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Article — Digitized Version

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Intereconomics

Suggested Citation: Zeeb, Matthias (1996) : Intellectual property protection and the globalization of the world economy, Intereconomics, ISSN 0020-5346, Nomos Verlagsgesellschaft, Baden-Baden, Vol. 31, Iss. 1, pp. 21-26,
<https://doi.org/10.1007/BF02930250>

This Version is available at:

<https://hdl.handle.net/10419/140528>

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Matthias Zeeb*

Intellectual Property Protection and the Globalization of the World Economy

The quest for technological leadership has caused the widespread use of intellectual property protection (IPP) as an instrument of national technology policies. Even the Agreement on Trade-Related Intellectual Property Rights (TRIPs) can be interpreted as an attempt to hinder the international diffusion of know-how from industrialized countries to technological followers. However, considering the globalization of the world economy, its effects might well be different from those expected.

For more than a century now, in most industrialized countries patent systems have been an instrument for fostering technological innovation. The prospect of supernormal profits in a temporary monopoly protected against illicit imitation is meant to encourage companies and inventors to increase investment in the research and development of new products and processing methods. The stimulating effect of technological progress on overall economic development and welfare will eventually outweigh – such is the rationale – the static loss caused by reduced competition during the patent term and the retarded diffusion of more efficient technologies.

In a globalizing world economy with the growth of world trade easily outpacing world output, the stimulation of technology-creating efforts has gained renewed importance due to its key role in international competitiveness.

Since the share of high-technology goods in international trade is rising and the newly industrialising countries are increasingly capable of producing in traditional and even in new sectors of industry, the domination of leading-edge technologies and a continued flow of innovation have emerged as main concerns of economic policies in the industrialized world. Technological know-how has come to be considered something like a national asset in worldwide competition with other countries.

Consequently, national technology policies were designed that were meant to allow domestic companies to build up dominant positions in world markets for high technology goods. In high-tech industries with enormous fixed costs for R&D as well as production, like aircraft or computer chips, such market domination is considered to be the only way for companies to reap innovation rents, earn back what has been invested and survive. State subsidies for R&D, often classified as “counter subsidies” against other countries’ funding programmes, were deemed to be the appropriate support for national champions in new technologies.¹ Yet, policy-makers also came up with more subtle forms of sustaining domestic industries, and here, as one element of a policy mix, intellectual property protection (IPP) policies had and have their function.

National Technology Policies

Typical examples can be found in the characteristics of government funded research consortia. The European JESSI or ESPRIT programmes, Sematech in the United States or the VLSI project in Japan were closed to foreign companies and even to their local subsidiaries. For the participating domestic firms, however, any patentable research results were accessible on preferential terms.² While in recent years these exclusive practices have been weakened, the original

* Eberhard-Karls University, Tübingen, Germany. Encouragement to work on the subject from Georg Koopmann, HWWA-Institute, Hamburg, is gratefully acknowledged.

¹ Cf. Henning Klodt: Wettlauf um die Zukunft: Technologiepolitik im internationalen Vergleich, Tübingen 1987, pp. 3-16.

intention remains intact. The cross-border movement of information is to be hampered, while the internal diffusion of technical advancements is stimulated in line with strategic considerations regarding national (or European) technology development.

Section 337 of the US Tariff Act of 1930 is another case in point. It has provided American companies with a notably effective means of shielding their home markets against imports accused of infringing intellectual property rights. Bypassing the lengthy way through the courts, an appeal to the International Trade Commission (ITC) can quickly lead to an import ban. Next to the official reasoning – more domestic R&D through improved protection against imitation – Section 337 may offer another even more important advantage to US companies. A close analysis³ of the more than 300 cases between 1974 and 1990 shows that when firms of other technologically advanced countries, and in industries like machinery or scientific instruments, are involved, there is an increased likelihood of extrajudicial agreement even before the ITC proceedings come to an end. Such an outcome is probable when Section 337 is used “as a means of harassment”⁴ rather than to defend a patent. It can therefore be assumed that in oligopolistic world high-technology markets, Section 337 supplies US firms with an additional instrument in bilateral strategic bargaining games in which the division of innovation rents is being determined.

As the main producer of computer chips in the late 70s and early 80s, the United States chose a very specific approach to defend its companies' leadership in that core technology. The 1984 Semiconductor Chip Protection Act was conceived to push the technological followers towards similar legislation. By means of a reciprocity clause that granted protection to foreign chip producers only if their home country provided for corresponding protection for US firms, the other industrial nations were indeed

stimulated to follow suit. However, this legal success could not hinder US companies losing market shares in the following years in various sectors of semiconductor production.⁵

For the industrial nations it can thus be said that IPP has in general been accepted as an appropriate means of fostering innovation and technical progress. At times it is even fine-tuned to further objectives in line with national technology policies.

The developing countries as net importers of technical know-how have traditionally taken a completely different attitude towards IPP. In view of their backlog in all sectors of industry, stringent patent protection was considered to be detrimental to their development needs. Patents and license agreements were thought to allow monopolistic pricing by Northern companies that would cause the transfer of scarce resources. In order to facilitate the transfer and diffusion of technology, patent laws – if at all existent and enforced – included short terms of protection, the obligation to work a patent not through imports but through production, the exclusion of pharmaceuticals from patentability, and the possibility of compulsory licensing to domestic firms.

Assessment of these weak IPP policies' actual impact on developing countries' technological advancement is difficult. The special status of pharmaceuticals may have helped to reduce health care costs and allowed countries like Argentina or India to build up generic drugs-producing capacities, but own research efforts remained the exception. Compulsory licensing, on the other hand, has hardly been used. Since these rights are seldom exclusive and do not include transfer of know-how from the patent holder, their technical and economic value is limited.⁶

Increasing Trade Conflicts

Nevertheless, the broadening technological base especially of some NICs and their governments' permissive attitude towards intellectual property infringement were the root causes of an increasing number of trade conflicts during the 1980s. Korea, Taiwan, Brazil and Thailand, to name but a few, were

² Cf. David B. Audretsch: Intellectual Property Rights: New Research Directions, in: H. Albach, S. Rosenkranz, (eds.): Intellectual Property Rights and Global Competition: Towards a New Synthesis, Berlin 1995, pp. 35-76, here pp. 60-61; Sylvia Ostry, Richard R. Nelson: Techno-Nationalism and Techno-Globalism: Conflict and Cooperation, Washington, D.C. 1995, p.53; Margaret Sharp: The single market and European technology policies, in: C. Freeman, M. Sharp, W. Walter (eds.): Technology and the Future of Europe: Global Competition and the Environment in the 1990s, London, New York 1991, pp. 59-76, here p. 65.

³ Cf. John Mutti: Intellectual Property Protection in the United States under Section 337, in: The World Economy, Vol. 16, No. 3, May 1993, pp. 339-357, in particular pp. 348 and 355. In 1989 a GATT panel found Section 337 to contravene Art. III of the General Agreement and in Congress legislation has recently been proposed to bring Section 337 into line with the principle of national treatment.

⁴ *Ibid.*, p. 348.

⁵ Cf. David B. Audretsch, *op. cit.*, p. 47; Jeroen van Wijk, Gerd Junne: Intellectual Property Protection of Advanced Technology, Changes in the Global Technology System: Implications and Options for Developing Countries, UNU/INTECH Working Paper No. 10, Maastricht 1992, pp. 13-14.

⁶ Jeroen van Wijk, Gerd Junne, *op. cit.*, p. 26.

accused of turning a blind eye to the widespread piracy of trademark protected consumer goods, illegal copying of computer software and imitation of patented technology. The United States' bilateral response with threats and trade measures under Section 301 of the Trade and Tariff Act is well-known. It paved the way for the entry of intellectual property rights into the arena of multilateral trade negotiations. Under the umbrella of the Uruguay Round of the GATT, negotiations on trade-related aspects of intellectual property rights (TRIPs) were taken up. While in the beginning the positions of the industrialized and the developing countries were indeed worlds apart, the eventual result came very close to what representatives of Northern corporate associations had demanded all along.

Benefits of IPP

The TRIPs-Agreement goes far beyond the existing treaties on intellectual property in that it proscribes minimum standards and obliges member states to provide for enforcement measures. In addition, the linkage to WTO-membership favours an early worldwide implementation and opens the WTO dispute settlement procedures to intellectual property issues.

Little wonder therefore, that TRIPs have been hailed as an "adjustment mechanism in North-South trade".⁷ Improved international IPP is interpreted as an element of an international competition policy relieving industrial nations from some of the pressure put on them by the NICs' catching-up strategy based on imitation. Restoration of a sufficiently long imitation-lag would allow innovative companies in the North to secure their R&D-stimulating pioneer profits without having to turn to subsidies from national technology policies. Nevertheless, the developing countries are said to also benefit from stronger IPP for three reasons:

- "No imitation without innovation!"⁸
- continued free-riding "will not be tolerated indefinitely by industrial countries" anyway⁹
- a reliable set of competition rules "will remove uncertainty about the extent of IPR [intellectual property rights] protection" and "make technological developments more transparent".¹⁰

Yet, taking a closer look at the links between IPP and global competition, the picture proves to be more complex.

For the LLDCs, lacking IPP is definitely not the

most pressing obstacle to development. Where the basic conditions of decent human living are missing, implementation of a patent law can neither be "efficient" nor a political priority. Any projected implementation cost will surpass possible benefits for many years to come. The TRIPs-Agreement explicitly recognizes these countries' "special needs and requirements, their economic, financial and administrative constraints, and their need for flexibility to create a viable technological base"¹¹ by granting a transitional period of 10 years which in effect can be extended indefinitely.

Much less clear are the effects of changes in IPP for the large majority of the LDCs.¹² While implementation costs may be contained by the gradual introduction of IPP, and the increase in royalty payments tends to be overestimated, little can be said about the welfare losses caused by the termination of product piracy and by the possibility of anticompetitive behaviour, which both depend on demand elasticities. Finally, provided that domestic innovators respond to higher protection, additional R&D activities may cause opportunity costs especially through the redeployment of qualified human capital.

On the side of potential benefits derived from stronger IPP, the stimulation of inventive activity at home as well as abroad is dependent on market size and consumer preferences, but quantitative empirical evidence on this relationship is missing. Thus, the main influencing factors have been established, yet their overall impact on a developing economy could only be determined on a country by country basis.

International Acceptability

The situation of the NICs has its specific features. On the one hand many of their industries are sufficiently advanced to innovate even in leading technologies. Consequently, the loss of inventive activity through insufficient incentives may be rather large. On the other hand, these countries' rapid

⁷ Gerhard Fisch, Bernhard Speyer: TRIPs as an Adjustment Mechanism in North-South Trade, in: *INTERECONOMICS*, Vol. 30 (1995), No. 2, pp. 65-69, here p. 65.

⁸ *Ibid.*, p.68.

⁹ *Ibid.*, p.69.

¹⁰ *Ibid.*, p.69.

¹¹ TRIPs-Agreement, Art. 66(1).

¹² Cf. the instructive overview article by Carlos Alberto Primo Braga: The developing country case for and against intellectual property protection, in: W. E. Siebeck, (ed.): *Strengthening Protection of Intellectual Property in Developing Countries. A Survey of the Literature*, World Bank Discussion Paper No. 112, Washington, D.C., 1990, pp. 69-87.

economic development also makes them major consumers of foreign technology, which is often spread through copying or imitation. The cost of diffusion of new technologies which would have to be licensed or imported from a foreign patent holder might therefore rise considerably under a more stringent intellectual property regime.

It was the scope of these copying activities, the growing importance of the NICs' domestic markets for companies in industrial countries, and their export success in technologically ever more advanced goods, that made countries like Korea or Taiwan primary targets of US bilateral actions. This added a new dimension to decision-making on IPP: the need for "international acceptability".¹³

So, ironically, the South-East Asian NICs may have contributed in two ways to agreement between North and South in the course of the TRIPs negotiations: through their tremendous economic achievements and through their eventual responsiveness to demands for increased IPP. Developing countries did indeed turn to the South-East Asian model when it became clear that the purely inward-oriented import

substitution strategy of industrialization had run into problems. Continued macro-economic difficulties and a growing technological backlog were signs of crisis. Many countries embarked on a new course that opened up foreign trade and encouraged foreign direct investment (FDI). Technology policies had to be adapted accordingly.¹⁴ Legislation on technology transfer was reconsidered and liberalized in order to stimulate licensing and other forms of cooperation with foreign companies. Funding for independent national technology producers has been reduced in line with findings that explain international competitiveness with successful diffusion and application rather than production of new technologies. And IPP has been strengthened to provide domestic companies now integrating into the international division of labour with a reliable legal environment that helps them to be recognized as trustworthy partners and protects their own know-how in their commercial and technological contacts with foreign clients or suppliers.

¹³ Carlos Alberto Primo Braga, *op. cit.*, p. 87.

¹⁴ Cf. Jeroen van Wijk, Gerd Junne, *op. cit.*, pp. 46-48.

Bernhard Fischer/Albrecht von Gleich/Wolf Grabendorff (eds.)
**Latin America's Competitive Position
 in the Enlarged European Market**

Fostering the integration of the Latin American economies into the world markets is one of the main principles of the reform policies that have been undertaken by practically all countries of the region. Much emphasis is given to a sustainable improvement of the export capacity and of the competitiveness of Latin American products in traditional and new markets. Europe, in spite of declining trade relations, still ranks first or second among the Latin American trading partners. Against this background the results of integration within the European economic area and their implications for trade with Latin America are discussed. The competitive position of Latin American countries is compared with that of South-East Asian as well as East European countries and reasons are provided for their different performance. The recent economic policy reforms in Latin American countries are assessed with regard to sustained improvement of their export capacity and whether they are sufficient to guarantee a continued inflow of foreign private capital. Finally, strategies are developed which aim at a deepening of trade and investment flows between Europe and Latin America.

1994, 404 p., paperback, 90,- DM, 702,- öS, 90,- sFr, ISBN 3-7890-3418-5
 (Veröffentlichungen des HWWA-Institut für Wirtschaftsforschung – Hamburg)



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Selective Approach

Yet, despite these recent policy shifts there is little reason to believe that developing countries will quickly and wholeheartedly embrace the new norms laid down in the TRIPs-Agreement. With TRIPs being connected to the WTO procedures on dispute settlement, open free-riding also remains a risky option. Thus, a selective approach seems most likely. Countries will tighten their IPP in sectors where they have comparative advantages. India, renowned for its growing software industry and an important producer of audiovisual works, may serve as an example. It was among the first countries to grant copyright protection to computer software, signed the Washington Treaty on the protection of semi-conductors and supported a US proposal on the protection of audiovisual works under the auspices of the World Intellectual Property Organization (WIPO). At the same time conflicts with the United States over insufficient patent protection continued.¹⁵

For areas of lesser importance to national technological development a whole array of measures from administrative hurdles to reluctant enforcement can be imagined to reduce the scope of protection. Even the TRIPs-Agreement itself includes a comfortable loophole when stating that members are under no obligation "to put in place a judicial system for the enforcement of intellectual property rights distinct from that for the enforcement of laws in general".¹⁶ Thus, where the general judicial system is inefficient, the same may be expected for IPP. As long as legislation on intellectual property is only passed in order to fend off foreign pressure, its implementation will be sluggish. However, as will be shown, there is a chance that because of ongoing change in the world economy, in developing countries with a sufficiently broad technological base domestic support for strengthened IPP might grow more rapidly than one might think.

Globalized Production Structures

The 1990s have so far witnessed accelerated structural changes in the world economy. A number of factors contribute to the evolving mode of global production. System transformation in Central and Eastern Europe, the outward-oriented economic reforms in many developing countries, and regional integration in various parts of the world have intensified competition in markets that tend to be ever

more of global reach. Pressure on profit margins forces companies to specialize on their core activities, while components are purchased from specialized suppliers. This growing partition of production processes is accompanied by intensified technological cooperation between firms, and in a very rapidly rising number of cases is organized on a global scale. Multinational enterprises take advantage of liberalized legislation on the movement of capital and on FDI and place their production facilities where cost is low. Not surprisingly, worldwide FDI has recently been growing even faster than trade.

The continuously low cost of transportation and new communication technologies which facilitate the movement of information have been prerequisites for the coordination of globalized production structures. Communication technologies allowing for the unproblematic intercontinental transfer of e.g. engineering results are also about to increase indirectly the mobility of highly qualified human capital. Exploding R&D costs and the availability of well-trained and comparatively cheap scientists and engineers in many countries of the South may also cause migration of R&D and add to the geographic decoupling of R&D and production.

But how are these worldwide changes in the structures of production interrelated with IPP? Having reviewed the existing literature dealing with the effects of IPP on technology transfer and FDI, Primo Braga¹⁷ came to a two-sided conclusion. It seemed plausible, and some research results pointed in this direction, that technology transfer and FDI were positively influenced by an increase in IPP. Yet, the lack of appropriate IPP did not seem to hinder technology transfer or FDI if the overall economic situation of the country in question was positive.

Despite this blurred evidence, Primo Braga stated "that the influence of intellectual property rights protection as a determinant of foreign direct investment is bound to increase as the world economy becomes more knowledge-intensive".¹⁸ And indeed, the distinctive new trends which mark the world economy today lead to the growing importance of IPP. At the same time, the impact of IPP may well differ from what some of the proponents of the TRIPs-Agreement had in mind.

Tightened IPP will reinforce the ongoing formation of cooperations for globalized production. With more

¹⁵ Ibid., p. 42.

¹⁶ TRIPs-Agreement, Art. 41(5).

¹⁷ Cf. Carlos Alberto Primo Braga, op. cit., pp. 82-83.

¹⁸ Ibid., p. 83.

actors involved and operating in different national systems of IPP, minimum standards as proscribed by the TRIPs-Agreement can contribute to mutual trust between commercial partners. The transfer of technology and joint development of know-how in client-supplier relations can take place under calculable legal circumstances. Similar considerations apply to the migration of R&D to developing countries. Stronger IPP makes the outsourcing of R&D an even more attractive option for Northern companies since it reduces the customer's risk of losing know-how.

And finally, the results of an econometric study carried out by Ferrantino¹⁹ suggest that US multinationals export more to their affiliates operating under weak IPP than to subsidiaries producing in countries with stronger IPP systems, "possibly out of a desire to conceal information about the production process by concealing production within the borders of the U.S."²⁰ Thus improved IPP abroad leads to more technology transfer and upgrading of FDI and to reduced production and exports in the United States.

Outlook

To sum up: the TRIPs-Agreement will probably yield results that may not quite have been intended. Its conception as a kind of extended national technology policy that would re-establish a sufficiently long imitation-lag between industrial countries and technological followers is losing weight. In the medium term, TRIPs will indeed reduce the illicit application of know-how through piracy or imitation. Yet, as has been explained above, under the conditions of globalizing production, TRIPs will *expand* the possibilities of intentional cross-border diffusion through technology transfer or FDI. Due to their advantage of low labour costs, developing countries and the countries of Central and Eastern Europe are and will be the main beneficiaries of this process. And the industrialized countries will now also have to face the relocation of knowledge-intensive industries.

IPP continues to have the function of securing private innovation rents. An innovating company even has improved opportunities of securing its pioneer-profits all over the world. In the past, the benefits for the home country could largely be identified with the advantage of the innovating firm. In the future, neither

domestic production nor its economic and political externalities – like balance of payment effects or the creation of employment – will automatically be assured. In such a setting even the conditions of political decision-making towards companies in search of a new location may converge for developing and industrialized countries. This may bring about a reallocation of state subsidies from R&D towards payments for desired location decisions.

What can be learned from all this for national technology policies?

Efforts to hinder cross-border diffusion by means of IPP or by research programmes closed to foreign companies have all failed. They had long been out-flanked by strategic alliances between multinational enterprises which ignored the logic and intentions of state-funded research programmes where they were not in their interest.

Domination of leading technologies can no longer be considered a national asset since it is mostly tied to multinational enterprises which decide on production and application in line with their corporate interests. The industrialized nations should accept the more rapid pace of international diffusion as a fact and draw the necessary conclusions.

Under the circumstances of globalizing production, TRIPs must no longer be interpreted as part of a policy to regulate competition between nations but as a base for a multinationally agreed policy to regulate competition between companies. This "new" role for TRIPs is the original, traditional role of IPP. Logical first steps in line with an internationally coordinated approach on technology and IPP should include:

- the opening of research programmes to foreign companies on a reciprocal basis;²¹
- the reduction of transaction costs²² for companies applying for patent protection through the further harmonization of procedures or even mutual recognition of patents.

While the TRIPs-Agreement represented the first attempt at concerted action in the field of international IPP, its follow-up should lead to a system based on international cooperation, which seems the only appropriate reaction to the globalization of the economy and of technology.

¹⁹ Cf. Michael J. Ferrantino: The Effect of Intellectual Property Rights on International Trade and Investment, in: *Weltwirtschaftliches Archiv*, Vol. 129 (1993), No. 2, pp. 300-331.

²⁰ Michael J. Ferrantino, *op. cit.*, p. 328.

²¹ Cf. Sylvia Ostry, Richard R. Nelson, *op. cit.*, p. 88.

²² *Ibid.*, p. 88-89.