent and to conclude licensing contracts.

⁸⁶ Raghavan, "US seeks dispute panel against Brazil over patents". Third World Network. 19 January 2001.

⁸⁷ Ibid.

⁸⁸ Raghavan, "US to withdraw TRIPS dispute against Brazil". Third World Network. 25 June 2001.

developing countries called attention to this issue during the Earth Summit and asserted that stricter intellectual property rights would impede the availability of ESTs.⁸⁹ The developing countries' concerns were observed in chapter 34 of Agenda 21 which stipulated the necessity of the transfer of ESTs to developing countries for sustainable development. This chapter also holds that the need to protect intellectual property rights shall be considered and that the terms for the transfer of such technology should be mutually agreed upon. The establishment of the TRIPS Agreement strengthened the international intellectual property rights system, which is an opposite direction to the developing countries wishes.

The developing countries concerns are justified. An example on the difficulty that the developing countries experience is their problems to receive substitutes for chlorofluorocarbons (CFCs) under the Montreal Protocol. Member countries to the Montreal Protocol were obliged to find a substitute for this chemical, which destroys the atmosphere's ozone layer, by the year 2000. Developing countries were given an adjustment period until 2010 to phase out this substance. Art 10 of the agreement calls upon the parties to transfer environmentally safe substitutes and technologies to developing countries.⁹⁰

The relevant substitutes to CFCs are HFC 134a and hydrocarbon, which are protected by patents and trade secrets owned by a few firms in the developed countries. India wanted to exchange its use of CFCs to HFC 134a, which was regarded as the best replacement, but was having difficulties in getting access to the technology. The TNCs that were in possession of the patents demanded either very high royalties or that India would agree not to export or sell the substance locally. Indian companies did not accept these requirements since calculations showed that the price for the patents was too excessive.⁹¹

Indian companies have further had difficulties to acquire the substance FM 200, a replacement for halon, which is used in fire extinguishers among other things. A US company owns the patent, which is licensed on certain conditions, for instance, that the final approval of the product must be performed by US agencies. Additionally, the patent owner required that a joint venture arrangement should be established which they would control. Indian companies only wanted to buy the technology and produce the substance locally. This together with the excessive license price made it impossible for India to meet the demands of the US companies, and India thus has to rely on import of FM 200.⁹²

⁸⁹ Khor, 2002, p. 87.

⁹⁰ Art 10A of the Montreal Protocol reads: "Each Party shall take every practicable step, consistent with the programmes supported by the financial mechanism, to ensure that the best available, environmentally safe substitutes and related technologies are expeditiously transferred to (...) developing countries under fair and most favourable conditions."

⁹¹ Khor, 2002, p.92-94.

⁹² Ibid, p. 94-95.

The examples above illustrate the complexity of problems surrounding transfer of technology. The developing countries agreed to sign environmental agreements and change their laws and practices to adjust to the established provisions. In return it is stated that the developed countries should transfer technology and assist the developing countries in their process towards development, but this is something that these countries and the TNCs are having difficulties to live up to. A decisive problem is that the governments are the ones that sign the agreements and the companies are those who mainly own the technologies.

The fact that transfer of ESTs is essential for sustainable development in developing countries was confirmed at the Earth Summit. With the establishment of the TRIPS Agreement the trend has shifted towards stricter protection of intellectual property rights making it difficult for the developing countries to get access to ESTs. The TNCs that are based in developed countries own a majority of patents for ESTs technologies and can thus keep prices high for their patents or simply deny selling the technology to developing countries. The developing countries have often not the economical capacity to buy licenses and if they do, the TNCs require that they must control the company buying the license.⁹³

The WTO's Committee on Trade and Environment (CTE) was established in 1994. Its target is to investigate, among other things, intellectual property rights and the TRIPS Agreement. Its work programme includes discussions on to which extent the agreement allows for the transfer of environmentally sound technology. The TRIPS compatibility with the Convention on Biological Diversity (CBD) that calls for technology transfer on "*fair and most favourable terms*", which some countries say conflicts with TRIPS, is also investigated.⁹⁴

4.6 Communication from the member countries to the TRIPS Council

The Doha Ministerial Decision on Implementation-Related Issues and Concerns reaffirmed that art 66.2 is mandatory. It was also decided that the TRIPS Council, which is responsible for administering and monitoring compliance with the TRIPS Agreement, shall put in place a mechanism for ensuring the monitoring and full implementation of the article.

In July 2002 the least-developed countries placed before the TRIPS Council a communication stating their views concerning the implementation of art 66.2. In the report it was pointed out that provisions in international agreements on technology transfer, for instance the TRIPS Agreement, have proven to be only paper promises. It is therefore necessary to make sure that the Doha Decision, which states that the TRIPS Council shall put in place a mechanism for the full implementation of art 66.2, is realized. The

⁹³ Ibid, p. 87-95.

⁹⁴ The CTE agenda: http://www.wto.org/english/tratop_e/envir_e/cte07_e.htm

establishment of a mechanism aims at ensuring the full implementation of art 66.2, and the developed countries are thus obliged to hand in reports which shall be reviewed and updated annually. The least-developed countries pointed out that measures should be taken against the member countries that fail to report. They stress the importance of the need for the mechanism not to become an ad hoc system; and that instead it should be incorporated in the TRIPS Agreement.⁹⁵

The TRIPS Council decision of the 19 February 2003 gave effect to instructions to put in place a mechanism for ensuring the monitoring and full compliance with article 66.2. This decision lays down an obligation on the developed country members to submit reports on actions taken or planned in pursuance of their commitments under art. 66.2. These reports shall be updated annually and new detailed reports shall be handed in every third year. The TRIPS Council shall review these reports at its end of year meeting each year and during these meetings members get an opportunity to ask questions and request additional information. The decision also contains a list of information which shall be provided, for instance identification of the type of incentives and information on their practical functioning. It was also decided that the arrangement in the decision shall be reviewed by the Council after three years with the view of improving them.⁹⁶

The developed countries have handed in updates to their reports on actions taken or planned to be taken in pursuance of their commitments under article 66.2. The 2004 year report from the European Communities (EC) states that the government attempts to promote technology transfer are limited because the private owns a majority of the technology and the governments are unable to force private owners to transfer their technology. For these reasons the incentives have to consist of facilitation of projects with the objectives to, among other things, improve the capability of the least-developed countries to absorb technology, support common research projects and to promote direct investment and licensing.⁹⁷

The EC has developed mutual projects to promote technology transfer and the individual countries also have their national programmes aimed to fulfil their obligations under the decision. It should be noted that there is no EC project that is specifically aimed at the least-developed countries; instead the projects are focused on regions or a specific country.⁹⁸

The US report of 2003 presents the activities that the government has taken to comply with its obligations. These are mainly different programmes and projects devoted to increase the capacity building and the technical assistance to developing countries, for instance the Millennium Challenge

⁹⁵ IP/C/W/357.

⁹⁶ IP/C/28.

⁹⁷ IP/C/W/412/Add.5.

⁹⁸ Ibid.

Account launched by President Bush to enhance economic growth in developing countries.⁹⁹

An additional example is Japan, which is offering training courses on intellectual property rights for government-related persons and officials of intellectual property offices in developing countries. Projects between the Japanese private sector and participants from developing countries are also carried out.¹⁰⁰

These projects naturally increase the developing countries knowledge about technology transfer and intellectual property rights and help them create an indigenous technological capacity. A developed technological capacity is important for these countries' ability to attract and absorb technology as efficiently as possible. These incentives are accelerating the developing countries' process in receiving access to technology, but are only the first step towards development for these countries.

⁹⁹ IP/CW/412/Add.3.

¹⁰⁰ IP/C/W/412.

5 An obstacle or a condition ?

Can stronger intellectual property rights protection promote international transfer of technology to developing countries or is it an obstacle? This issue has separated the developing and the developed nations into two groups. In this chapter the effect of intellectual property right on technology transfer and the divergent views of the north and south will be discussed.

5.1 General remarks

When investigating the effects that intellectual property right can confer on technology transfer it is important to bear in mind the following aspects. It should be remembered that intellectual property rights are just one of the factors which affect technology transfer and companies decision to invest. Factors such as availability of skilled workforce, the political situation, the domestic market and the infrastructure of the country are also considered.¹⁰¹

Intellectual property rights cover all sorts of creations, for instance inventions, literary or artistic works and designs which all have their specific nature. It is therefore important not to generalize and refer to the effects of intellectual property rights altogether since that would give a simplified picture. Even if a separate area of intellectual property rights is analysed it is necessary to consider which product and sort of activity that are concerned.¹⁰²

The importance of the developing countries' ability to absorb technology should further be noted. For these countries to be able to receive technology successfully there must be a capacity to learn, to invest, to absorb and put the technology into practice.¹⁰³ These are factors that need to be taken into consideration by the developing countries.

There is no conclusive evidence that intellectual property rights enhance development and innovation.¹⁰⁴ Several studies from different angles have been made on the effects of intellectual property rights, for instance on trade, FDI, transfer of technology and on the impact of stronger intellectual property rights in developing countries. Since these studies have been performed with varied methods and are of different extent, it is difficult to read out any general inferences.¹⁰⁵

The effect that intellectual property rights can confer on trade has many times been analyzed from an economic perspective. Examples of studies

¹⁰¹ Matthews, p. 111-112.

¹⁰² Correa., 2000, p.24, 26..

¹⁰³ Correa, 2003, manuscript.

¹⁰⁴ UNCTAD Policy Discussion Paper, p. 5.

¹⁰⁵ Correa, 2000, p.25,26, 30.

performed are Nogués (1993), (Mansfield (1994) and (1995), Maskus and Penubarti (1995), Primo Braga and Fink (2000), Smith (1999) and (2001), McCalman (2001), Glass and Saggi (2002).

5.2 North - South perspectives on intellectual property rights and technology transfer

The different approaches of the developing and the developed countries towards intellectual property and technology transfer are important to consider for the understanding of this issue, which has divided nations in two groups.

It is well known that developing countries and developed countries frequently have different views regarding the protection of intellectual property rights. The traditional view of many developing countries is that technological information belongs to the common heritage of mankind and accordingly intellectual property rights should not limit access to it. These countries tend to have weak intellectual property rights protection claiming that they need to get access to the technology created in the developed countries to be able to develop, which is easier if they have weak intellectual property right laws.¹⁰⁶

There are a number of additional explanations as to why there is a lack of effective protection of intellectual property rights. For instance, pirates have an advantage over the real producers since those who copy intellectual property rights have lower production expenses and can choose to make the most attractive products and by that reduce the risks they take on the market. Accordingly the pirates are more successful in the developing countries because they can better serve the needs of the developing countries, for example, by offering low prices on products. A further explanation is that these countries do not have a high number of inventors and authors that could demand enhanced protection and enforcement of intellectual property rights. The governments may also have low economic assets which would make them reluctant to invest in foreign intellectual property because they consider that too much of a burden for their economy.¹⁰⁷

Additionally, developing countries have problems enhancing their technological development. There are many reasons for this difficulty. The technical infrastructure may be underdeveloped, for example the research and development (R & D) possibilities. Another reason is that technology transferred from developed countries originally may not be created to fulfil the needs of the developing countries, instead it is meant directly for sale, often to other developed countries. This technology would be difficult to use in the countries that does not have any capability to use it effectively.

¹⁰⁶ D'Amato and Long, p. 61-62.

¹⁰⁷ Ibid, p. 62.

Because the technology options are many developing countries could have problems in finding out what kind of technology they actually need. That could lead to a result that they make the wrong decision. Finally, these countries may not have established an effective plan for their future technological development.¹⁰⁸

The developing countries use technology transfer mechanisms such as imitation as a mean to increase their development. Imitation and copying was also used by the now developed countries during their technological development, and had in fact an important role for the industrialization of those countries. Developing countries have expressed concerns that strengthened intellectual property rights would lead to difficulties in obtaining transfer of technology this way.¹⁰⁹

The developed countries have traditionally a different approach towards intellectual property rights. They consider that intellectual property rights are a necessary compensation to the inventors since the latter disclose their creations. This economical compensation encourages the inventors and authors to use their assets to embark upon more research for their work. Developed countries consider that the common heritage of mankind theory is not useful for the developing countries since the latter, by denying protection to their national inventors, does not give them any incentive to invent locally.¹¹⁰

The most common form of international technology transfer for MNEs has been to invest technology in their subsidiaries abroad, because then they can effectively control the information transferred. The motives for these companies to invest in developing countries are among other reasons to use the cheap labour available, to control and establish new markets, and to discover new raw material.¹¹¹

Companies' preference for internalized technology transfer, FDI, is also due to the low price and the fast process if compared to externalized technology transfer, such as joint ventures and licences. A particular disadvantage with FDI for the recipient country is that companies receive increased control over their technology and accordingly this could restrain spillovers and technology learning. For the technology transfer recipient the benefits of all technology transfer channels are several, although it is difficult to measure. Benefits which occur in the early stage are increased productivity, new products, and lower costs. The level of benefits in the later stage depends mainly on how much the recipient can adapt and learn from the technology transferred, and also on the ability to increase its own capability. Technology transfer will also lead to technology diffusion and spillovers to companies and institutions in the recipient country.¹¹²

¹⁰⁸ Ibid, p. 42.

¹⁰⁹ Khor, 2001 p. 205-206.

¹¹⁰ D'Amato and Long, p. 65.

¹¹¹ Ibid, p. 41.

¹¹² UNCTAD World Investment Report, 1999, p. 203, 207.

5.3 Intellectual property rights promote technology transfer

The most common argument for stronger intellectual property rights in developing countries has been, and is, that developed countries are more positive towards technology transfer to countries with effective intellectual property rights. The developed countries fear that weak intellectual property rights would lead to lack of control over the transferred technologies, which would make them an easy target for piracy.¹¹³

This view is confirmed in two extensive studies made by Edwin Mansfield for the World Bank in 1994 and 1995 examining FDI, intellectual property rights and technology transfer. He performed a survey on 94 major US firms covering six different industries asking them how important intellectual property rights protection was when they considered FDI in other countries. The results of the survey showed that the US firms in the survey “*tend to regard intellectual property protection as being more important in decisions regarding the transfer of advanced technology than in investment decisions*”.¹¹⁴ A president of a large chemical company stated that the weaker a country’s intellectual property rights are, the more reluctant they would be to transfer technology through joint venture, license or direct investment because of “...*The risk that the laws will not be able to effectively deter or remedy a theft of our technology...*”¹¹⁵ In the study there were also industries which considered strong intellectual property rights less important, for instance electrical equipment companies. Mansfield concludes that this could be due to the fact that patent protection is regarded as more important for the pharmaceutical and chemical sector than for other areas since their products are easier to copy.¹¹⁶

In his study Mansfield found that the strength of countries intellectual property rights appeared to have a decisive impact on the type of technology transferred. This was especially relevant for technology transfer by high-technology industries, such as the chemical and the pharmaceutical industries.¹¹⁷

Mansfield further found that the companies’ type of investments had an impact on their FDI decisions: “*For investment in sales and distribution outlets, only about 20 percent of the firms reported that intellectual property protection was of importance. For investment in rudimentary production and assembly facilities, about 30 percent said that such protection was*

¹¹³ Primo Braga and Fink, 1999, p. 276.

¹¹⁴ Mansfield, Edwin, *Intellectual property protection, foreign direct investment and technology transfer*. The World Bank and the International Finance Corporation (IFC) 1994, p. 1 and 14. The industries in the survey included chemicals, transportation equipment, machinery, food and metals.

¹¹⁵ Ibid, p.24.

¹¹⁶ Ibid, p. 28.

¹¹⁷ Ibid, abstract.

*important. For investments in facilities to manufacture components or complete products, about 50-60 percent said it was important, and for investment in R &D facilities, about 80 percent said it was important.*¹¹⁸

According to Mansfield's study the chemical industry was particularly reluctant to transfer technology to a country with weak intellectual property rights. The survey also showed that the technology transferred to these countries was older than the technology transferred to countries with effective intellectual property rights.¹¹⁹

Mansfield's study of 1995 focused on direct investment and technology transfer to developing countries by companies in Germany and Japan. The results showed that countries' intellectual property right laws had a major effect on the size and type of the technology transfer and the direct investment to these countries by high technology industries such as chemicals, pharmaceuticals, machinery, and electrical equipment, in Japan, US and Germany.¹²⁰ Mansfield found further that 80 percent of the pharmaceutical and chemical industries considered the effectiveness of intellectual property rights were important while 20 percent of sales and distribution outlets were of the same opinion.¹²¹

These studies show that a country's strength of intellectual property rights is an aspect which firms in developed countries pay attention to when they consider investing. The chemical and pharmaceutical sectors proved to be especially attentive to the weakness or strength of countries' intellectual property rights. However, not all industries were regarding intellectual property rights of the recipient to be decisive.

Mansfield's studies were performed a while ago but the large companies' course of action have probably not changed in a substantial manner. Their views regarding the importance of strong intellectual property rights protection have probably been reinforced due to the increased technological progress. There are several scholars who support Mansfield's findings. Pamela J Smith has made two studies analysing the effects of foreign patent rights on US exports. She found that weak patent rights are restraining US export, but this is only the case for countries which extensively use imitation. Strengthened intellectual property rights in those countries, as conveyed by the TRIPS Agreement, would lead to decreased possibility to imitate and therefore increased US export.¹²² Smith has further found that effective intellectual property rights increase information flows between countries which uses imitation heavily and also leads to enhanced establishment of

¹¹⁸ Ibid, p.1.

¹¹⁹ Ibid, p.22.

¹²⁰ Mansfield, Edwin, *Intellectual property protection, direct investment and technology transfer: Germany, Japan and the United States*. International Finance Corporation (IFC) discussion paper, no.27. 1995. p. 1

¹²¹ Ibid, p.22.

¹²² Smith, P.J, "Are weak patent rights a barrier to US exports?" *Journal of International Economics*, vol. 48, issue 1, June 1999, p. 170.

abroad affiliates and licensing.¹²³ Maskus and Penubarti (1995) study showed that exporting firms pay attention to a country's national patent laws and that patent protection affects imports in both small and large developing countries positively.¹²⁴ McCalman (2001) found that patent harmonization would lead to increased technology transfer between countries with benefits especially for the US.¹²⁵

These are some of several studies that assert that intellectual property rights are of major importance for transfer of technology. As mentioned above, many of the studies on this issue were performed with different methods and therefore it is difficult to make general conclusions. More research is needed to clarify all aspects of the issue, a comment which is also made by the scholars.

Nevertheless, research is pointing at the availability of intellectual property as important for companies' investment decisions, although it depends on which industry it concerns. Especially research-intensive industries such as chemical and pharmaceutical companies whose products are sensitive towards imitation, consider intellectual property protection as important.

As Carlos Correa pointed out in a law and economics conference in 2003, it is understandable that companies could be reluctant to transfer technology to countries where the protection for their technological information does not exist or is scarce.¹²⁶ Companies develop technology which they naturally want to protect so that their research work is rewarded. The reward is also important for the financing of future R&D.

Enhanced intellectual property rights may increase FDI and licensing, but could also imply other benefits for developing countries. Stronger intellectual property rights in developing countries could promote the development of indigenous inventions. Developed countries may also become more willing to perform research on pharmaceutical products, which remedy common diseases in developing countries, if these countries have an effective intellectual property rights system. These benefits may lead to increased flows of technology from developed to developing countries.¹²⁷

¹²³ Smith, P.J, "How do foreign patent rights affect U.S exports, affiliate sales and licenses". Journal of International Economics, vol. 55, issue 2, December 2001, p. 411-439.

¹²⁴ Maskus , Keith E and Penubarti, Mohan, "How Trade-Related are Intellectual Property Rights?", Journal of International Economics, vol. 39, issues 3-4, November 1995, p. 227-248.

¹²⁵ McCalman, Philip, "Reaping what you sow: an empirical analysis of international patent harmonization". Journal of International Economics, Volume 55, Issue 1, October 2001.

¹²⁶ Correa, 2003, manuscript.

¹²⁷ Matthews, 2002, p. 110.

5.4 Intellectual property rights hinder technology transfer

That intellectual property rights are of major importance for companies' investment decisions abroad is not agreed upon by scholars. There are studies performed which show that intellectual property rights protection is of less importance.

To begin with, Nogués (1993) noted "*the decision to licence and transfer technology depends much more on the legal strength of the licensing agreement and the adaptable capacity of the buyer to absorb technology*". He found that, because of lack of evidence, it could not be asserted that companies would be more willing to transfer their newest technological information if intellectual property rights were available. Nogués asserts that intellectual property rights are important for companies' investment decisions when it concerns R&D, but less important for investment decisions in products since these decisions depend more on the country's investment climate.¹²⁸

Primo Braga and Fink (2000) found in their study that the impact of intellectual property rights on trade flows of high technology was not of significant importance. They pointed out that stronger intellectual property rights could have a positive effect on imports since the risk of piracy would be reduced. Nevertheless, companies may also decrease its exports if the intellectual property rights system is enhanced as they get more market power where copying and imitation is limited.¹²⁹

Glass and Saggi (2002) found that stronger intellectual property rights in the south reduce the risk of imitation but not more than imitation performed by firms in the north. They pointed out that stronger intellectual property rights make imitation more costly since it demands more labour. This leads to a waste of resources which in their turn diminishes FDI and innovation.¹³⁰

Correa consider that the mere existence of intellectual property rights *per se* does not constitute a sufficient incentive for technology transfer to developing countries. Stronger intellectual property rights enhance TNCs control over technology and the right to refuse access since most technology is in their hands. Stronger protection further allows these companies to impose conditions and charge higher prices for their products.¹³¹

¹²⁸ Nogués, 1993, "*Social costs and benefits of introducing patent protection for pharmaceutical drugs in developing countries*", The Developing Economies, vol. 31, no. 1, March 1993, p. 42.

¹²⁹ Primo Braga and Fink, 2000 "*How stronger protection of intellectual property rights affect international trade flows*", p. 3.

¹³⁰ Glass and Saggi, 2002, "*Intellectual property rights and foreign direct investment*", Journal of International Economics, vol. 56, issue 2, March 2002, p. 381-410.

¹³¹ Correa, 2003, manuscript.

Enhanced intellectual property rights, as conferred by the TRIPS Agreement, are likely to increase the developing countries expenses. This could be the effect since companies in developed countries own most patents and the developing countries accordingly have to pay high prices to get access to the technology. The developing countries dependence on the developed countries will thus increase and, if they cannot afford the prices for the patents, the access to information will be diminished.¹³²

Developing countries which have developed a significant technological capability, such as Brazil, Korea and China, used weak intellectual property rights protection at the beginning of their development process, just as the developed countries did during their industrialization process. Since these countries had limited economic assets to buy technologies, they used weak intellectual property rights protection in order to get access to technological information. It could thus be asserted that weak intellectual property rights protection is more linked to increased development for countries with a weak technological base than strong intellectual property rights. If countries enhance their intellectual property rights system companies would get a more effective remedy to combat imitation, and developing countries would accordingly be more reluctant to use this form of technology transfer. In the CIPR final report it is asserted that country experiences points at intellectual property rights are important for countries capability to attract technology, but only when they have reached a certain level of development. Least-developed countries thus will not benefit as much from increased intellectual property rights as developing countries which have obtained a level of technological capacity.¹³³

Kim (2002) has made a similar conclusion. This study concludes that intellectual property rights restrain technology transfer in the beginning of the industrialization process during which a country uses reverse engineering and imitation. Kim found that intellectual property rights were not important for technology transfer until the country had managed to develop a scientific and technological infrastructure. Countries such as Japan, Korea and the U.S would not have been able to reach their present technological level if they had used strong intellectual property rights at the beginning of their industrial development.¹³⁴

Stronger intellectual property rights can further reduce developing countries local R&D. Effective intellectual property rights laws attracts companies from abroad but if the majority of patents granted in the country is mainly owned by foreign companies it could diminish innovation, since the foreign companies increases their bargaining power.¹³⁵

¹³² Matthews, 2002, p. 113.

¹³³ CIPR final report, p. 21-22, 26.

¹³⁴ Kim, "*Technology transfer and intellectual property rights: lessons from Korea's experience*", 2002, p. 5.

¹³⁵ Khor., 2002, p. 90.

The conclusion that can be drawn from this discussion is that empirical evidence on the effects of intellectual property rights on technology transfer is miscellaneous. Scholars are of divergent opinion whether intellectual property rights really can increase technology transfer and FDI. Many of them also point out that this area is complex and further research is needed to increase the understanding of this issue.

Intellectual property rights seem to have an effect on technology transfer but the effect is ambiguous. Additionally, intellectual property rights are just one factor that affects technology transfer. The situation in the recipient country must also be considered together with other factors such as the type of technology transferred.

Today it is generally recognised that the development of national scientific and technological capacity is crucial for the developing countries ability to absorb technology. The development of this capacity depends on many factors such as availability of economical resources, a well-developed education system and a system of supporting institutions.¹³⁶

A way to measure a country's technological capacity is to look at the number of patent applications filed under the Patent Cooperation Treaty (PCT).¹³⁷ Patent applications under the PCT from developing countries increased from 680 in 1997 to 5.359 in 2002, which is a growth of almost 700 %. In 2003 patent applications from developing countries had risen by 11%, and the countries that had most applications were Korea, China, India, South Africa, Singapore, Brazil, and Mexico in order of descendance¹³⁸. When considering these figures, it should be noted that patents are mainly held by the developed countries and a few developing countries, the latter mentioned above. These developing countries also have developed a considerable technological capacity and have therefore the opportunity to perform R&D.¹³⁹ R&D is concentrated in OECD countries; there are 10 OECD countries that account for 84 percent of the global R&D and for 94 percent of the patents granted in the US.¹⁴⁰ These figures shows that developing countries evidently still are dependent on technology from the developed countries.

¹³⁶ CIPR Final Report, p. 20.

¹³⁷ Ibid, p.12.

¹³⁸ WIPO press release, WIPO/PR/2003/338, Geneva, February 18, 2003.

http://www.wipo.int/edocs/prdocs/en/2003/wipo_pr_2003_338.html

WIPO press release, WIPO/PR/2004/375, Geneva, February 23, 2004

http://www.wipo.int/edocs/prdocs/en/2004/wipo_pr_2004_375.html

¹³⁹ CIPR Final Rreport, p.12.

¹⁴⁰ Roffe, "*IPRs and access to technology – a developing country perspective*". WIPO-WTO Workshop, November 2003.

5.5 The way forward

Technology transfer to developing countries is, after more than thirty years in the international debate, still a pressing issue. The attempts to create a code of conduct for transfer of technology have so far been unsuccessful and provisions in international agreements, which call upon the developed countries to transfer technology to developing countries, have proven to be ineffective.

That access to technology is of major importance for a country's development is generally recognised. It is evident that the enhanced international intellectual property rights system has led to restricted technology access for developing countries. An obvious example is the developing countries difficulties in getting access to ESTs. The question is thus how to increase technology flows from developed to developing and least-developed countries, since technology is mainly owned by companies in the north. What is needed is some sort of tool to make TNC more willing to invest in developing countries.

During the Doha negotiations it was decided that a Working Group on Trade and Transfer of technology should investigate how to enhance technology transfer to developing countries. Several developing countries have, in submissions to the Working Group, expressed the need for a review of the TRIPS Agreements provisions on technology transfer in order to make them more effective.¹⁴¹

The importance of defining the technology transfer components has been noted, for instance by the EC. A submission from the EC in 2002 to the Working Group stressed that the focus should be on the establishment of a mutual definition of technology transfer, to identify the channels for technology transfer and to clarify under what conditions these channels are most effective. The EC held that the understanding of these issues would be the basis for the future work in clarifying how to increase technology transfer to developing countries.¹⁴²

A group of developing countries has tabled a communication on "Possible recommendations on steps that might be taken within the mandate of the WTO to increase flows of technology to developing countries".¹⁴³ The communication recommended, among other things, that the provisions on technology transfer in WTO Agreements should be examined with the aim of making them operational and meaningful. The communication also asserted that MNEs preferred to transfer technology to their subsidiaries and were reluctant to use licensing because they feared that it would create

¹⁴¹ See for instance India, 18 Februari 1999, (WT/GC/W/147) and the African Group, 6 August 1999, (WT/GC/W/302).

¹⁴² WT/WGTTT.

¹⁴³ WT/WGTTT/W/6. Communication submitted by Cuba, India, Indonesia, Jamaica, Kenya, Nigeria, Pakistan, Tanzania, Venezuela and Zimbabwe.

competition for their subsidiaries. Therefore it is important for the Working Group to recommend methods for a more effective use of licensing by MNEs. It was further recommended that the Working Group should investigate developing countries difficulties in meeting obligations stipulated in WTO agreements. The communication highlighted the need of internationally agreed rules which facilitate trade and development, especially recommendation on rules for technology transfer to developing and least-developed countries. These recommendations should aim at increasing global technology flows and there should be special consideration regarding developing countries, for instance the training of their personnel and access to scientific literature and databases. The Working Group should further investigate how to enhance technological base of developing countries. Finally the communication stated that the need for a “*self contained agreement on trade related technology transfer and development*” should be examined.¹⁴⁴ As mentioned in chapter 2, the recommendations from developing countries on how to increase technology transfer were presented during the WTO Ministerial Conference in Cancún 2003.

The Working Groups annual report of 2004 held that the members considered that the Groups discussions concerning trade and technology transfer had not been comprehensive. The member countries pointed out that further work was needed to clarify all issues concerning the subject. It was stressed that since technology transfer was a complicated area it was necessary to clearly define its components and channels. The members agreed that all factors of technology transfer, for instance the role of the government and of the companies and the technology transfer channels should be taken into consideration by the Working Group in order to get an overall picture. The members agreed to continue the work on the examination of trade and technology transfer, and on recommendations that could be taken within WTO to increase technology flows to developing countries.¹⁴⁵

The TRIPS Agreement, because of its wide coverage, is the most important international instrument on technology transfer, but has proven to convey a negative effect on technology transfer to developing countries. The obscurity of the provisions on technology transfer and the lack of effective use of the technology transfer provisions by the developed countries are the decisive matter.

A review of the TRIPS Agreement with the aim to make the provisions more effective may lead to increased technology transfer to developing countries. However, to revise the agreement is a lengthy procedure; the latest WTO Ministerial Conference held at Cancún in 2003 ended without consensus.

¹⁴⁴ Ibid.

¹⁴⁵ WT/WGTTT/6.

An important matter mentioned is that the TRIPS Agreement was meant for governments, it is they who should provide incentives to enterprises and institutions. It is also a fact that the governments have limited power to oblige TNCs to transfer technology. Since the provisions in the TRIPS Agreement on technology transfer have not been effectively complied by the developing countries, it is relevant to discuss other solutions.

In this context it should be noted that instruments which are meant to harmonize national laws should be addressed to the governments since only states are recognised as subjects of international law. Companies are not recognised as subjects under international law but are obliged under the host country's laws, which may have been adjusted to comply with international agreements.¹⁴⁶

The two attempts in the 1970s to create a code of conduct for technology transfer to developing countries were never successful, but codes of conduct, which regulate companies' behaviour, have gained expanded interest in recent years. Codes of conduct can be addressed to governments or directly to TNCs, the latter stating voluntary obligations since companies are not regarded as subjects of international law with a capacity to own duties and claims. Accordingly it is difficult to directly place obligations on companies in international legally binding instruments. Codes of conduct can be public but there are also private internal codes developed by the TNCs. The benefits with public codes are that they can become legally binding for states and establish the governments' obligations to regulate the TNCs. The drawbacks are that the negotiators could have difficulties in agreeing on all terms, as was the case with the codes created in the 1970s. Private codes, although fast and cheap to adopt, may not have an effective monitoring system and lack enforcement provisions.¹⁴⁷ Thus, these instruments are difficult to use to make companies comply with what they have set out to do.

TNCs have undoubtedly major power in the international trade, but their actions and investment decisions are difficult to affect, as has also been pointed out by the country members in the TRIPS Council. The commercial technology transfer process is performed between voluntary parties, and international instruments, such as the TRIPS Agreement, cannot decide where companies shall invest. However, these instruments can establish rules, which facilitate the technology, transfer process and remove obstacles.¹⁴⁸ It is thus important to make sure that the provisions in international instruments that promote technology transfer to developing countries are functional and complied to by the developed countries.

The enhanced global harmonization, with international agreements such as the TRIPS Agreement, makes it impossible not to consider the situation in other countries. The increasing international trade and cooperation between

¹⁴⁶ Day Wallace, p. 1098.

¹⁴⁷ Wawryk, p. 54-55.

¹⁴⁸ Roffe, "IPRs and access to technology – a developing country perspective". WIPO-WTO Workshop, November 2003.

countries creates an environment where it is necessary to pay attention to all parties involved. Both parties will benefit from considering each other's needs, since they all are parties to the same agreements and participants in the international trade. It is accordingly necessary to strike a balance between the demands of the developing countries and the developed countries.

That some industries are attentive to the effectiveness of countries intellectual property laws when they consider investing cannot be disregarded from. It is also a fact that developing countries will continue to be importers of technology from the developed countries, where the major part of technology is owned. Technology transfer is accordingly still crucial for their development.¹⁴⁹

The effect of intellectual property rights on technology transfer depends to some extent on how these rights are applied to by the technology owners. If companies consider the situation of the developing countries, they could use less strict intellectual property rights were it is most urgent, as for instance are the case with transfer of ESTs.

The importance to consider the needs of the developing countries was reaffirmed in year 2000 when the UN Millennium Development Goals was established. It contains eight goals which all UN member countries shall have pledged to by the year 2015. Goal 8 is meant to be achieved by the developed countries and calls upon them to develop a global partnership for development. This includes, among other things, to make the benefits of new technology available, particularly information and communication technology, in cooperation with the private sector. It is also stipulated that countries shall cooperate with the pharmaceutical companies to provide access to affordable essential drugs in developing countries.¹⁵⁰ This goal confirms that cooperation between the private sector and the governments is necessary for the development of poor countries and that access to new technology is a part of this process.

¹⁴⁹ UNCTAD Policy Discussion Paper, p. 13.

¹⁵⁰ <http://www.un.org/millenniumgoals>

6 Conclusion

There is no conclusive evidence that stronger intellectual property rights altogether are an obstacle or a condition for technology transfer. Many studies have been performed on this issue, but scholars have reached divergent conclusions. Reasons for this dissonance are that different research methods have been used and that the focus has been on different aspects of technology transfer. It is obvious that this matter is complex and involves many components which need to be considered.

Nevertheless, it can be asserted that weak intellectual property rights are more connected with development for countries with a weak technological base and limited economical resources than strong intellectual property rights protection. It is a common feature of developing countries to use weak intellectual property right to get hold of modern technology, since they lack economical assets to buy expensive technologies. During the beginning of the industrialization, when a country uses channels such as imitation and reverse engineering, stronger intellectual property rights thus reduce technology transfer. Stronger intellectual property rights become an important factor for technology transfer first after the country has developed a technological capacity.

As showed in this thesis, there are both benefits and drawbacks with stronger intellectual property rights for the developing countries. Undoubtedly, stronger intellectual property rights enhance companies control because they can more effectively punish infringement and refuse access to their technologies. Companies can also impose higher prices and conditions since they have fewer competitors where the practice of imitation is restricted. The results of these actions are that technology transfer channels will be restricted, especially channels which are used by the developing countries. On the other hand, strengthened intellectual property rights can have a positive effect on companies will to invest in developing countries.

Ultimately, it is the companies who decide where to invest. However, an effective intellectual property rights system is only one factor which influences companies' decisions. Other factors are also important, for instance the infrastructure and the domestic market of the recipient country. To increase the will of companies to invest, the developing countries can therefore consider these factors and commit on the development of an indigenous technological capacity. A developed technological capacity also increases the ability to absorb and adapt technology, factors which has proven to be of decisive significance for countries development.

Still, technology transfer from other countries is important for developing countries and therefore it is necessary with a functional international instrument which results in increased technology transfer to these countries.

The TRIPS Agreement can not be regarded as a sufficient tool for technology transfer to developing countries. The obscurities of the text of the Agreement could lead to that technology transfer channels such as compulsory licensing could be diminished. Additionally, the developed countries have not effectively used the provisions in the agreement for the purpose of promoting technology transfer. Because of the Agreements wide coverage it is necessary to improve the technology transfer provisions and make them more effective, although this procedure will take time.

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