

International Property Rights and International Trade: Consequences for Developing Countries*

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ANNOTATION. The purpose of this article is to reveal the impact of the protection of intellectual property rights (IPR) on the technological growth of developing countries within the context of their integration into the multilateral trade system. The author generalizes the theoretical studies in IPR protection for open and closed economies, traces the consequences of enforcing IPR protection on the economic growth and diffusion of technologies in the world, analyzes the multilateral regulations of the WTO in trade-related aspects of intellectual property rights, and assesses the impact of the introduction of this system on developing countries. The article explores the prospects for developing the multilateral system of IPR protection to ensure a balance between countries with different levels of development, and outlines the internal policy instruments of IPR that would comply with the interests of technological growth in the developing countries. These findings would benefit the formulation of a balanced policy of IPR protection related to Ukraine's trade and other policies to invigorate technological development within the context of its integration into the world trade system.

KEY WORDS. Intellectual property, international trade, developing countries, intellectual property rights, open trade, technology transfer, trade-related aspects of intellectual property rights, World Trade Organization, R&D.

Introduction

An important feature in the modern development of the world economy is the growth in the international trade in goods and services with innovation components and which are protected by intellectual property rights. As K.Maskus points out, the importance of IPR in international economic relations is growing more and more¹. The underlying reason is that the output of goods and services under a fiercely intensifying competition requires substantial investment in research. Therefore the products of research must be protected against copying or imitation to recover costs and gain profit. The system of IPR protection can stimulate innovative activities domestically and technology transfer internationally. At the same time the enforcement of IPR protection in a market of innovative products that is being monopolized can

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Moschini G., «Intellectual Property Rights and the World Trade Organization: Retrospect and Prospects», Working Paper no. 334, Iowa State University (May 2003), p. 2.

have a number of negative consequences for the technological development of those countries using these products, namely, developing countries.²

As transborder trade in goods and services expands, the existing systems of national IPR protection are not sufficient. In this connection, within the framework of the World Trade Organization (WTO) there are multilateral rules on trade-related aspects of intellectual property rights (TRIPS) that have to promote international trade, effectively protect intellectual property rights, and guarantee that IPR enforcement would not become a barrier to legitimate trade³. The consequences of TRIPS for developing countries remain a persistent issue of discussion in economic literature. There is growing criticism and concern that TRIPS was negotiated under the pressure of economically powerful trading partners and the harmonization of IPR protection serves the interests of developed countries, more often than not at the expense of developing countries⁴.

Considering the importance of invigorating Ukraine's technological development and integration into the WTO system, the purpose of this article is to generalize the theoretical studies in IPR protection for open and closed economies, trace the consequences of enforcing IPR protection on the economic growth and diffusion of technologies in the world, and assess the impact of the introduction of this system on developing countries. The objective is to explore the prospects of development of the multilateral system of IPR protection to ensure the balance between countries with a different level of development, and outline the instruments of internal policy of IPR that would accord with the interests of technological growth in the developing countries. These findings could be used for formulating a balanced policy of IPR protection related to trade and other types of Ukraine's policies to invigorate technological development within the context of our country's integration into the world trade system.

Substantiating the Consequences of IPR Protection in Open and Closed Economies

A key economic feature of the products of research is their high economic value. Their development requires substantial costs, and they can be easily copied and replicated. The theoretical developments in the area of intellectual property prove the importance of IPR protection, since a country thereby has a greater incentive to pursue innovative activities and derive benefits from the

² Falvey R., N. Foster and O. Memedovic, «The Role of Intellectual Property Rights in Technology Transfer and Economic Growth: Theory and Evidence», Working Paper, UNIDO (Vienna: 2006), pp. 2, 9, 27.

³ *Uhoda pro torhovelni aspekty prav intelektualnoi vlasnosti./Resultaty uruhvaiskoho raundu perehovoriv. Teksty ofitsiynykh dokumentiv* [Agreement on Trade-Related Aspects of Intellectual Property Rights. Results of the Uruguay Round of Multilateral Trade Negotiations: Texts of Official Documents. Kyiv. Vymir Publishers. Secretariat of the Interagency Commission on Ukraine's Accession to WTO, 1998, p.337]

⁴ Grossman G. M. and E. L. C. Lai, «International Protection of Intellectual Property», *The American Economic Review* 94:5 (2004), pp. 1652—1653; Nanda N., «WTO and Development: It's All About a Mercantilist Game», 2004, pp. 4-5. — <http://www.gdnet.org>.

production of better products of higher quality. IPR protection is an important instrument for the development of new technologies, because it enables an inventor to compensate his/her research expenses and derive monopolistic profit from the technologies throughout a certain period of time⁵. In particular, S. Kanwar and R. Evenson proved that stringent IPR protection has a positive and considerable impact on the share of investments in research in GDP. At the same time D. Coe and E. Helpman showed that the expenditures on R&D positively impact on the TFP⁷ and production⁸. As G. Grossman and E. Helpman⁹ pointed out, openness of trade ensures access to imported inventions embodied in new technologies, expands the market for domestic manufacturers, which increases returns from innovations and strengthens a country's specialization in science-intensive production. They also argue that intervention in trade could support long-term economic growth, if protectionist policies encourage investment in science-intensive sectors¹⁰. D. Coe, E. Helpman and T. Bayoumi prove empirically that a country can raise its TFP through imports from a country with a great «knowledge reserve» owing to the cumulative R&D¹¹. M. Connolly revealed a positive link to GDP between high-tech imports from developed countries, domestic innovations and technology imitation. H. Yannikkaya confirms that countries trading with innovative countries will probably develop much faster¹³. K. Maskus and M. Penubarti point out that more stringent IPR protection promotes imports from the OECD countries, and the impact is stronger in countries with a larger market¹⁴. S. Fink and S. Primo Braga argue that more stringent IPR protection promotes general trade, but negligibly impacts on trade in high-tech products¹⁵. Applying the IPR index designed by Rapp and Rozek¹⁶, D. Gould and W. Gruben proved that IPR protection has a positive impact on GDP growth, and this impact is somewhat greater in countries with more open trade¹⁷.

⁵ Falvey et al, (For overview of literature on the effects of IPR and stimulation of innovation see «The Role of Intellectual Property Rights in Technology Transfer and Economic Growth», pp. 17—22; Moschini, »Intellectual Property Rights and the World Trade Organization,» pp. 14-25.

⁷ Total Factor Productivity (TFP).

⁸ Coe D. T. and E. Helpman, «International R&D Spillovers», *European Economic Review*, 39 (1995): pp. 859—887.

⁹ Harrison A., «Openness and Growth: A Time-Series, Cross-Country Analysis for Developing Countries», *Journal of Development Economics* 48 (1996), p. 419.

¹⁰ Harrison, «Openness and Growth», p. 420.

¹¹ Coe D. T., E. Helpman and T. Bayoumi, «R&D Spillovers and Global Growth», *Journal of International Economics* 47:2 (1999): pp. 399—428.

¹³ Yannikkaya H., «Trade Openness and Economic Growth: a Cross-Country Empirical Investigation», *Journal of Development Economics* 72 (2003), pp. 61—62.

¹⁴ Maskus K.E. and M. Penubarti, «How Trade-Related Are Intellectual Property Rights?», *Journal of International Economics* 39 (1995): pp. 227—248.

¹⁵ Falvey et al, «The Role of Intellectual Property Rights in Technology Transfer and Economic Growth», p. 78.

¹⁶ Rapp R. T. and R. P. Rozek, «Benefits and Costs of Intellectual Property Protection in Developing Countries», *Journal of World Trade* 24 (1990): pp. 75—102.

¹⁷ Gould D. M. and W. C. Gruben, «The Role of Intellectual Property Rights in Economic Growth», *Journal of Development Economics* 48 (1996): pp. 323—350.

Generally, IPR infringement may result in a number of deforming economic effects, such as:

- reduced incentives to develop new technologies, introduction of innovations in manufacturing, development of new goods and services or their increased range;
- distorted competition, since innovators, having incurred large expenses for R&D, are unable to compete with manufacturers of counterfeit products who have not expended any resources but derive material or other gain;
- reduced incentives to improve quality of products, since there is no sense in supporting the image of a manufacturer who introduces innovations, because the counterfeit products of low quality ruin him/her;
- worsened conditions of the trade in high-tech products of countries-innovators owing to their forgery on external markets, which reduces profits of companies of the countries where such goods are legally manufactured and exported; and,
- deformed commodity flows between countries-innovators and countries-consumers of technological products.

Economists are of the opinion that in countries that are closed to international trade enforced IPR protection stands in the way of maximizing their welfare, because competition on the market of technologies abates, as prices go up and access to many innovative products is restricted. In countries with an open economy, the losses are less evident, because trade denies the opportunity to derive gain from foreign innovations¹⁸. But even in an open economy, countries have different incentives to implement one or another policy of IPR protection because of the difference of prices for innovation factors, the size of the market, and the capacities for conducting R&D. When IPR protection in high-income countries is lengthy, the increase in the term of protection in less developed countries delay the period of competitive price formation with manufacturers whose expenditures are lower¹⁹. However, more stringent IPR protection cannot be absolute and long-term, even if the protection term continues to be in effect. There are frequent cases when one and the same inventions are duplicated in other countries where the first innovation was not registered, or interchangeable technologies are developed that by their properties are similar to the already existing and patent-protected technologies.

Although exclusive privileges granted to intellectual property rights markedly improve the incentives of potential innovators, they are obviously not the best solution to the problems of invigorating innovations. By creating monopolies, IPR become a non-standard source of distortion of an economic system, which does not promote the emergence of an efficient market. In order to achieve efficiency, inno-

¹⁸ Grossman, «International Protection of Intellectual Property» (2004), pp. 1635—1636.

¹⁹ Grossman G. M. and E. L. C. Lai, «International Protection of Intellectual Property», NBER Working Paper No. 8704 (2002), p. 37. — <<http://www.nber.org/papers/w8704>>. (Earlier version: Grossman, «International Protection of Intellectual Property» (2004)).

vations, provided they are accessible, have to be used as widely as possible at a price that equals marginal production costs. But this will hardly happen in a real economy where a monopolist is set on maximizing profits²⁰.

As A. Deardoff points out, the advantages from the increase in innovations through stronger IPR protection is reduced with the increase in the number of countries who make their regime of IPR protection more stringent. Since IPR owners set monopolistic prices that distort a consumer's choice, stronger IPR protection may result in the decline in welfare, specifically in countries who are little or not at all engaged in R&D²¹.

When technologies are transferred through trade, countries-importers derive relative advantage in the manufacture of this product earlier possessed by the country-innovator. However, when IPR are inadequately protected in developing countries, exporters from developed countries may «mask» their production technologies, thereby reducing the risks of imitation of their products²². As E. Helpman points out, stronger IPR protection in countries-importers reduce the opportunities for imitation and enhance R&D in the countries-innovators in the short-term outlook, since such developments become more profitable. In the long run, innovations may decline, because owing to stronger (prolonged) IPR protection an innovator-monopolist loses the incentive for continued improvements. Therefore, stronger IPR protection in the countries-imitators may reduce world economic growth²³.

In general, the granting of a temporary status, though not the best of solutions, nonetheless aims to restore the motive of innovative activities, which, in turn, should promote long-term economic growth and the improvement of the quality of products. Judging from the economic literature, the introduction of a system of IPR protection in an open economy results in dynamic advantages, because it furnishes better incentives for innovation and diffusion of technologies through international trade in high-tech goods and services. IPR protection can sustain economic growth in countries that are open for foreign trade and have comparable advantages in innovative technology-intensive activities. The impact of stronger IPR protection on the economy of closed and non-innovative countries is less evident.

Consequences of Stronger IPR Protection in Countries with Different Levels of Development

Quite a few empirical studies have tried to deal with the issue of whether a country with restricted capacities for innovations will derive advantages from

²⁰ Moschini, «Intellectual Property Rights and the World Trade Organization,» p. 15.

²¹ Deardoff A. V., «Welfare Effects of Global Patent Protection», *Economica* 59 (1992): pp. 33—51.

²² Taylor M. S., «TRIPs, Trade, and Technology Transfer», *Canadian Journal of Economics* 26 (1993): pp. 625—638.

²³ Helpman E., «Innovation, Imitation, and Intellectual Property Rights», *Econometrica* 61 (1993): pp. 1247—1280.

stronger IPR protection due to technologies and innovations being very unevenly distributed among countries. A number of leading industrially developed countries, namely their transnational corporations (TNCs), control a lion's share of technological innovations and their diffusion in the world. D. A. Smith stresses that this control is a determining feature of inequality in the world²⁴. As R. Falvey, N. Foster and O. Memedovic point out, extensive IPR protection will probably lead to an inadequate diffusion of new knowledge, which, in turn, might slow down innovation growth, since the development of new innovations is related to access to already existing knowledge²⁵. A. Deardoff argues that for the majority of developing countries imitation will serve as a source of technological development. Making IPR protection more stringent in these countries can be viewed as a redistribution of profits from internal imitation firms to foreign innovators from developed countries rather than a stimulation of innovative activities within the developing countries²⁶.

Let us analyze the impact of the introduction of IPR protection on the economic growth and diffusion of knowledge in countries depending on the level of their development. If we consider two groups of countries — developed (innovators) and developing countries (imitators) — we see the obvious and positive effect of stronger IPR protection in the world for the first group. Applying the IPR index designed by Rappa and Rozek, M. Thompson and F. Rushing show that IPR protection positively impacts on TFP in relatively more developed countries²⁸. In 1999 W. Park pointed out that IPR protection has an indirect positive link with economic growth through capital investment and R&D in the most developed countries²⁸. But the consequences for the second group are not unequivocal. As G. Chin and G. Grossman point out, the effect for developing countries depends on the technology transfer channels. They argue that strong IPR protection will have a positive impact on these countries only when their R&D will be highly productive and will substantially reduce costs, and also when these countries will assume a considerable share of the world market of innovative products²⁹.

An important issue is to identify through what transfer channels the developing countries can acquire the necessary technologies and grow economically. Some empirical works present different results of stronger IPR protection on different channels of technology diffusion not only through

²⁴ Smith D. A., «Technology and the Modern World-System: Some Reflections», *Science, Technology & Human Values* 18:2 (1993), p. 186.

²⁵ Falvey et al, «The Role of Intellectual Property Rights in Technology Transfer and Economic Growth», pp. 2—3.

²⁶ Deardoff, «Welfare Effects of Global Patent Protection», pp. 33-51.

²⁸ Thompson M. A. and F. W. Rushing, «An Empirical Analysis of the Impact of Patent Protection on Economic Growth: An Extension», *Journal of Economic Development* 24 (1999), pp. 67—68.

²⁸ Falvey et al, «The Role of Intellectual Property Rights in Technology Transfer and Economic Growth», p. 12.

²⁹ Moschini, «Intellectual Property Rights and the World Trade Organization», p. 27.

trade in goods and services, but also through patenting, license agreements, foreign investment and joint ventures.

The impact of stronger IPR protection on technology transfer is not unequivocal and depends on the characteristics of countries. On the one hand, stronger protected IPR may restrict technology diffusion because of the monopolization of the market of technological products, which provides for reducing their output and raising their prices. On the other hand, IPR may play a positive role in the diffusion of knowledge, since the existing information in the applications for registration of patents is accessible to potential innovators. B. Xu and E. Chang prove that IPR protection impacts positively on the registration of patents abroad, while patenting of foreigners is positively linked with the increase in TFP in the countries with average and low incomes, but not in the developed countries³⁰. When technologies are transferred through license agreements, stronger IPR in developing countries promote innovations in developed countries and the practice of licensing in the developing countries. Licensing gives advantages to both parties to the agreement — to the innovator (profits as royalties) and the licensor (opportunity to use the innovation and manufacture goods at lower costs). However, the conclusion of license agreements calls for additional expenses (negotiations, technology transfer, procedure of protection against imitation of this technology, etc.). Reducing the risk of imitation through stronger IPR protection can cut down the costs for licensing. In this manner technology transfer to the North is stimulated, while in the South resources are freed for innovation³¹. G. Young and K. Maskus proved that stronger IPR protection positively impacts on the practice of technology transfer through licensing³². If foreign direct investment (FDI) is viewed as a source of technology transfer, stronger IPR protection may stimulate IPR, relocation of production from developed to developing countries, and growing innovation in the latter³³. J. Lee and E. Mansfield showed that FDI in the manufacture of end products and R&D are lower in the countries with weaker IPR protection³⁴. E. Mansfield proves that stronger IPR protection impacts on the decision to commit FDI only in R&D³⁵. B. Smarzynska argues that weak IPR protection hinders FDI, specifically in sectors where IPR are especially important and companies give

³⁰ Xu B. and E. P. Chiang, «Trade, Patents and International Technology Diffusion», *Journal of International Trade and Economic Development* 14 (2005): pp. 115—135.

³¹ In Western economic literature, the South means the developed countries, while the North the undeveloped countries.

³² Falvey et al, «The Role of Intellectual Property Rights in Technology Transfer and Economic Growth», p. 32.

³³ Glass A. and K. Sagi, «Intellectual Property Rights and Foreign Direct Investment», *Journal of International Economics* 56 (2002): pp. 387—410.

³⁴ Lee J. Y. and E. Mansfield, «Intellectual Property Protection and U.S. Foreign Direct Investment», *The Review of Economics and Statistics* 78 (1996), pp. 181-186.

³⁵ Mansfield E., «Intellectual Property Protection, Direct Investment and Technology Transfer: Germany, Japan and the United States», IFC Discussion Paper no. 27 (Washington, DC: The World Bank and International Finance Corporation, 1995).

preference to trade strategies (e.g. distribution), but not to manufacture³⁶. L. Branstetter et al point out that US TNCs respond to a more stringent regime of IPR protection abroad by increasing technology transfers³⁷. However, N. Kumar determined that the extent of IPR protection does not considerably affect the level of R&D expenses incurred by Japanese and American TNCs abroad³⁸.

In general, we can identify the follow impact of IPR protection on technology transfer channels depending on the level of a country's development³⁹:

1) international trade: the impact of IPR on commodity flows depends on the size of the market and the imitation capability of a country-importer; in countries with imitation capacities, the impact of IPR on trade in industrial goods (except for goods that are difficult to imitate) is positive, while in countries with a small market and weak imitation capacities, a negative impact is possible; trade promotes the spread of impacts from technology transfer between developed countries as well, and from developed countries to developing countries;

2) R&D: stronger IPR protection increases domestic costs for R&D; larger costs for R&D promote technology transfer and economic growth;

3) patenting within a country: stronger IPR protection increases the number of domestic patents in countries with innovation/imitation capacities, and reduces domestic patenting in countries with a greater openness of trade; there is no unequivocal evidence of the impact of domestic patenting on economic growth;

4) patenting abroad: there is a more positive impact of IPR protection on patenting abroad in countries with greater openness of trade and in countries with larger innovation/imitation capacities; there is evidence that increased patenting abroad promotes technology transfer in the developed countries with stronger IPR protection, higher innovation/imitation potential, and an open market;

5) foreign investment: stronger IPR protection can be important for investment by some TNCs, namely in R&D and in sectors where products can be easily imitated (chemical, pharmaceutical industry); some studies argue that TNCs are more inclined to transfer technologies to countries with stronger IPR protection; it is difficult to say whether FDI provide for technology transfer;

³⁶ Smarzynska B., «The Composition of Foreign Direct Investment and Protection of Intellectual Property Rights: Evidence from Transition Economies», *European Economic Review* 48 (2004): pp. 39—62.

³⁷ Branstetter L. G., R. Fisman and C. F. Foley, «Do Stronger Intellectual Property Rights Increase International Technology Transfer? Empirical Evidence from U.S. Firm-Level Panel Data», World Bank Policy Research Working Paper no. 3305 (Washington, DC: The World Bank, 2004).

³⁸ Kumar N., «Determinants of Location of Overseas R&D Activity of Multinational Enterprises: The Case of US and Japanese Corporations», *Research Policy* 30 (2001): pp. 159—174.

³⁹ Falvey et al, «The Role of Intellectual Property Rights in Technology Transfer and Economic Growth», p. 18.

6) licensing: there is little evidence of the impact of IPR protection on licensing; the results of some empirical studies show that stronger IPR protection promotes licensing, specifically in countries with innovation/imitation capacities; and,

7) domestic economic growth; stronger IPR protection increases economic growth in developed countries and developing countries with negligible innovation/imitation capacities; there is no unequivocal evidence for the developing countries with substantial innovation/imitation capacities.

In summing up the results of the analyzed empirical studies, we can assert that strong IPR protection can promote technology transfer through a number of channels, but this impact depends on specific factors related to the presence in a country of an imitation or innovation base. Therefore, in our opinion, it is important to analyze the consequences of the impact of IPR protection on the economic indicators for each country individually, since the variational factors for each country are very large. In particular, the analysis of the experience of South Korea showed that strong IPR protection hindered rather than promoted technology transfer at the early stages of industrialization, when the technologies in the country were accumulated through re-engineering and imitation of ready foreign products. Only after accumulating sufficient knowledge, production capacities, and an extensive scientific and technological infrastructure a country is capable of developing innovations, and only then IPR become an important element of technology transfer and economic development. The experience of India showed the importance of weak IPR protection for building up local capacities, when the country was at an early stage of development. At the same time, weak IPR protection in a country-recipient of FDI makes foreign investors transfer obsolete technologies. As the experience of China showed, the transferred technologies lagged by at least five years behind the technological limits⁴⁰.

In summing up the overview of the literature, we can conclude that the consequences of applying IPR protection depend on the level of development of a country. For highly developed countries stronger IPR protection promotes economic growth due to mastering innovations and diffusion of technologies. As the results of empirical studies prove, for countries with an average level of development stronger IPR protection has an insignificant impact or may become its restriction. On the one hand, stronger IPR encourage domestic innovations and technology diffusion through international trade in high-tech products and the practice of nonresidents patenting their inventions in these countries, which may positively affect economic growth. On the other hand, the developing countries lose the advan-

⁴⁰ Falvey et al, «The Role of Intellectual Property Rights in Technology Transfer and Economic Growth», p. 44.

tages from rapid technological development, since they are compelled to abandon imitation.

For the least developed countries, which lack marked capacities for innovation and imitation, stronger IPR protection can result in increased patenting but, as the empirical studies prove, this does not have a considerable impact on economic growth. The passage of these countries through the imitation stage to an innovational model of development can become possible when more stringent rules of IPR protection are introduced.

In the real economy, IPR protection rules, combined with the purposes of international trade liberalization, are mainly set within the framework of the WTO. Given the heated theoretical discussion on the possible impacts of IPR protection in different areas of the economy, it is important to analyze in detail the existing system and agenda of the negotiations on the trade-related aspects of intellectual property rights within this organization.

WTO's Multilateral Regulation in the Area of Intellectual Rights Protection

Within the WTO a set of provisions has been designed to promote the technological development of its member countries. In the main, they are reflected in the Agreement on Trade-Related Aspects of Intellectual Property Rights 1994 (TRIPS), in separate provisions of the General Agreement on Tariffs and Trade (GATT), and in a series of declarations and decisions of WTO bodies.

The TRIPS Agreement is the basis of the multilateral system of IPR protection aimed to promote technological innovation, transfer and diffusion of technologies for the mutual benefit of manufacturers and users of technological knowledge in a manner that facilitates social and economic welfare, as well as a balance of rights and obligations (Article 7 of the TRIPS Agreement).

The TRIPS Agreement embraces such elements as the application of the basic principles of the General Agreement on Tariffs and Trade (GATT) as well as international agreements and conventions on IPR within the framework of the World Intellectual Property Organization (WIPO), such as the national regime and the most-favored-nation regime. That is, an inventor from Ukraine⁴¹ should have the opportunity of being granted a patent in Japan on the same terms and conditions as a Japanese inventor. The TRIPS Agreement binds to introduce equal for all WTO members minimum terms for the protection of each type of IPR. Besides, this Agreement includes the provision on harmonizing national legislation

⁴¹ Assuming that Ukraine is a member of the WTO.

with TRIPS standards, IPR disputes settlement, and special transitional norms of TRIPS implementation⁴².

The provisions on IPR protection are very detailed and imperative. They embrace provisions on avoidance of delays in IPR registration, stronger punishment of infringement of the rights, non-admission of counterfeit products into domestic markets, mechanisms of destruction of counterfeit and pirated products, and compensation of damages even for failure to inform about known IPR infringements.

The most important obligations under the TRIPS Agreement concern patents. The term for protecting an invention (product or process) should be 20 years. The minimum terms of protection of other types of IPR are presented in Table 1. A patent should be granted without discrimination at the place where it was devised. It guarantees the owner the exclusive right to manufacture, use, sell and export the products protected by this patent. Governments may deny patenting for the protection of public order, public morals, human health, animals or plants, as well as to avoid causing damage to the environment. A country's government may introduce the practice of mandatory licensing of patents, granting a third party (a company within the boundaries of this country) the right to use the patent without the permission of the patentee for the common welfare of the country after paying a corresponding compensation to the patentee⁴³.

In accordance with the TRIPS Agreement (articles 65-67), specific transitional provisions are stipulated for developing countries and countries with a transition economy. But practically all the transition periods for the implementation of the obligations under the TRIPS Agreement have expired. Therefore, once Ukraine joins the WTO it cannot hope for any concessions as to the effect of the transitional provisions.

Table 1

**Minimum protection terms under the provisions
of the TRIPS Agreement⁴⁴**

⁴² *Uhoda pro torhovelni aspekty prav intelektualnoi vlasnosti./Resultaty uruhvaiskoho raundu perehovoriv. Teksty ofitsiynykh dokumentiv* [Agreement on Trade-Related Aspects of Intellectual Property Rights. Results of the Uruguay Round of Multilateral Trade Negotiations: Texts of Official Documents. Kyiv. Vymir Publishers. Secretariat of the Interagency Commission on Ukraine's Accession to WTO, 1998, p.337]

Torhivlia ta prava intelektualnoi vlasnosti (Rozdil 12)/Komertsiyna dyplomatia: trohovelna polityka i pravo. [For greater detail read: R.Moskalyk, R.Chait. Trade and Intellectual Property Rights (Chapter 12) /Commercial Diplomacy: Trade Policy and Law. Manual. Second edition, amended and revised. Lviv. Astrolabia Publishers, 2006, pp.223-248]

⁴⁴ R.Moskalyk. Trade and Intellectual Property Rights. p.235].

Object of protection	Terms and conditions
Patents	20 years from the registration date of application for a patent
Author's right	50 years after the death of the author
Cinematographic works	50 years after its creation, even if it was never communicated to the public during that period
Photographic works or works of applied art	25 years after the date of creation
Performers and manufacturers of phonograms	50 years from the end of the calendar year when the phonogram was made or the performance held
Radio and television programs	20 years from the end of the calendar year of a certain broadcast
Trademarks	7 years from the first registration that may be prolonged an unlimited number of times; the term of each prolongation is also 7 years
Industrial samples	At least 10 years
Geographical indications	Unlimited
Integral microcircuits	10 years from the registration date, and when registration is not mandatory the microcircuit arrangement is protected throughout 10 years from the date of first manufacture
Undisclosed information	Unlimited, as long as necessary

The TRIPS Agreement embraces not only provisions on national regime based on the existing IPR conventions and agreements, but also the provisions on the harmonization of the minimum standards of IPR protection. Moreover, extending to the TRIPS Agreement is also the mechanism of dispute settlement in the WTO whose decisions are binding on all member countries. In this manner the WTO covered a new non-trade area of international economic relations. This served as a spur for including in the agenda of negotiations other non-trade areas as well, such as investment, competition, and environmental protection⁴⁵.

The TRIPS Agreement includes some aspects governing the migration of skilled labor for providing services in foreign countries. It defines such a method of provision of services as «presence of natural persons,» under which services are provided by individuals who depart temporarily to another country for this purpose (e.g., consultants, managers, instructors, actors). The temporary departure of highly skilled personnel for work on a commercial basis in another country can be very important for the technological development of the host country, since it implies transfer of knowledge as well as ex-

⁴⁵ Maskus K. E., «Regulatory Standards in the WTO: Comparing Intellectual Property Rights with Competition Policy, Environmental Protection, and Core Labor Standards», *World Trade Review* 1:2 (2002): p. 135—152.

expertise and skills of specialists from abroad. Yet the WTO members themselves are limiting the impact of this Agreement on the liberalization of highly skilled labor flows in order to protect their domestic labor markets. In opposition to one another, they impose restrictions on the supply of such services. In particular, under its obligations to the WTO Poland is entitled to introduce some measures against foreign providers of many services which are inconsistent with WTO principles concerning access to markets and the national regime⁴⁶.

After the Uruguay Round, negotiations with the WTO on technological development concerned the information technology sector and the improvement of a lot of aspects of the TRIPS Agreement. An important result of the first ministerial conference of the WTO member countries in Singapore in 1996 was the inclusion of the information technology sector in the system of WTO regulation, when the Declaration on Trade in Information Technology Products (Information Technology Agreement — ITA) was signed. The Declaration stipulated the complete liquidation of tariff barriers on the products listed in it. The developing countries were granted transition periods for some products⁴⁷. The ITA was adopted by 29 WTO members, and on 1 February 2007 the number of its signatories increased to 69, accounting for about 97 % of world trade in information technology products⁴⁸.

In accordance with the Doha Declaration of 2001 — adopted by a conference of ministers at Doha, Qatar, within the framework of the WTO — the member countries were to conduct negotiations and consultations in areas related to technological development, in particular issues such as improving the mechanisms of IPR protection as well as trade-related technology transfer⁴⁹. Another Doha Declaration on the TRIPS Agreement and Public Health, adopted by the ministerial conference at Doha in 2001, stressed the importance of the TRIPS Agreement implementation and interpretation in order to protect human health by providing access to the existing and development of new medicines. This Declaration reflected the interests of the developing countries who were concerned over the possible negative impact of the TRIPS Agreement on these countries' access to medicines⁵⁰. The negotiations revolved around such issues as notification of diseases; prevention of outflow of medicines to the markets of developed countries; technology transfer; implementation, additional protection of geographic indications included; and the problems country could face in mandatory licensing of patents, if the

⁴⁶ R.Moskalyk, R.Chait. Trade and Intellectual Property Rights (Chapter 12) /Commercial Diplomacy: Trade Policy and Law. Manual. Second edition, amended and revised. Lviv. Astrolabia Publishers, 2006, pp.123-125

⁴⁷ Ministerial Conference, 'Declaration on Trade in Information Technology Products' (13.12.1996), WT/MIN(96)/16.

⁴⁸ Information Technology Agreement / Official Web-site of the World Trade Organization. — http://www.wto.org/english/tratop_e/inftec_e/inftec_e.htm.

⁴⁹ Ministerial Conference, 'Ministerial Declaration' (20.11.2001), WT/MIN(01)/DEC/1.

⁵⁰ Ministerial Conference, 'Declaration on the TRIPS Agreement and Public Health (14.12.2001), WT/MIN(01)/DEC/2.

country lacked sufficient (or none at all) pharmaceutical production capacities.

Decisions on individual issues of these negotiations have already been arrived at within the framework of the WTO. For instance, in 2003 the WTO member countries reached agreement on the issue of access to basic medicines for countries that lack proper production capacities for this purpose⁵¹. In December 2005, the General Council of the WTO introduced an amendment to the TRIPS Agreement. Article 31 *bis* provides for specifying the rules of granting mandatory licenses in the sector of pharmaceutical products and adequate compensation to the patentee. The Annex to the TRIPS Agreement sets forth the interpretation of pharmaceutical products, «acceptable importer and exporter» who is a WTO member, requirements to the execution of mandatory licenses and notification about these licenses to the WTO, evaluation of the insufficiency or lack of production capacities for the manufacture of pharmaceutical products in the country-importer of these products that arrive from countries in which was granted a mandatory license for the manufacture of these products. The referred to amendments and additions do not concern the diffusion of technologies. In this decision the General Council only mentions that the WTO members recognize the desire to facilitate technology transfer and build up the production capacities in the pharmaceutical sector⁵².

The multilateral WTO system of IPR protection is the subject of review and the ongoing Doha round of negotiations, but only insofar as it concerns at the present time the developing countries' access to inexpensive medicines. The agreements reached do not resolve the problems of balancing the rights and obligations of the WTO member countries that are at different levels of development. Moreover, in the past few years there has been growing criticism to the effect that the obligations under the TRIPS Agreement ruin the developing countries' plans of technological development. In this connection, let us analyze where the existing TRIPS system, along with the recent amendments and additions, accords with the developing countries' interests of technological growth.

Do the Trade-Related Aspects of Intellectual Property Rights Promote Technological Growth in Developing Countries?

The multilateral TRIPS Agreement within the framework of the WTO contains obligations of a much higher level than the existing conventions on IPR protection within the framework of the WIPO, because the provisions of TRIPS embrace the rules of harmonization of IPR protection and to them also extend the

⁵¹ General Council, 'Implementation of Paragraph 6 of the Doha Declaration on the TRIPS Agreement and Public Health: Decision' (30.08.2003), WT/L/540.

⁵² General Council, 'Amendment of the TRIPS Agreement: Decision' (06.12.2005), WT/L/641.

mechanisms of dispute settlement in the WTO whose decisions are binding on all member countries of this organization. In the opinion of W. Ethier, the previous IPR conventions and agreements were concluded between countries that viewed the protection of these rights necessary and of benefit to them. The countries that ignored such protection were no more than importers of intellectual property. But unlike such an approach, the countries-importers of IP at the Uruguay Round on GATT (1986—1994) agreed to stronger IPR protection in exchange for liberalizing trade in products that were important for their export (specifically, agricultural products, textiles, garments)⁵³. New WTO members (many of them with transition economies) assumed stricter obligations of IPR protection in order to accede to the organization. What can be considered as a typical feature of this process is the asymmetry of assumed obligations and derived advantages reflecting the asymmetry in the negotiation power of the WTO member countries⁵⁴. In consequence of the misbalanced provisions of the TRIPS Agreement there arise trade disputes, temporary suspension of trade concessions in response to violated IPR, or actions to renew the reciprocity of rights and obligations in response to the justified noncompliance with IPR protection by certain WTO members⁵⁵.

An important aspect is the skepticism in the developing countries about the ability of the TRIPS Agreement to stimulate technology transfer. In the opinion of V. Sidenko, for one, their transition to an innovation model of development can become complicated when the TRIPS Agreement rules are applied, because the insufficient financial resources in these countries can considerably limit technology transfer to them⁵⁶.

Some researchers believe that the inclusion of TRIPS in the system of WTO regulation is at variance with trade liberalization and competition⁵⁷. It is argued that TRIPS can restrict trade and competition and guarantee immense income to TNCs predominantly from the developed countries at the expense of the consumers of the entire world. Besides, TRIPS can contradict the principles of competition, since it favors the prolongation of the term of existence of monopoly rights. G. Bhagwati believes that TRIPS does not provide for common advantages; it rather positions WTO as a collector of rent related to IP on behalf of the multinational corporations⁵⁸.

⁵³ Ethier W. J. «Intellectual Property Rights and Dispute Settlement in the World Trade Organization», PIER Working Paper no. 03-034 (November 2003), p. 5. — http://papers.ssrn.com/sol3/papers.cfm?abstract_id=472443.

⁵⁴ *Analiz perehovornoho protsesu ta zoboviazan novykh krain-chleniv SOT [na prykladi krain z perekhidnoiu ekonomikoiu]*. [M. Malsky, R. Moskalik. Analysis of the Negotiation Process and Obligations of New WTO Member Countries (as Exemplified by Countries with Transition Economies). *Lviv University Herald*. International Relations series. Lviv. Ivan Franko National University of Lviv, 2004, Issue 13, pp. 172-176].

⁵⁵ Ethier, «Intellectual Property Rights and Dispute Settlement in the World Trade Organization», p. 6.

⁵⁶ *Liberalizatsia ta protektsionizm perekhidnykh ekonomik v globalnomu seredovyshchi*. [V. Sidenko. Liberalization and Protectionism of Transition Economies in the Global Environment. 2001. <<http://www.uceps.org/ua/show/196/>>]

⁵⁷ Nanda, «WTO and Development», pp. 4—5.

⁵⁸ Nanda, «WTO and Development», p. 4.

As much as possible innovations are necessary for a country's economic growth today. The attraction of innovations will obviously be quicker, if their diffusion or entry into a market is not blocked. Within this context, there arises the issue of identifying the optimum limit and duration of IPR protection. If the benefits of society from IPR protection exceed the costs, it is advisable to protect these rights more strongly. In the opinion of N. Nanda, substantial expenses are incurred because a part of society is restricted access to intellectual property, and therefore the expenses of society may by far exceed the benefits, thereby evoking doubts in the advisability of stronger IPR protection⁵⁹. Moreover, the critics of TRIPS emphasize that the all too strict and lengthy regime of IPR protection puts the innovator-monopolist in a position beyond competition for a long period of time that can crush to motivation to invest in innovative activities. Therefore, IPR protection can become an obstacle to technological development. However, the critics of TRIPS frequently avoid arguing that competitors are also engaged in innovative activities and devise alternative samples of technologies capable of competing with the inventions of the first innovator.

Given the quick changes in technologies and the reduction in the life cycle of the technological products themselves, we can agree with the TRIPS critics that under modern conditions the terms of IPR protection are too long and do not reflect the current requirements of the innovators. The very procedure of granting patents in a lot of countries is still complex, lengthy and costly for the innovator. Therefore it is important to design a new type of IPR that could be acquired at a lesser cost and much easier than a patent. In the European countries a discussion is going on to harmonize the lowest level of innovation protection — what is called the right to «a useful sample» that already exists in many countries. The validity period of such protection is much shorter than with a patent; it can be received much faster and the examination of the invention's quality is minimal or not required at all. The risk of introducing the right to a «useful sample» consists in that it can be used for registering inventions and innovations of dubious value, thereby creating a legal uncertainty for the potential buyers of such rights. For all that, the right to a «useful sample» is especially urgent for the industrial sectors, in which the life cycle of a product is very short⁶⁰. Therefore the advantages from the acceleration and reduction of expenses for the application for a patent may by far exceed the flaws that arise as a result of reducing the length of the monopoly use of an invention.

An interesting issue is the consequences of the TRIPS Agreement for the attraction of FDI and economic growth of the developing countries. It is generally believed that, along with progressive technologies, it is necessary to attract FDI as much as possible. FDI may rise as a result of a more reliable le-

⁵⁹ Nanda, «WTO and Development», p. 5.

⁶⁰ R. Moskalyk. Trade and Intellectual Property Rights, p.240

gal environment and better investment climate. But the opponents of TRIPS are of the opinion that a shortage of IPR protection may also encourage FDI. For example, a company may intend to enter a market with an inadequate IPR protection system, in which case it could rely on the FDI to ensure control over the investor's information or invention owned by the investor⁶¹. Yet this argument is rather disputable. Taking into consideration the presence of a large number of alternative markets open for foreign invest, a foreign company will hardly risk committing its own resources and IPR in a country with an inadequate system of protection of these rights.

In summing up the analysis of the critical remarks about the economic consequences of the TRIPS Agreement for countries with a different level of development, it can be argued that this Agreement is of greater advantage for the developed countries and can hinder an invigorated technological development of the developing countries, those with transition economies included. We can agree with the opinion of some researchers that TRIPS imposes excessive obligations on less developed countries to protect not the national interests in technological development, but the intellectual property rights of foreign TNCs⁶². What remains disputable is whether the high standards of IPR protection in the WTO will result in innovation development in the developing countries. Judging from the current empirical studies, the developing countries are, in the main, importers of intellectual property and would stand to gain from freer access to the competitive market of world technologies not encumbered by excessive IPR protection. Besides, as G.Grossman and E.Lai point out, harmonizing policy in IPR protection is neither necessary nor sufficient for the achievement of global efficiency⁶³.

At the current stage of development of a multilateral trade system, attempts are being made to transform WTO for a more comprehensive regulation of world trade and economic relations to embrace trade, the IPR protection system, technology transfer, issues of environmental protection and other areas. Such a combination of rules in trade and technologies might be potentially favorable for the technological development of the WTO members, but the obligations and advantages should be balanced within the context of the main purpose of the Doha round — development of the less developed countries in the first place.

Conclusions and Recommendations for Policy

With the growth of competition in the production of goods and services, there is a need to improve the quality of existing and development of new products, which, in turn, requires substantial investment in R&D. The size of

⁶¹ Nanda, «WTO and Development», p. 5.

⁶² Ethier, «Intellectual Property Rights and Dispute Settlement in the World Trade Organization», p. 7.

⁶³ Grossman, «International Protection of Intellectual Property» (2004), p. 1635.

such investment will depend on the level of the objects of IPR protection against copying and imitation. Given the expansion of international trade in goods and services, the existence of national IPR protection is not sufficient. The TRIPS Agreement within the framework of WTO is now the most ambitious attempt to regulate the multilateral IPR protection system related to trade. An important feature of this Agreement, as compared to previous international conventions on IPR within the framework of WIPO, is its provision to harmonize the set of intensive standards of IPR protection that are binding on all WTO members as a condition for the continued use of advantages from free trade. But in the economics literature there is growing criticism that the multilateral TRIPS is of greater advantage to developed countries and can stand in the way of the technological development of developing countries.

In summing up the review of studies mentioned in this article, we can arrive at the conclusion that the consequences of strong IPR protection depend on a number of factors, such as the level of openness of trade, level of economic development, presence of innovation/imitation capacities, technology transfer channels, as well as on the opportunities of countries to use the advantages from the received technologies. Empirically it has been substantiated that stronger IPR protection has a considerable and positive impact on economic growth in the more open economies, since the domestic innovations or imitations are replaced by technologies devised abroad. The link between open trade and IPR protection is important, because the accumulation of technologies impacts on the stimulation of economic growth.

For highly developed countries, stronger IPR protection promotes economic growth due to invigorated innovative activities and diffusion of technologies. For countries with an average level of development, strong IPR protection can have an ambiguous effect — higher incentives of technology transfer through growing imports and FDI, on the one hand, and a slowdown in accumulation of technologies and knowledge because of restrictions in imitation activity, on the other hand. An interesting result of the empirical studies is that least developed countries, which lack any significant potential for either innovation or imitation, can also grow economically from stronger IPR protection, although it is unclear for account of what technology transfer channels.

Within the context of formulating state policy, the orientation toward companies that engage in imitation and will not derive dynamic advantages in the future cannot be considered as the best possible choice for developing countries. Of course, these countries can reorient their policy toward stimulating innovation, but its success will depend on the degree of accumulation of technological knowledge, the innovation base and infrastructure, which is more possible at the post-industrial stage of development. In that way, stronger IPR protection creates a closed circle for the technological growth of countries that have not yet developed an adequate base for reorienting toward innovative activities. Moreover, given the growing pace of development of

innovations and the appearance of new technologies, a widening technological gap is expected between the innovationally developed countries and the developing countries that use predominantly obsolete technologies. The latter risk becoming interminable outsiders, as they constantly try with an ever-growing delay to catch up with the countries-innovators.

Such a pessimistic scenario for the developing countries harbors the risk of spreading globally. Therefore the system of IPR protection must not become a catalyst of increasing the technological divide between countries. It is also obvious that the level of IPR protection cannot be unified between countries with a different level of economic or technological development.

Economic studies confirm that a country absorbing progressive innovations ensures real economic advantage in the long-term outlook. Important for state policy then is the answer to the question in what way can a country acquire new technologies. Empirical studies prove that the effectiveness of the technology transfer channel — including international trade, FDI, patenting and licensing — depends on the specific conditions of development.

Taking into account the intensive discussion of the advantages and flaws of stronger IPR protection, there arises the problem of choosing the best possible policy in this area. As W.Nordhaus pointed out, such policy should be based on the revealed dynamic advantages and statistical losses of efficiency⁶⁴. In the real economy, the dynamic and even statistical effects from IPR protection are difficult to identify reliably by the methods of quantitative analysis, because there are complex interrelations between economic phenomena not only at the national, but also at the inter-state levels. G.Grossman and E.Lai point out that it is difficult to formulate the best government policy of IPR protection when a part of the advantages from national innovations fall into the hands of foreigners, or, on the contrary, residents derive advantages from the technological solutions from abroad, or when domestic and foreigners enjoy equal opportunities for innovative activities, or else when domestic and foreign companies have different opportunities of innovative activities as well as different levels of skilled personnel resources and technical know-how⁶⁵.

A country's best possible policy in patenting should be determined by the difference between two components:

- 1) the sum of costs of stronger IPR protection for domestic companies as well as additional costs due to the monopolization and higher prices of foreign companies;
- 2) dynamic advantages from increased innovative activities in the country and its trading partners.

We can agree with the opinion that the best policy of IPR protection maximizes a country's national welfare, if it is seconded by the policies of the

⁶⁴ Grossman, «International Protection of Intellectual Property» (2004), p. 1635.

⁶⁵ Grossman, «International Protection of Intellectual Property» (2004), p. 1636.

trading partners, because the foreign system of IPR protection impacts on the incentives for innovations and relative quantity of patentees in the entire world⁶⁶.

G.Grossman and E.Lai proved that there are different levels of demand in innovations in each country and therefore the marginal costs for IPR protection will be different as well. In this case, the difference in elastic demand in innovative products will be yet another factor that impacts on a government's motives to pursue one or another policy of IPR protection. A policy of stronger IPR protection can be considered effective if the country does not have an elastic demand in innovative products, given all other equal conditions⁶⁷.

Then there is another important conclusion for framing state policy of IPR: if a country can exchange concessions and compensations in different types of policy, the effective patenting regime ensures the best possible aggregate incentives for innovative activities worldwide. Different combinations of IPR policy can introduce these incentives in two countries, and therefore there is no need to unify the validity period of patent protection (as within the framework of TRIPS) for the achievement of a global effectiveness⁶⁸.

WTO membership can stimulate the level of technological growth in the member countries, including developing countries, creating the effect of interaction between openness of trade, institutional improvement, IPR protection, and the regime of technology transfer promotion.

Regardless of the significant achievements, the TRIPS Agreement is regarded as a lean compromise between the interests of the WTO member countries. The provisions of TRIPS accord with the main interests of developed countries, probably even at the expense of the less developed. Developing countries, Ukraine included, are mainly importers of intellectual property and for this reason they would stand to gain from a freer access to the competitive market of world technologies not encumbered by excessive IPR protection. Besides, harmonizing patenting policy is neither necessary nor sufficient for the achievement of global effectiveness⁶⁹. Therefore the system of obligations and advantages from IPR protection should be balanced for the sake of the economic development of less developed countries, which is the main goal of the current Doha round of negotiations within the framework of the WTO. Such a system must ensure transparency and efficiency of international trade, reduce the costs for compliance with these rights by individual countries, and should not require from countries with a lower level of development to harmonize their policy of IPR protection with the standards of the developed countries.

⁶⁶ Grossman, «International Protection of Intellectual Property» (2004), pp. 1651—1652.

⁶⁷ Grossman, «International Protection of Intellectual Property» (2004), p.1652.

⁶⁸ Moschini, «Intellectual Property Rights and the World Trade Organization», p.40

⁶⁹ Grossman, «International Protection of Intellectual Property» (2002), p.4.

The level of development and level of innovative and imitation capacities of countries should determine the best IPR policy of governments. In the developing countries, the priority of government policy should be liberalization of trade in, primarily, technological products and services, but not the introduction of a more stringent system of IPR protection. The level of a country's IPR protection should correspond to its goals of invigorating technological development and economic growth. Policies linked to the implementation of TRIPS standards should be specific for countries with a different level of development. Developing countries should also use other types of state policy in the area of IPR to stimulate the accumulation of technologies and knowledge⁷⁰:

1. Policy related to the registration and service of IPR, which under a certain configuration may impact on the development of the domestic innovative sector and international diffusion of knowledge. Such policy may define, for example, state fees for patent registration, annual fees for supporting an effective industrial sample or reregistration of trademarks. Developing countries may also limit the scope of the effect of patents and encourage the use of patents, permitting domestic companies to base their innovative activities on already registered foreign patents. The countries can make more stringent the requirements to the novelty of IP objects to avoid patenting lengthy R&D. At the same time adjustments could be made to the regime of the «useful sample» right.

2. The practice of mandatory licensing of patents, granting the third party (a company within the boundaries of the country) the right to use a patent without the permission of the patentee for the general welfare of the country, paying a corresponding compensation to the patentee.

3. Policy of strongly encouraged competition to prevent monopolistic price formation, for example, through a policy of control over prices, setting reference or administrative specified maximum prices, application of parallel import, and the like.

4. Regulatory policy that can sustain the impact of IPR protection on domestic innovations and also serve to derive greater advantages from international technology transfer. In particular, the instruments of such policy are favorable taxation and regulatory regimes, as well as investment in education, science and technologies.

5. Institutional development to improve the communications and transportation infrastructure, the institutions of commercialization of innovations, establishment of technoparks, innovative centers, IPR mediation and consultations structures, along with supporting the stability of macroeconomic institutions, liberal trade, and innovative policy.

⁷⁰ Devised with allowance for policy recommendations in: Falvey et al, «The Role of Intellectual Property Rights in Technology Transfer and Economic Growth», pp. 49—58.

6. Participation in international organizations and programs covering technical, legal and marketing expert examination in innovations and technology transfer. Among the important measures are to study the economic effects of IPR protection and dissemination of their results, encouragement of exchange of information about the latest technologies for sectors, presentations of and trainings in the mechanisms of technology transfer, and funding of educational and scientific projects. For this purpose international organizations (WTO, UNIDO, UNCTAD, WIPO and others) or governments-donors could establish trust funds for financing the projects. Besides, international organizations should be involved in monitoring the efforts of countries-innovators in the transfer of technologies and evaluating the effect and level of technology transfer.

7. Commercial diplomacy that should be aimed at ensuring the link between technology transfer and access to markets through a simplified access to the markets of the developed countries for the products of the developing countries, in the manufacture of which the latter have a comparable advantage. As empirical studies prove, the size of a market and growing output are stimulated by investments in new technologies. Guaranteed access to the export markets of the developed countries could become a key factor of stimulating the introduction of innovations into production of the less developed countries.

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