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distortions and the assumed world market price transmission.

□ North-South or East-West integration opens up the prospect of more rapid development for the developing and reforming countries involved.

□ Worldwide growth stimuli can be expected to stem from the GATT agreements in particular, but from regional integration as well, with potential positive effects on the agricultural exports and economic development of countries in the Third World and in Central and Eastern Europe.

□ The implementation of environmental and health standards brings the danger that developing and reforming countries will be increasingly excluded from the markets of industrial countries. More than in the past, these countries may in this way be prevented from exploiting their comparative advantages, with

corresponding adverse consequences for lasting development in these regions.

Current developments in world agricultural markets therefore offer a number of opportunities, but they also hold dangers for Third World countries and the Central and Eastern European economies in transition. The best strategy for these countries is to ensure the optimum use of their domestic resources by reducing the remaining domestic sectoral and macro-economic distortions. In addition, it is important that they speak with one voice in the next GATT round, which will probably be "green"; only in that way can they ensure that agricultural trade is not swamped by a green wave of protectionism, and possibly even more seriously distorted than it is by traditional agricultural protectionism.

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TRIPs as an Adjustment Mechanism in North-South Trade

Developing countries tend to take a negative view of the protection of intellectual property rights as reflected in the TRIPs agreement, as this seems to conflict with their own developmental needs. As the following article points out, there are, however, a number of reasons why developing countries, too, may benefit from stronger protection of intellectual property rights.

During the Uruguay Round negotiations the industrial countries, above all the US, insisted that the final accord should include an agreement on the protection of intellectual property rights (IPR). A strengthening of IPR protection was necessary, it was claimed, because insufficient protection reduces investment in cost-intensive R&D activities, especially basic research. This in turn reduces innovation, which itself is the main source of global development and progress, as recent developments in both trade theory and growth theory have clearly demonstrated.

It is important to understand that the insistence of industrial countries on the inclusion of IPR protection in the Uruguay Round trade negotiations is

fundamentally due to a major shift in the pattern of world trade during recent years and the resulting adjustment challenges. For more than a decade now, world trade has grown faster than world production, which has intensified competition significantly. The adoption of an export-oriented economic policy in a large number of developing countries has given North-South trade a new dynamism based on a different structure of exchange: apart from most of the African countries, LDCs are no longer predominantly exporters of primary products, but of manufactured goods. While North-South trade was of a complementary nature for a long time, these days exports of both North and South largely consist of similar goods. This substitutive trade increases the adjustment pressure for all parties concerned and, especially, threatens large-scale displacements in the industrial countries.

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The production of a large number of industries, especially standardized manufactured goods, where technology is geographically highly mobile, has been shifted from the old industrial countries to developing countries in general and the Asian NICs in particular. This process has resulted – perhaps for the first time in the history of North-South trade – in a trade pattern characterized by the standard textbook exchange of ubiquitous goods leading to massive adjustment problems in the old industrial countries, which, in turn, are the prime reason for the increasing trend of neo-protectionism observed from the 1980s onwards.

Simultaneously, both in reaction to this development and due to technological progress, the importance of knowledge-based, high-technology industries has grown dramatically for the developed countries. "It was estimated that, by 1986, more than 27 percent of U.S. exports contain intellectual property components while the rate was less than 10 percent when the GATT was negotiated."¹ Due to the special characteristics of knowledge – as opposed to capital and labour – as a factor of production, this development has led to new sources in the determination of comparative advantages and has, thus, radically altered the nature of competition.²

It is above all the NICs that have gained in international competitiveness. What is really important in this respect is not the familiar phenomenon that the comparative advantage in producing one good or the other shifts from the old industrial countries to the developing countries in a later stage of the production cycle. Rather, the new and more important development is that by combining their comparative advantages and their capabilities of imitation the NICs enter the markets for *innovative* products faster than ever before. This up-grading of NIC exports based on a strategy of imitation has shortened product cycles immensely.

The interest of industrial countries in the strengthening of IPR protection is therefore clearly evident: if stronger IPR protection improves and facilitates the development and production of knowledge-intensive goods, the industrial countries' comparative advantage in the production of those goods will be maintained.

Firms, workers and policy-makers need to adjust to these changes in the global economy. At the same

time, the global trade system has to be adapted to the challenges of increased globalization, enhanced international competition and the resulting adjustment problems. It is therefore absolutely justified that the creation of an international system regulating global competition features prominently on the agenda of the WTO.

The TRIPs Agreement

The Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods (TRIPs agreement) is based on the existing multilateral conventions on IPR protection, most of which are administered and supervised by the UN World Intellectual Property Organisation (WIPO). The TRIPs agreement integrates the existing systems of IPR protection and complements them in those areas, where – for various reasons – no international consensus existed so far.

As its basis, the TRIPs agreement stipulates that all WTO members adhere to the existing conventions on IPR protection, such as the Berne Convention for the Protection of Literary and Artistic Works, the Paris Convention for the Protection of Industrial Property and the International Convention for the Protection of Performers, Producers of Phonograms, and Broadcasting Organisations.

Considering that IPR protection follows the territorial principle, i.e. the extent of protection is subject to the respective national law, differences in the level and enforcement of protection effectively constitute a non-tariff barrier. Therefore, one of the main elements of the TRIPs agreement is the call for the harmonization of national rules.

The TRIPs agreement requires WTO members to treat nationals of trading partners on the same basis (most-favoured-nation principle) and to provide for national treatment with regard to protection of intellectual property (national treatment). All norms of the agreement are minimum standards.

The agreement covers a wide range of IPR. This includes e.g. the improved protection of copyrights, which is especially important with a view to computer programmes. The provisions on trademarks closely follow the 1988 EC trademark directive including the right to hold and transfer trademarks without actually operating the business concerned.

Most important, however, are the provisions regarding patents, where the industrial countries' conception of patent protection prevailed. This applies to the length, where the agreement requires that 20 years' patent protection be available for all inventions in almost all fields of technology. It also

¹ Thomas Cottier: Intellectual Property in International Trade Law and Policy: The GATT connection, in: *Außenwirtschaft*, Vol. 47, 1992, No. 1, pp. 79-105.

² Cf. J. H. Reichmann: The TRIPs Agreement and the Developing Countries, in: *UNCTAD Bulletin*, No. 23, Nov./Dec. 1993, pp. 8-12.

applies to the criteria of inventions eligible for patent protection (art. 27,1), the exceptions from patent protection (art. 27,2) as well as the rights of the patent holder (art. 28) and the regulations concerning process patents. It must be regarded as one of the great successes of the Uruguay Round trade negotiations that such a high standard of protection could be achieved. This includes, not least, strict limits on compulsory licensing or similar infringements of the exclusive rights of the patent holders (art. 31).

LLDCs have been granted a transition period of eleven years for the full implementation of the agreement, developing countries and transitional economies a period of five years. Recognizing that IPR are only insufficiently institutionalized or even completely unknown in some LDCs, these exceptions were granted to soften the blow of stronger IPR protection. To pharmaceutical and agro-chemical products the transitional period applies only in part.

Moreover, the agreement contains provisions regarding trade secrets, which was especially demanded by the chemical industry. Finally, it has to be pointed out that new, internationally binding rules on the enforcement of IPR protection have been agreed upon. The new provisions cover civil judicial procedures and remedies, including provisional measures, procedures for obtaining the assistance of the customs authorities to prevent the importation of counterfeit and pirated goods, and criminal procedures to be available in cases of piracy on a commercial scale. In regard to provisional and border measures in particular, detailed requirements are laid down to safeguard against abuse.

Dynamic Trade Theory

The importance of TRIPs in the context of North-South trade becomes evident against the background of dynamic trade theory. Drawing on Schumpeter's³ growth theory, this theory explains foreign trade by the existence of dynamic competition. An innovation grants a temporary monopoly to the so-called pioneer entrepreneur, which in due time will be eroded by competitors by means of imitation. Due to the introduction of new products and production processes old markets are destroyed while new markets and competitive positions are created.

Dynamic competition is based on the interaction of advancing and following. A country's comparative advantages are not, as is commonly assumed, exogenously given, but result from a process of searching and learning which itself is determined by

competition incentives and the institutional setting. Consequently, comparative advantages are partly endogenous. In this theory foreign trade is primarily determined by technological progress, which in turn raises the question of the necessary and different conditions for technological progress.

According to the technological gap model⁴ of international trade, it is the different availability of technological knowledge in industrial and developing countries respectively that explains much of North-South trade. Innovating firms (and countries) possess a temporary monopoly, enabling them to avoid pure price competition to a certain extent. The possession of comparative advantage based on technological leadership is, however, limited by imitation. Once the technological edge is lost, the direction and structure of trade is determined by traditional explanations of foreign trade, such as different factor proportions.

In this model, the structure of international trade depends on the imitation-lag. The duration of the imitation-lag is the decisive factor of competition. On the one hand, it decides how long innovators can draw super-normal profits from their innovations and, thus, how big the incentive for innovation is. On the other hand, the imitation-lag decides when the followers start to participate in the benefits stemming from the innovation. It is important to note, that the imitation-lag represents the temporal dimension of the adjustment process and is therefore of particular interest from the point of view of competition. It is equally important to note that the duration of the imitation-lag is not exogenously given, but is itself the result of entrepreneurial activity and economic policy. It is here that the question of TRIPs becomes relevant.

Traditional trade theory assumes perfect markets, a well-functioning price-mechanism and perfect factor mobility. As a consequence, adjustment occurs instantly and without costs. In contrast, models of dynamic competition trade theory admit to the existence of far-reaching adjustment processes, which are neither instantaneous nor costless. From the point of view of competition international trade is a process of constant searching and learning riddled with uncertainty. The specialisation of firms in certain countries not only reflects their own adjustment behaviour, but also corresponds to that of their

³ Cf. Joseph A. Schumpeter: *Capitalism, Socialism, and Democracy*, New York 1942; for an application of Schumpeter's growth theory to international trade relations cf. Detlef Lorenz: *Dynamische Theorie der internationalen Arbeitsteilung*, Berlin 1967.

⁴ Cf. M. V. Posner: *International Trade and Technical Change*, in: *Oxford Economic Papers*, Vol. 13, 1961, pp. 323-341.

trading partners, which again quasi constitutes both the framework and the impulse for their own adjustment.

Two dimensions of adjustment are of particular relevance: adjustment costs and adjustment time. The former include e.g. new investment, retraining, relocation and social costs. As to the necessity of developing new technologies to replace those imitated by the followers, it has to be realized that, "Technical innovations do not fall from heaven. They require efforts and they impose costs."⁵

The adjustment time is relevant in respect of the dynamic game of innovation and imitation. It has to be realized that innovations are usually the result of an extensive research effort and that both innovation and the introduction of new products are preceded by significant time-spans.

Benefits from TRIPs

If technological progress is endogenous and if the distribution of technological knowledge is decisive for the pattern of international trade, the question naturally arises, what motivates firms to devote resources to research efforts, as the answer to this question will determine a country's position in the world economy. It is primarily the prospect of super-normal profits resulting from innovation that pushes firms into research.⁶ The expectation of super-normal or "pioneer" profits is a pre-condition for technological progress. The idea of enforcing the right to intellectual property is built around the assumption that the process of innovation depends on a system of incentives and that therefore the IPRs as a decisive factor of incentive play an important role in the adjustment process.

TRIPs are especially relevant as a large number of developing countries – following the example set by Japan – have made the imitation of industrial countries' advanced technologies a cornerstone of their catching-up strategy. In doing so, these countries benefit in two respects: firstly, technological knowledge is in principle a public good; the imitating country therefore saves the high costs of innovation. Secondly, most of the imitating countries

are especially competitive due to their low wage levels.⁷

TRIPs therefore face the classic dilemma already known from the theory of patent protection: it cannot be denied that competition is the main force behind technological progress. The efficiency of technological development is greatly enhanced by competitive pressures and the constant threat of losing the temporary monopoly. Stronger (international) competition does not, however, necessarily and always translate into technological progress and welfare gains for all. On the contrary, stronger competition may well impede the dynamics of technological progress, if the amount of super-normal ("pioneer") profits accruing to the innovator is insufficient. As has already been pointed out, without sufficient pioneer profits the incentive to innovate will decrease.⁸

From this point of view, TRIPs share certain aspects with contestable market theory, the point being to maintain, on the one hand, the competitive pressures of international trade by keeping market entry barriers low, while preserving, on the other hand, the incentives for innovation by securing super-normal profits to a sufficient extent. TRIPs, in other words, are an element of international competition policy.

Developing countries tend to regard TRIPs primarily as an attempt by the industrial countries to evade stronger competition from imitating LDCs. *Prima facie*, TRIPs seem to conflict with the developmental necessity to open industrial countries' markets for LDC exports. Equally important, developing countries obviously have a strong interest in gaining a share of the high profits accruing in the early phases of the product cycle as soon as possible.

There are a number of reasons, however, why developing countries, too, may benefit from stronger IPR protection. Firstly, the strategy of catching-up by imitation depends on the existence of sufficient incentives for innovation: no imitation without innovation! Secondly, by using the public good

⁵ F. M. Scherer and David Ross: *Industrial Market Structure and Economic Performance*, Boston 1990, p. 165. From the point of view of competition theory the term "capacity to transform" is often mentioned in this context, which itself is the outcome of an endogenous process and is influenced by the interaction of entrepreneurial and political forces. Cf. e.g., Charles Kindleberger: *Foreign Trade and the National Economy*, 1967.

⁶ Cf. Horst Siebert: *A Schumpeterian Model of Growth in the World Economy: Some Notes on a New Paradigm in International Economics*, in: *Weltwirtschaftliches Archiv*, Vol. 127, 1991, p. 803.

⁷ Note, however, that the phenomenon of imitation is not confined to North-South relations. Often it is more attractive and rewarding for a firm in the industrialized countries to occupy the leading position in user-oriented technology rather than being the industry's technological leader.

⁸ The conflict could also be described as follows: Short-term gains in terms of lower adjustment costs due to less competition have to be weighed against higher long-term costs stemming from the unwillingness to adjust, especially in term of lower growth due to a less dynamic economy. A more general treatment of the phenomenon of international competition and adjustment from a dynamic point of view, is given in G. Fisch: *Integration und Kohäsion heterogener Staaten in der EU, außenhandelstheoretische und entwicklungsrelevante Probleme*, Wiesbaden 1994.

"technological knowledge" for their imitation strategy without sharing in the R&D costs needed for the production or, rather, generation of this good, developing countries take a classic free-rider position, which will not be tolerated indefinitely by industrial countries. Thirdly, LDCs will benefit from a clear and stable system of international competition rules. TRIPs will remove uncertainty about the extent of IPR protection; they will also make technological developments more transparent: to protect intellectual property is to make it public! To sum up, a uniform, well institutionalized system of TRIPs is an important step towards a system of transparent and unequivocal rules for international competition, which also supports developing countries in their catching-up process.

Thus, while TRIPs may impose considerable short-term costs for the developing countries as far as trade in knowledge-intensive goods is concerned, seen in the dynamic context of North-South trade the preservation of a rules-based international trading system will yield considerable long-term benefits for both industrial and developing countries. Even from the point of view of development economics the debate should not be about whether to introduce TRIPs at all, but about the "right" specification of TRIPs.

TRIPs and International Competition

As mentioned above, TRIPs should be seen in the context of creating an international competition policy, the necessity of which is evident. Increased competition in both standardized and high-tech goods has altered the world economy to an extent which calls for a completely new set of competition rules. The successful catching-up of developing countries, especially the NICs, based on a strategy of imitation, has affected the industrial countries' capacity and willingness to adjust. As Preusse has pointed out, the acceleration of imitation has not only enhanced adjustment pressures and costs, but also the protectionist instincts of innovating countries.⁹ The crucial point for industrial countries is, as Krugman¹⁰ has forcefully demonstrated years ago, that given the possibility of imitation and, thus, a shift of production from North to South, constant innovation in the North is necessary not just to grow, but to maintain real incomes in the North.

⁹ Cf. Heinz-Gert Preusse: *Handelsspeissismus alt und neu*, 1991, p. 206.

¹⁰ Cf. Paul Krugman: *A Model of Innovation, Technology Transfer, and the World Distribution of Income*, in: *JPE*, Vol. 87, 1979, No. 2, pp. 253-266.

To maintain their technological leadership, innovating countries do not only resort to protectionism. Without pushing the idea of an "acceleration trap" too far, it is certainly evident that increased international competition compels firms to ever greater R&D efforts. Trying to alleviate the pressure, firms tend to try to "nationalize" those costs shifting the burden to the general public: national industrial policies targeted at high-tech industries become increasingly important. The growing budgets of national industrial policies witness to the attempt to lessen the pressure on firms suffering from the shortening of the imitation-lag. Whether this strategy lessens the costs to society, too, is however at least debatable.

The rat race to increase national competitiveness clearly demonstrates that stronger international competition is not exclusively advantageous. Stronger technological competition certainly results in higher R&D efficiency and a greater effort to improve locational advantages in general. It also leads, however, to more frequent recourse to mercantilist instruments. It is here, in the field of competition policy, that TRIPs have a role to play: TRIPs are not about protectionism versus free trade, but about how to manage the intensity of world-wide competition.

TRIPs are obviously not a first-best text-book solution for international trade, as they hinder international competition and the up-grading of developing countries. However, understood not as a protectionist device of industrial countries, but rather as a calculable, fixed-term adjustment mechanism, they are certainly superior to a technological competition fought with mercantilist weapons. Strengthening international IPR protection raises incentives for R&D and secures pioneer profits for innovators. This strategy is more rewarding and less costly than trying to push ahead by means of national industrial policies. By guaranteeing a world-wide reward for technological advance, TRIPs contribute to keeping Schumpeter's dynamics of advancing and following alive in the world economy.

However, industrial countries would be well advised not to feel complacent for having carried the day in the Uruguay Round. If the temporary protection provided by TRIPs is not used efficiently, it will have been a Pyrrhic victory: without the willingness and flexibility of firms in the industrial countries to constantly improve upon their innovative and productive capabilities, the TRIPs agreement merely affords them an opportunity to rest on their already withering laurels for a few more years.