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NOTE

INTELLECTUAL PROPERTY RIGHTS IN CHINA: TECHNOLOGY TRANSFERS AND ECONOMIC DEVELOPMENT

MIKHAELLE SCHIAPPACASSET†

I.

INTRODUCTION

There is considerable dialogue regarding the effect of intellectual property (IPRs) rights on economic development.¹ Developed countries,² such as the United States, own the majority of IPRs, and consequently consider intellectual property (IP) protection crucial to their continued financial well-being.³ In response to growing pressure to improve their protection of IP, less-developed countries are voicing their concern that strong IPRs⁴ inhibit their economic development.⁵ As the international community continues to seek universal uniformity in IP protection, an understanding of the effect IPRs have on economic development is vital.

For American holders of IPRs no country raises greater concern than the People's Republic of China (PRC or China).⁶ Despite having a set of world-class laws for the protection of IP on the books, China

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¹ See, e.g., Keith E. Maskus, *Intellectual Property Challenges for Developing Countries: An Economic Perspective*, 2001 U. ILL. L. REV. 457 (2001); see also Robert M. Sherwood, *The TRIPS Agreement: Implications for Developing Countries*, 37 IDEA 491 (1997); see also Evelyn Su, Note, *The Winners and the Losers: The Agreement on Trade-Related Aspects of Intellectual Property Rights and Its Effects on Developing Countries*, 23 Hous. J. INT'L L. 169, 185 (2000).

² There are a number of different terms used to indicate the level of development a country has reached. This note uses from most to least-developed: developed, less-developed, least-developed. Unless making a distinction between less and least-developed, less-developed or developing can generally be understood to encompass both less and least-developed.

³ See Marco C.E.J. Bronckers, *The Impact of TRIPS: Intellectual Property Protection in Developing Countries*, 31 COMMON MKT. L. REV. 1245, 1246 (1994).

⁴ In this note, "strong IPRs" means both comprehensive IP laws and strict enforcement of those laws. "Weak IPRs" can mean either a lack of comprehensive IP laws or weak enforcement of those laws, or both.

⁵ Bronckers, *supra* note 3, at 1247.

⁶ See generally Ramona L. Taylor, *Tearing Down the Great Wall: China's Road to WTO Accession*, 41 IDEA 151, 158-64 (2001).

has one of the highest IP infringement rates in the world.⁷ Every year businesses in the United States lose as much as \$2 billion to piracy in China.⁸ This failure of enforcement owes as much to a fear of the economic consequences of protecting IPRs as it does to China's weak administrative and judicial systems.⁹ Those wishing to encourage Chinese adherence to international standards and its own laws must come armed not only with institutional suggestions, but also economic arguments.

China joined the World Trade Organization (WTO) in 2001, opening up the country to the benefits of international trade.¹⁰ With one of the highest economic growth rates in the world,¹¹ a population of 1.3 billion,¹² and the fastest growing domestic market for goods and services, China should be an investor's dream.¹³ It is, as of 2003, one of the largest recipients of foreign direct investment (FDI) in the world.¹⁴ China's failure to enforce IPRs, however, has the potential to severely limit China's ability to maintain its current rate of economic growth as it reaches higher levels of technological advancement. This is because much of China's economic growth depends on technology transferred through FDI,¹⁵ and foreign investment enterprises or multinational corporations (MNCs) are wary of transferring new and advanced technology to countries, such as China, where IP protection is

⁷ Keith E. Maskus et al., *Intellectual Property Rights and Economic Development in China*, tbl. 1 (July 29, 1998) (unpublished manuscript, on file with the Buff. Intell. Prop. L.J.).

⁸ See Peter K. Yu, *Piracy, Prejudice, and Perspectives: An Attempt to Use Shakespeare to Reconfigure the U.S.-China Intellectual Property Debate*, 19 B.U. INT'L L.J. 1, 2 (2001); see also Amanda S. Reid, Note, *Enforcement of Intellectual Property Rights in Developing Countries: China as a Case Study*, 13 DEPAUL-LCA J. ART & ENT. L. 63, 66 (2003) (noting that it has also been calculated that U.S. businesses loose as much as \$1.9 billion a year to copyright infringement in China alone).

⁹ See Alexander C. Chen, Note, *Climbing the Great Wall: A Guide to Intellectual Property Enforcement in the People's Republic of China*, 25 AIPLA Q. J. 1, 6-7 (1997).

¹⁰ See Louise S. Sorell, *A Comparative Analysis of Selected Aspects of Patent Law in China and the United States*, 11 PAC. RIM L. & POL'Y 319, 338 n. 4 (2002).

¹¹ See THE WORLD BANK, *CHINA 2020: DEVELOPMENT CHALLENGES IN THE NEW CENTURY* 3 (1997); INTERNATIONAL MONETARY FUND, *WORLD ECONOMIC OUTLOOK 2005* (2004), at <http://www.imf.org/external/pubs/ft/weo/2004/02/pdf/statappx.pdf> (China's growth fell in 2000-2001 to about 7%, but compare China's high growth rate in the 1990s to other high growth countries like Taiwan at 6.3% and Singapore at 5.2%, or the US at 1.5%); but see Joel R. Paul, *Do International Trade Institutions Contribute to Economic Growth and Development?*, 44 VA. J. INT'L L. 285, 313 (2003) (notes that China's purported high growth rates have been challenged, leading to estimations of a -2% to 6% actual GDP).

¹² United States Department of State, *Background Note: China*, at <http://www.state.gov/r/pa/ei/bgn/18902.htm> (last visited Aug. 25 2004) [hereinafter Department of State].

¹³ See Taylor, *supra* note 6, at 151, 159.

¹⁴ See Department of State, *supra* note 12.

¹⁵ See THE WORLD BANK, *supra* note 11, at 11.

weak.¹⁶ In order to lay a firm foundation for its future economic development, China needs to turn its attention to enforcing IPRs.

Many notes and articles have been written addressing China's poor IP protection record and proposing organizational or attitudinal changes that should be made in order to improve the Chinese system.¹⁷ This Note will take a different approach, addressing the underlying economic factors that should encourage such change, particularly in light of China's need to acquire growth-enhancing IP through technology transfers. The Note will first consider the current debate concerning the relationship between IPRs and economic development. It will then look at the Uruguay Round Agreement on the Trade Related Aspects of Intellectual Property Rights (TRIPS or the Agreement) as the existing international standard for IP protection. Then it will consider more specifically the role technology transfers play, in light of IPRs, in economic development. Next, the Note will explore the history and current practice of China in recognizing, protecting, and enforcing IPRs. Finally, the Note will argue that China's economy will suffer if the country fails to pursue stronger IP protection.

II.

THE CORRELATION BETWEEN IPRs AND ECONOMIC DEVELOPMENT

There is a robust dialogue concerning the effect of IPRs on economic development, especially vis-à-vis developing countries.¹⁸ The growing consensus is that strong IP regimes in developing countries could have a long-term beneficial effect on their economic growth.¹⁹ This favorable effect is dependent, however, on other important factors, such as increasing human capital, particularly in technical skills, expanding technical infrastructure, developing efficient managerial techniques, and encouraging international trade and investment from

¹⁶ See EDWIN MANSFIELD, *INTELLECTUAL PROPERTY PROTECTION, FOREIGN DIRECT INVESTMENT, AND TECHNOLOGY TRANSFER* 11 (1994).

¹⁷ See generally Chen, *supra* note 9; see also Julia Cheng, *Note, China's Copyright System: Rising to the Spirit of TRIPS Requires an Internal Focus and WTO Membership*, 21 *FORDHAM INT'L J. L.* 1941 (1998); see also Zheng Chengsi, *Comment, The TRIPS Agreement and Intellectual Property Protection in China*, 9 *DUKE J. COMP. & INT'L L.* 219 (1998); see also Scott J. Palmer, *Note, An Identity Crisis: Regime Legitimacy and the Politics of Intellectual Property Rights in China*, 8 *IND. J. GLOBAL LEGAL STUD.* 449 (2001); see also Reid, *supra* note 8; see also Naigen Zhang, *Intellectual Property Law Enforcement in China: Trade Issues, Policies and Practices*, 8 *FORDHAM INTELL. PROP. MEDIA & ENT. L. J.* 63 (1997).

¹⁸ See *supra* note 1.

¹⁹ See Maskus, *supra* note 1, at 457.

abroad.²⁰ The beneficial effect of enforcing IPRs will also depend on factors such as the country's gross domestic product (GDP), the share of the GDP spent on research and development (R&D), and the openness and transparency of the domestic market.²¹

One of the most important forces behind economic development is technology transfers from more developed to less-developed countries.²² It is within this context that the protection and enforcement of IPRs, along with the other factors, such as expanding the technical infrastructure and maintaining an open and transparent market, become particularly important. Countries with open economies are more likely to attract the foreign investment that supports technology transfers, and domestic businesses in open economies are more likely to absorb the cost of technology transfers if the transfers are protected by strong IPRs.²³ While sufficiently strong IP protection is helpful for promoting FDI and other forms of technology transfer, it is absolutely critical for encouraging investment in R&D.²⁴ Thus, economic development cannot be disconnected from technology transfers and the protection of IPRs.

Strong IPRs are seen to encourage economic development by: (1) promoting domestic innovation by protecting the development of nascent technology;²⁵ (2) preventing brain drain by ensuring innovators are rewarded for their effort;²⁶ and (3) fostering technology transfers, such as FDI, licensing, and imports.²⁷ Other beneficial side effects include: job creation, an increase in tax revenue from the IPRs themselves, related investment activity, and the development of domestic industries.²⁸ The mere registration of patents, both domestic and foreign, gives domestic companies a foundation for future innovation and development, but patent-holders are unlikely to register where there is a high risk of infringement.²⁹

Despite the benefits of IP protection, many countries with some technological capability find it undesirable to impose a strict regime of

²⁰ *Id.* at 457, 460.

²¹ Keith E. Maskus, *Intellectual Property Rights and Economic Development*, 32 CASE W. RES. J. INT'L L. 471, 477 (2000).

²² Su, *supra* note 1, at 198-99.

²³ Maskus, *supra* note 1, at 471.

²⁴ See Sherwood, *supra* note 1, at 504.

²⁵ *Id.* at 493.

²⁶ Su, *supra* note 1, at 204.

²⁷ See Maskus, *supra* note 1, at 464-66.

²⁸ Yu, *supra* note 8, at 63.

²⁹ See MANSFIELD, *supra* note 16, at 31 (even where economic development and technological skills are low, weak IP protection can stifle development by, for instance, limiting the incentive to create at the basic level of a petty patent); see also Maskus, *supra* note 1, at 459-60.

IP protection because it is becoming easier to copy (or pirate) certain types of technology.³⁰ Countries pursuing this course fail to recognize that, although free-ridership³¹ may be desirable in the short term, it fails in the long term because piracy does not necessarily support absorption of technology.³² In addition, access to new technology and R&D opportunities becomes more limited because the cost of technology transfers increases as the transferor compensates for the expected loss of profits due to piracy.³³ Thus, while piracy may have short-term benefits, it could potentially result in long-term losses through decreased transfers of advanced technology and the inability of the technology transfer recipients to innovate further on the basis of technology obtained through piracy.

There are, however, a number of counter arguments to the proposition that strong IPRs will encourage economic development. To begin with, there is historical precedent for developing countries to "borrow" from other countries' technologies. For example, the United States adopted much of its technology from England and France when it was developing during the 19th century.³⁴ One of the great concerns for developing countries is that strong IPRs induce rent transfers to developed, technology-exporting countries such as the United States.³⁵ The result is that money, which could be used to develop the domestic technological infrastructure of developing countries, is spent acquiring technology from abroad.³⁶ In fact, the transfer of technology itself could ultimately be blocked as the purchase price of technology becomes prohibitive.³⁷ Strong IPRs also have a tendency to create monopolies in developing economies where the market is commonly less competitive, thus undermining the effective development of domestic innovations.³⁸ Finally, and very importantly, the cost of implementing protective IP regimes is extremely burdensome on less-

³⁰ See Keith E. Maskus, *Lessons from Studying the International Economics of Intellectual Property Rights*, 53 VAND. L. REV. 2219, 2224 (2000).

³¹ Free-ridership is essentially learning from the innovations (or stealing) the inventions of others.

³² That is, it is harder to fully comprehend stolen technology than technology that is properly transferred. Sherwood, *supra* note 1, at 503.

³³ See KEITH E. MASKUS, *INTELLECTUAL PROPERTY RIGHTS IN THE GLOBAL ECONOMY* 176 (2000); see also Sherwood, *supra* note 1, at 502.

³⁴ See Reid, *supra* note 8, at 83.

³⁵ See Bronckers, *supra* note 3, at 1247 (a rent transfer is essentially the transfer of funds from the party using the IP to the party owning the IPRs. Thus, developing countries are afraid that large amounts of money will be paid out to developed countries in order to make use of IP).

³⁶ *Id.*

³⁷ See Su, *supra* note 1, at 199.

³⁸ Maskus, *supra* note 1, at 469; see also Sherwood, *supra* note 1, at 494.

developed countries as it requires extensive legislation, institutional development, training, and enforcement.³⁹ It may actually be in the best interest of the least-developed countries, therefore, not to encourage strong IPRs because piracy, or learning by copying, is more economically feasible.⁴⁰ Furthermore, due to an unskilled workforce and limited trade in technologically advanced goods, the least-developed countries are unlikely to attract technology transfers in any other manner. The difficulty, of course, is that copying a product does not necessarily result in acquisition of the underlying technology that was used to create the product.⁴¹ Least-developed countries are, therefore, in the uncomfortable position of being unable, for financial reasons, to acquire IP to boost their economic development and, at the same time, unable to learn effectively from that technology they are able to steal. Generally speaking, a developing country which focuses on strictly protecting and enforcing IPRs, as well as on other developmental and market factors like improving human capital and open markets, should be able to enhance its economic growth better than other developing countries that fail to take such steps or are so underdeveloped that they are unable to take such steps.

III.

THE EFFECT OF TRIPS ON TECHNOLOGY TRANSFERS AND ECONOMIC DEVELOPMENT

TRIPS is the primary international agreement seeking to harmonize the protection of IPRs. It is one of the multilateral agreements made at the Uruguay Round that created the WTO. The function of the WTO is to reduce barriers to international trade. The formation of TRIPS within the context of the WTO implies that the focus of the Agreement is on remedying IP issues that are an impediment to international trade.⁴² Any country that wishes to become a member of the WTO and its international trading regime must adhere not only to the General Agreement on Trade and Tariffs (GATT) but also to all the Uruguay Round Agreements, including TRIPS.

TRIPS outlines a minimum standard of substantive IP protection that each member nation must provide in their national laws.⁴³ The forms of IPRs covered by the Agreement include: copyright and related rights, trademarks, geographic indicators, industrial designs, pat-

³⁹ Maskus, *supra* note 21, at 494; *see also* Sherwood, *supra* note 1, at 511.

⁴⁰ *See* Maskus, *supra* note 30, at 2222; *but see* Sherwood, *supra* note 1, at 503 (arguing that extremely poor countries have less to lose in pursuing strong IP protection).

⁴¹ Sherwood, *supra* note 1, 503.

⁴² Su, *supra* note 1, at 186.

⁴³ *Id.* at 187.

ents, integrated circuits, trade secrets, and contractual licenses.⁴⁴ The Agreement provides for, where appropriate, rights conferred, exceptions, requirements of use, licensing and assignment. The Agreement also addresses issues of enforcement, administrative procedures and remedies, criminal procedures, dispute prevention and settlement, and transitional arrangements.⁴⁵ The GATT's fundamental principles of most-favored-nation status and national treatment are also embraced by TRIPS.⁴⁶ Developing countries and those countries transitioning from a centrally-planned to a free-enterprise economy were given five years from entry into force to become fully compliant (i.e. until January 1, 2000), while the least-developed countries are not required to become compliant until January 1, 2006.⁴⁷ These transitional periods were a concession by the developed countries in the face of less-developed countries' concerns that strong IPRs were against their economic interest, and a recognition by developed countries that less-developed countries did not have the infrastructure necessary to implement TRIPS immediately.⁴⁸ Thus, TRIPS introduced a completely new concept of IPRs that was universal rather than national in scope.⁴⁹ The Agreement was promulgated by developed countries whose economies are reliant on exports by industries dependent on IPRs.⁵⁰ Many less-developed countries did not see the Agreement as being in their best interest because it entailed a transfer of wealth from them to those countries holding the most IPRs, in particular OECD countries.⁵¹ These developed countries focused on convincing the developing countries that strong IP protection was in their best interest,

⁴⁴ Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization [hereinafter WTO Agreement], Annex 1C, THE LEGAL TEXTS: THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS 320 (1999), 1869 U.N.T.S. 299, arts 9-40, 33 I.L.M. 1197 (1994) [hereinafter TRIPS Agreement].

⁴⁵ TRIPS Agreement, *supra* note 44, arts. 41-62.

⁴⁶ See Su, *supra* note 1, at 191; see also General Agreement on Tariffs and Trade, art. III, IV, Oct. 30, 1947, 61 Stat. A-3, 55 U.N.T.S. 1874 [hereinafter GATT] (the principle of most-favored-nation status requires that any trade concession extended by a WTO Member must be extended to all WTO Members, while the principle of national treatment requires that all WTO members treat the nationals of other Members the same as they treat their own citizens).

⁴⁷ Developed countries had to be compliant with TRIPS as of January 1, 1995. TRIPS Agreement, *supra* note 44, arts. 65, 66 (The "centrally-planned" countries, are the former communist countries.)

⁴⁸ Bronckers, *supra* note 3, at 1252.

⁴⁹ Su, *supra* note 1, at 173.

⁵⁰ See Frederick M. Abbott, The WTO TRIPS Agreement and Global Economic Development, 72 CHI.-KENT L. REV. 385, 386 (1996).

⁵¹ *Id.* at 387. OECD is the Organization for Economic Co-Operation and Development, which is composed of developed nations, such as the United States.

arguing essentially that strong protection would increase innovation and technology transfers.⁵² The developing countries eventually agreed to TRIPS in order to avoid continued unilateral pressure from the United States to improve their IP protection.⁵³ In return, the developed countries granted concessions on agriculture and textiles, two areas of great importance to the labor-intensive economies of developing countries.⁵⁴ Developed countries also agreed to permit compulsory licensing, viewed by developing countries as an effective means to limit patent abuse and monopolies.⁵⁵ This compromise between developed and developing countries is clear in TRIPS' preamble which purportedly recognizes that development and technological growth are the necessary basis of national IP laws, and that developing countries have "special needs" requiring flexibility in the implementation of their IP laws.⁵⁶

TRIPS may ultimately succeed in producing harmonization and increased IP protection, but at the same time, it may not meet the needs of less-developed countries. TRIPS, by increasing IP protection, may actually limit the transfer of technology to developing countries because the Agreement raises a financial and legal barrier to the absorption of existing technology.⁵⁷ In addition, the protection that the Agreement requires is not high enough to secure the inflow of R&D investment necessary for developing countries to benefit over the long term from strong IP protection.⁵⁸ This barrier could potentially lead to a widening gap between rich and poor nations, as developed countries forge ahead armed with a good head start and income from their export of IPRs, while less-developed countries are stuck importing outdated technology instead of learning through the time honored practice of copying.⁵⁹ In the alternative, it has been asserted that, while TRIPS will have a negative effect on developing countries in the short run, circumstances will improve as both foreign and local

⁵² *Id.* at 390.

⁵³ *Id.* at 388.

⁵⁴ *Id.* at 387.

⁵⁵ Bronckers, *supra* note 3, at 1270-71.

⁵⁶ TRIPS Agreement, *supra* note 44, Preamble.

⁵⁷ See Su, *supra* note 1, at 201-02.

⁵⁸ Robert M. Sherwood, *Global Prospects for the Role of Intellectual Property in Technology Transfer*, 42 IDEA 27, 30 (2002).

⁵⁹ See generally Su, *supra* note 1, at 171; Sherwood, *supra* note 1, at 502-03; Abbott, *supra* note 50, at 395-96; see also L. Danielle Tully, Note, *Prospects for Progress: The TRIPS Agreement and Developing Countries after the DOHA conference*, 26 B. C. INT'L & COMP. L. REV. 129, 140-41 (2003). (in fact, one of the key issues that emerged leading up to the WTO Fourth Ministerial Conference at Doha, Qatar in 2001, was the failure of developed countries to support the advancement of developing countries by engaging in technology transfers).

firms come to see the benefit of increased protection.⁶⁰ Empirical evidence of the effect of TRIPS on the international protection of IPRs and the economic development of less-developed countries is understandably lacking as compliance with TRIPS has only recently become mandatory for developing countries and is not yet mandatory for the least-developed countries. Regardless, the setting of TRIPS within the WTO framework gives a powerful incentive to developing countries to meet its standard of protection as there is always the underlying threat that other trade benefits may be withheld under the WTO regime.⁶¹

IV.

THE ROLE OF TECHNOLOGY TRANSFERS IN ECONOMIC DEVELOPMENT

The transfer of technology, including the transfer of IP, is one of the primary mechanisms for stimulating economic development.⁶² "Technology" can be defined as "a combination of equipment and knowledge" or "the systematic application of scientific or other organized knowledge to practical tasks" or "the systematic knowledge for the manufacture of a product, for the application of a process, or for the rendering of a service, including any integrally associated managerial and marketing techniques."⁶³ Technology has also been characterized as anything used by a society to contribute to economic development.⁶⁴ A technology transfer is a "process by which science and technology are diffused throughout human activity."⁶⁵ In order to qualify as an actual transfer, the recipient must effectively absorb the technology.⁶⁶

Technology is commonly transferred by a foreign investment enterprise or a multinational corporation (MNC) in the form of intermediate goods, expert advice, or IPRs.⁶⁷ This transfer can take place through international trade in goods and services, FDI in the form of wholly-owned subsidiaries and joint ventures, or technology licens-

⁶⁰ Su, *supra* note 1, at 212.

⁶¹ See *e.g.*, *id.* at 194.

⁶² Keith E. Maskus, *The Role of Intellectual Property Rights in Encouraging Foreign Direct Investment and Technology Transfer*, 9 DUKE J. COMP. & INT'L L. 109, 147 (1998); see also David M. Haug, *The International Transfer of Technology: Lessons that East Europe Can Learn from the Failed Third World Experience*, 5 HARV. J.L. & TECH. 209, 217-18 (1992).

⁶³ Haug, *supra* note 62, at 210-11.

⁶⁴ *Id.* at 211.

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.* at 212-13.

ing.⁶⁸ The manner of technology transfer a MNC is willing to undertake is dependent on the level of sophistication of the technology transferred and the level of IP protection available in the receiving market.⁶⁹ Thus, MNCs are more likely to invest in a wholly-owned subsidiary in a country where IP protection is weak, switching to joint ventures, and eventually licensing as the protection of IPRs grows stronger.⁷⁰ FDI in the form of a wholly-owned subsidiary tends to be the preferred form of investment on the part of the MNC because it retains exclusive control over its proprietary knowledge and profits.⁷¹ Licensing becomes more desirable than FDI where the transaction costs⁷² of licensing are low, the technology is basic and the domestic market is small or the firm does not have sufficient funds for FDI.⁷³ Joint ventures fall in between because the transferring MNC maintains some degree of control, but will often be unwilling to transfer advanced technology if it holds a minority share.⁷⁴ The level of IP protection in a country will thus be determinative of the manner and sophistication of the technology transferred.

FDI is "the act of establishing or acquiring a foreign subsidiary over which the investing firm has substantial management control," and is typically made by MNCs.⁷⁵ Approximately two-thirds of FDI is between developed countries, with the remaining one-third going to a few key developing countries.⁷⁶ FDI can be horizontal or vertical, with horizontal subsidiaries producing mainly for local market con-

⁶⁸ *Id.* at 213-15.

⁶⁹ See Maskus, *supra* note 21, at 481.

⁷⁰ MASKUS, *supra* note 33, at 123.

⁷¹ Haug, *supra* note 62, at 213-14.

⁷² See Edwin Mansfield, *Unauthorized Use of Intellectual Property: Effects on Investment, Technology Transfer, and Innovation*, in GLOBAL DIMENSIONS OF INTELLECTUAL PROPERTY RIGHTS IN SCIENCE AND TECHNOLOGY 116 (1993) [hereinafter SCIENCE & TECHNOLOGY] (here transaction costs mean the cost of enforcing the proprietary rights. One of the many reasons a corporation is less likely to license proprietary information to local businesses is the need to develop goodwill in association with its mark).

⁷³ SCIENCE & TECHNOLOGY, *supra* note 72, at 119; see also Haug, *supra* note 62, at 214-15 (licensing is the most versatile form of technology transfer and can include patent licenses, know-how agreements and technical assistance agreements).

⁷⁴ Primo Braga & Carsten Fink, *The Relationship Between Intellectual Property Rights and Foreign Direct Investment*, 9 DUKE J. COMP. & INT'L. L. 163, 173 (1998); see Haug, *supra* note 62, at 215 ("Joint ventures are long-term relationships involving the pooling of assets, joint management, profit and risk sharing, joint marketing, servicing, and production").

⁷⁵ Maskus, *supra* note 62, at 119.

⁷⁶ See UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT, FOREIGN DIRECT INVESTMENT AND DEVELOPMENT 11 (1999) [hereinafter UNCTAD]. The key developing countries include China, Mexico and Brazil. United Nations Conference on Trade and Development, Top Ten Foreign Direct Investment Host Economies in 2001, at www.unctad.org/Templates/WebFlyer.asp?intItemID=2087&lang=1 (last visited Sep. 29, 2004).

sumption and vertical subsidiaries producing primarily for export purposes.⁷⁷ A key component of FDI tends to be “knowledge-based assets” (i.e., intellectual and technological know-how).⁷⁸ MNCs are likely to undertake FDI rather than another kind of technology transfer, such as licensing, where monitoring and enforcing IPRs is difficult due to the need to control access to these knowledge-based assets.⁷⁹ In addition to technology, FDI also provides the recipient country with access to international production networks, markets, and brand names.⁸⁰ These side benefits are as important as the technology because growth is directly linked to capital investment, which in turn depends on the availability of foreign exchange.⁸¹ Foreign exchange is generated through exports, but it is very difficult for developing countries to penetrate international markets and increase their exports without FDI from MNCs.⁸² FDI is, therefore, vital for the growth of less-developed countries because it provides not only the technology needed to compete on the world stage, but also access to the international markets and the financial wherewithal to get there.

When deciding whether to invest in a country, a MNC is concerned with a number of factors, such as proximity of the place of investment to the prospective market for the goods produced, the size of that market, and the cost of transporting goods to that market.⁸³ In addition, MNCs commonly consider the existing physical infrastructure (e.g., roads), tax treatment, the licenses required to conduct business, customs duties levied, the cost of input prices and, of course, the IP protection available.⁸⁴ Also of concern is the amount of high skill-low wage labor and managerial capabilities that are available in the recipient country.⁸⁵ Thus, while attracting FDI is often dependent on the IP protection available, other factors can be as, if not more, important.

⁷⁷ Maskus, *supra* note 62, at 120, 124 (MNCs invest in vertical subsidiaries where they can take advantage of low wage markets, thus making the production for export more cost-effective. Horizontal subsidiaries on the other hand will be more desirable where the host country has a large market capable of consuming the product produced. Most MNCs pursue vertical FDI in developing countries).

⁷⁸ *Id.* at 121-22.

⁷⁹ *Id.* at 128.

⁸⁰ UNCTAD, *supra* note 76, at 18, 21.

⁸¹ *Id.*

⁸² *Id.*

⁸³ See generally Jeffrey J. Blatt & Phillip H. Miller, *Preparing for the Pacific Century: Fostering Technology Transfer in Southeast Asia*, 3 ANN. SURV. INT'L & COMP. L. 235, 238; MASKUS, *supra* note 62, at 125.

⁸⁴ Blatt & Miller, *supra* note 83, at 238-39; Braga & Fink, *supra* note 74, at 170.

⁸⁵ Blatt & Miller, *supra* note 83, at 238.

The country receiving the FDI should ensure, to the extent possible, that the investment transfers technology that is appropriately advanced for its stage of development.⁸⁶ The technology should be conveyed in a manner that the receiving country can absorb, and in a way that the country does not become dependent on the transferring MNC, but rather develops its own technological capabilities.⁸⁷ Because of these needs, developing countries prefer joint ventures to wholly-owned foreign enterprises and licensing agreements as joint ventures provide the recipient country with new and improved technology over the duration of the venture, giving the developing country time to adopt and integrate the technology.⁸⁸ At the same time, joint ventures do not last long enough to engender dependence.⁸⁹

Empirical evidence shows that countries with higher IP protection tend to attract not only more FDI, but also more advanced products and processes.⁹⁰ Thus, the higher the protection, the more likely the transferred technology is to be advanced.⁹¹ Correspondingly, the transfer of old, standardized, and labor-intensive technology will be less affected by the existing level of IP protection.⁹² For example, the food and transportation industries are the least concerned by the level of IP protection afforded by the countries in which they invest,⁹³ while producers of electrical equipment, metals, machinery and agriculture tend to be more concerned about IP protection.⁹⁴ Industries particularly concerned with IP protection when deciding whether to transfer technology are pharmaceuticals, software, and chemicals. But the form of investment most sensitive to IPRs is research and development (R&D).⁹⁵ Thus, it is evident that in addition to determining the amount of technology transferred, the level of IP protection affects the nature and quality of technology transferred as well.

⁸⁶ See Haug, *supra* note 62, at 224.

⁸⁷ See *id.* at 218, 225.

⁸⁸ *Id.* at 215, 236.

⁸⁹ See *id.* at 236; see also UNCTAD, *supra* note 76, at 37 (joint ventures are also an effective way to transfer "soft technologies" such as managerial skills).

⁹⁰ Braga & Fink, *supra* note 74, at 176-77.

⁹¹ MASKUS, *supra* note 33, at 129.

⁹² *Id.*

⁹³ See generally MANSFIELD, *supra* note 16, at 28.

⁹⁴ See Maskus, *supra* note 21, at 504; Maskus, *supra* note 62, at 158; See SCIENCE & TECHNOLOGY, *supra* note 71, at 112, 114 (The level of protection afforded IPRs, however, is of particular importance to investment in manufacturing where the receiving market is large, because of the potential scope of infringement).

⁹⁵ Braga & Fink, *supra* note 74, at 175-76; see also MANSFIELD, *supra* note 16, at 11. (It should be noted that the MNCs with research intensive products that are easy to imitate are also unlikely to transfer technology to countries with weak IPRs).

V.

THE PROTECTION OF IPRs IN CHINA

A. *The Historical Role of IPRs in China*

China's perceptions of IPRs derive from the community-oriented philosophies of Confucianism and Taoism.⁹⁶ IPRs were understood to be the property of the community as a whole and imitation was recognized as an integral part of the learning process.⁹⁷ IP protection, therefore, came late to China; the first patent law was enacted in 1898, followed twelve years later by a copyright law.⁹⁸ China's emerging protection for IP was prematurely eliminated when the communists came to power in 1949 and formed the PRC, which abolished the existing Chinese legal system.⁹⁹

In 1950, the PRC promulgated its first IP law, the "Provisional Regulation on the Protection of the Invention Right and the Patent Right."¹⁰⁰ However, it was not until the end of the Cultural Revolution and the adoption of China's Fifth Constitution in 1982 that a foundation was laid for the introduction of substantive IP laws.¹⁰¹ The first promulgated was the Trademark Law in 1982, followed by the Patent Law in 1984, and the Copyright Law in 1990.¹⁰² China also took steps to join the existing international legal regime for the protection of IPRs, including the World Intellectual Property Organization in 1980, the Paris Convention for the Protection of Industrial Property in 1985, and the Berne Convention for the Protection of Literary and Artistic Works in 1992.¹⁰³ Due to continuing pressure from the United States to improve its protection of IPRs, China substantially improved its IP laws during the early 1990s.¹⁰⁴ By 1995, the PRC's IP laws were thought to agree substantially with TRIPS.¹⁰⁵

China's entry into the WTO was tumultuous. In the West, the process, initiated in July 1986, renewed the debate over whether to isolate or engage the PRC.¹⁰⁶ It was riddled with unfortunate political events, such as the United States' bombing of the Chinese embassy in

⁹⁶ Chen, *supra* note 9, at 9.

⁹⁷ *Id.*

⁹⁸ *Id.* at 10-11.

⁹⁹ Weiqiu Long, *Intellectual Property in China*, 31 ST. MARY'S L. J. 63, 65 (1999).

¹⁰⁰ Sorell, *supra* note 10, at 321.

¹⁰¹ Long, *supra* note 99, at 66-67.

¹⁰² Michael N. Schlesinger, *A Sleeping Giant Awakens: The Development of Intellectual Property Law in China*, 9 J. CHINESE L. 93, 97 (1995).

¹⁰³ *Id.* at 98-99.

¹⁰⁴ DANIEL C. K. CHOW, A PRIMER ON FOREIGN INVESTMENT ENTERPRISES AND PROTECTION OF INTELLECTUAL PROPERTY IN CHINA 182 (2002).

¹⁰⁵ Schlesinger, *supra* note 102, at 94.

¹⁰⁶ NICHOLAS R. LARDY, INTEGRATING CHINA INTO THE GLOBAL ECONOMY 63 (2002).

Belgrade in 1999 and the ensuing anti-American protests in China.¹⁰⁷ Finally, on November 10, 2001, the PRC became a member of the WTO, agreeing to abide by the entire WTO regime, including TRIPS.¹⁰⁸ The United States' insistence that China's accession be on "commercially meaningful terms" resulted in China joining the WTO as a developed country, rather than as a developing country or a country transitioning from a non-market economy.¹⁰⁹ This meant that China entered on more exacting terms, and did not have the right to use the extended transition periods granted to developing countries, but rather had to comply immediately with TRIPS.¹¹⁰ With its entry into the WTO, China joined the world community in the commitment to a harmonized minimum standard of IP protection.

B. *The Current Status of IP Protection in China*

The PRC's IP laws are administered by the State Intellectual Property Office of the People's Republic of China (SIPO).¹¹¹ The laws administered include the Trademark Law of 1982 (revised October 27, 2001), the Copyright Law of 1990 (amended October 27, 2001), the Patent law of 1984 (revised August 25, 2000), the Law Against Unfair Competition of 1993, and the Criminal Law of 1979 (revised March 14, 1997).¹¹² Despite its status as a non-member at the time, China actively participated in negotiating TRIPS, and used the Agreement as the basis for forming and revising much of its own IP laws.¹¹³ The PRC also deems treaties to be part of Chinese law upon accession, and has said that where its IP laws are not in conformity with international standards it will look to the existing international rule.¹¹⁴ Between the recent revisions based on TRIPS and the inclusion of international law, China's IP laws are substantively some of the most comprehensive in the world.¹¹⁵

While the PRC's IP laws are considered substantively adequate, its enforcement measures, particularly in the area of copyright, are

¹⁰⁷ LARDY, *supra* note 106, at 63-64; RAJ BHALA, *INTERNATIONAL TRADE LAW: THEORY AND PRACTICE* 167, 188 (2d ed. 2001).

¹⁰⁸ Sorell, *supra* note 10, at 338 n.4; BHALA, *supra* note 107, at 180.

¹⁰⁹ LARDY, *supra* note 106, at 64; BHALA, *supra* note 107, at 155.

¹¹⁰ See generally LARDY, *supra* note 106, at 64.

¹¹¹ State Intellectual Property Office of the People's Republic of China, at http://www.sipo.gov.cn/sipo_English/gysipo_e/fzyg_e/default.htm (last visited Sept. 28, 2004).

¹¹² *Id.*

¹¹³ Zheng, *supra* note 17, 220-21.

¹¹⁴ Wang, Note, *The Current Economic and Legal Problems Behind China's Patent Law*, 12 *TEMP. INT'L & COMP. L. J.* 1, 20 (1998).

¹¹⁵ Yu, *supra* note 8, at 67.

severely criticized.¹¹⁶ IP infringement actions can be brought before either the administrative agency responsible for the protection of IP in the province, autonomous region or municipality, or to the People's Court.¹¹⁷ In order to better manage IP cases, China has established special Intellectual Property Divisions and arbitration committees within its court system.¹¹⁸ The Supreme People's Court, the highest appellate court in China, includes an "Intellectual Property Trial Division."¹¹⁹ IP cases brought by foreigners begin in the Intermediate People's Court, but the administrative process is more commonly pursued than litigation.¹²⁰ Arbitration, perceived as less contentious, is, however, considered the most desirable method of settlement by the Chinese.¹²¹ Civil litigation is generally speaking an impractical matter in China, as most infringers do so secretly and flee when trouble arises.¹²² China, therefore, chooses to emphasize public enforcement actions, such as much publicized raids. As a result, criminal punishment is the most effective method of enforcement in China.¹²³

Effective enforcement of IPRs is challenged in China by lack of the rule of law and transparency, rivalry within the enforcement apparatus itself, and corruption.¹²⁴ These problems are aggravated by the bureaucratic decentralization, which was undertaken to encourage economic development, but has resulted in regionalism and a tendency to protect local interests.¹²⁵ The most severe piracy is pursued by legitimate and powerful business men in large cities and piracy commonly supports entire local economies, with the pirated goods being intended for large scale commercial trade, both domestically and abroad.¹²⁶ Local officials often see infringement as a way to get rich and will frequently interfere in cases, ordering judges to direct judgments in favor of the local party.¹²⁷ In addition, the populace at large is generally unappreciative of IPRs for traditional cultural reasons and lack of education on the subject.¹²⁸

¹¹⁶ See Chen, *supra* note 9, at 15-17; Schlesinger, *supra* note 102, at 119.

¹¹⁷ Chen, *supra* note 9, at 44; Sorell, *supra* note 10, at 329 (the People's Court is the equivalent of a trial court in the United States).

¹¹⁸ Chen, *supra* note 9, at 40.

¹¹⁹ Cheng, *supra* note 17, at 1989; Sorell, *supra* note 10, at 331.

¹²⁰ Zhang, *supra* note 17, at 68.

¹²¹ Chen, *supra* note 9, at 38.

¹²² CHOW, *supra* note 104, at 208-09.

¹²³ *Id.* at 211, 217.

¹²⁴ Yu, *supra* note 8, at 69.

¹²⁵ Palmer, *supra* note 17, at 468-69, 471.

¹²⁶ Wang, *supra* note 114, at 28; CHOW, *supra* note 104, at 180.

¹²⁷ Wang, *supra* note 114, at 35, 38.

¹²⁸ *Id.* at 27.

Political intervention in the legal process is possible due to the weakness of China's legal profession, which was abolished in the early years of communism and only resurrected in 1980.¹²⁹ As of 1996, China had only about 50,000 full-time lawyers, of which less than 14,000 had received a law degree.¹³⁰ Most judges have no legal training and are commonly retired military men who are subject to local political pressure.¹³¹ Few judges are familiar with IP laws.¹³² In addition, judicial determinations in China are often useless because the judges do not publish their reasoning, damages are minimal, and delays extensive.¹³³ Furthermore, uniformity is lacking in the resolution of IP cases due to decentralization and a civil law system where prior decisions have no *stare decisis* effect.¹³⁴ Thus, despite the presence of excellent laws on the books, the enforcement and protection of IPRs in China fall well below that provided for in its domestic laws and mandated by those international agreements to which China is party.

VI.

ECONOMIC DEVELOPMENT AND TECHNOLOGY TRANSFERS IN CHINA

A. *The State of China's Economy*

With a population of 1.3 billion and a steady economic growth rate of 8% from 1978 to 1994, China is considered a potential economic super power.¹³⁵ A high savings rate, for both businesses and households, has supported high rates of investment and capital accumulation.¹³⁶ Relaxed regulations on foreign investment in special economic zones, mostly along the east coast, contributed substantially to this high economic growth.¹³⁷ China is the tenth largest trading nation in the world, and one of the fastest growing markets for goods and services.¹³⁸ China's major trading partners are Japan, the United States, Germany, the EU, and Korea.¹³⁹ China pursues an economic "open door policy" with the goal of developing its technological ca-

¹²⁹ *Id.* at 25.

¹³⁰ *Id.*

¹³¹ Wang, *supra* note 114, at 26; Cheng, *supra* note 17, at 1993-94.

¹³² Zhang, *supra* note 17, at 70.

¹³³ *Id.* at 81.

¹³⁴ Sorell, *supra* note 10, at 331.

¹³⁵ Taylor, *supra* note 6, at 151; THE WORLD BANK, *supra* note 11, at 3; *see also* Department of State, *supra* note 12 (China's growth rate in 2002 remained at 8%).

¹³⁶ THE WORLD BANK, *supra* note 11, at 4-5.

¹³⁷ *Id.* at 11.

¹³⁸ Taylor, *supra* note 6, at 151-52, 158.

¹³⁹ ECONOMIC AND SOCIAL COMMISSION FOR ASIA AND THE PACIFIC, GUIDEBOOK ON TRADING WITH CHINA (5th ed. 1999) [hereinafter ESCAP].

pacities.¹⁴⁰ China's ninth five-year plan (1996-2000) focused on transitioning from a planned to a "socialist market economy" and increased efficiency.¹⁴¹ The country sought foreign funding for projects in areas such as oil and coal, textiles, pharmaceuticals, electronics, chemicals, metallurgy, transport and communications.¹⁴² The tenth five-year plan (2000-2005) focuses on continuing to open up the socialist market economy by reforming state-owned enterprises (SOEs), the financial system, the agricultural and labor markets, and developing the social system needed to support private investment.¹⁴³ The emphasis is on the legal, human, and institutional infrastructure in China, and its integration with the global economy through membership in the WTO.¹⁴⁴ Current weaknesses in the Chinese economy, which will likely persist, include poor endowments in land, human capital, and physical capital.¹⁴⁵ China's industry is also dominated by SOEs and collectively-owned enterprises, which traditionally perform very poorly.¹⁴⁶ Despite existing negative economic variables, China's economy appears to be heading towards successful development.

B. *The Chinese Framework for Technology Transfers*

China has grown over the last quarter of a century to surpass the United States as the number one recipient of FDI in the world, receiving nearly \$53 billion in 2003.¹⁴⁷ As of 1997, there were almost 300,000 foreign-funded enterprises¹⁴⁸ in China,¹⁴⁹ and as of 2002, 45% of China's exports were produced by MNCs.¹⁵⁰ The laws governing investment in China by foreign investment enterprises include the Sino-Foreign Equity Joint Venture Law of 1979 (revised March 15, 2001),¹⁵¹ the Sino-Foreign Contractual Joint Venture Law of 1988 (re-

¹⁴⁰ Anna M. Han, *Technology Licensing to China: The Influence of Culture*, 19 *HASTINGS INT'L & COMP. L. REV.* 629 (1996).

¹⁴¹ *THE WORLD BANK*, *supra* note 11, at 18 (to this end it concentrated on reforming state-owned enterprises and developing its pillar industries of machinery, electronics, petrochemicals, cars, and construction).

¹⁴² *ESCAP*, *supra* note 139, at 98.

¹⁴³ *The World Bank, The World Bank and China: Country Brief*, at <http://lnweb18.worldbank.org/eap/eap.nfs/Countries/China/6DEAF1C89A29A3C885256B> (last visited, Oct. 20, 2002) [hereinafter *Country Brief*] (as with the ninth five-year plan, China is looking for investment partners).

¹⁴⁴ *Id.*

¹⁴⁵ *ESCAP*, *supra* note 139, at 92; *THE WORLD BANK*, *supra* note 11, at 93 (many industrial enterprises in China are in need of equipment upgrades).

¹⁴⁶ *THE WORLD BANK*, *supra* note 11, at 28.

¹⁴⁷ *See THE WORLD BANK*, *supra* note 11, at 83; Department of State, *supra* note 12.

¹⁴⁸ These are essentially multinational corporations (MNCs).

¹⁴⁹ *ESCAP*, *supra* note 139, at 82.

¹⁵⁰ *See* Department of State, *supra* note 12.

¹⁵¹ *CHOW*, *supra* note 104, at 259.

vised October 31, 2000),¹⁵² and the Wholly Foreign-Owned Enterprise Law of 1986 (revised April 12, 2001).¹⁵³ Contract formation is governed under the Contract Law of China, which took effect in October 1, 1999. This law standardizes contractual relationships and replaces prior contract law, which governed nationals and foreigners separately.¹⁵⁴

A foreign enterprise may undertake investment in China in the form of a wholly foreign-owned enterprise (WFOE), an equity joint venture, a contractual joint venture, or through contractual licensing. All plans for investment in China by a foreign entity must be pre-approved by China's Ministry of Commerce (formerly MOFTEC)¹⁵⁵ and China prescribes the extent to which foreign enterprises can invest in certain regions and industries.¹⁵⁶ WFOEs are currently the most popular investment vehicle, surpassing equity joint ventures, which were until recently the preferred method of investment.¹⁵⁷ This change is due to the revision of the Wholly Foreign-Owned Enterprise Law in 2001, which eliminated requirements for advanced technology transfers, the local purchase of inputs, and export performance quotas.¹⁵⁸ Equity joint ventures have declined in popularity because they continue to require the use of equipment and technology "appropriate" to the needs of Chinese technological development, and access to IP documentation is subject to more direct governmental oversight.¹⁵⁹

¹⁵² *Id.* at 283.

¹⁵³ *Id.* at 304.

¹⁵⁴ Feng Chen, *The New Era of Chinese Contract Law: History, Development and a Comparative Analysis*, 27 *BROOK. J. INT'L L.* 153, 162-68 (2001).

¹⁵⁵ See Anyuan Yuan, *China's Entry into the WTO: Impact on China's Regulating Regime of Foreign Direct Investment*, 35 *INT'L LAW.* 195, 207 (2001).

¹⁵⁶ Cheng, *supra* note 17, at 2002; see also Yuan, *supra* note 155, at 212 (some of the areas in which foreign investment is restricted or prohibited include: textile, petroleum, and certain service sectors).

¹⁵⁷ See George O. White III, *Enter the Dragon: Foreign Direct Investment Laws and Policies in the P.R.C.*, 29 *N.C. J. INT'L L. & COM. REG.* 35, 40 (2003); Yuan, *supra* note 155, at 202.

¹⁵⁸ White, *supra* note 157, at 41; but see 2003 Report to Congress on China's WTO Compliance, USTR 40 (Dec. 11, 2003), available at http://www.ustr.gov/assets/World_Regions/North_Asia/China/asset_upload_file425_4313.pdf (stating that China's revised laws continue to "encourage" technology transfers, while not officially requiring them).

¹⁵⁹ White, *supra* note 157, at 40, 53. They take the form of a limited liability company and foreign investors are required to contribute at least 25% of the capital. Cheng, *supra* note 17, at 2000-01; see also Kevin Kennedy, *A WTO Agreement on Investment: A Solution in Search of A Problem?*, 24 *U. PA. J. INT'L ECON. L.* 77, 165 (2003) (note that WTO membership requires China to eliminate requirements that raise barriers to investment such as mandatory purchase of local goods over foreign goods and "measures that tie the amount of foreign exchange and imported inputs to the value of exports" in order to comply with the Agreement on Trade Related Investment Measures (TRIMS)); see also Yuan, *supra* note 155, at 197, 213 (TRIMS is concerned with the elimination of investment measures that raise barriers to trade, but it does not address barriers to the establishment of

Contractual joint ventures are more rare, but allow more flexibility as investment, equity ownership and liability can be freely negotiated by the parties. This form of investment is commonly used where it is difficult to assess the value of each party's contribution.¹⁶⁰ Joint ventures, which commonly last 10 to 50 years, are seen by China as a desirable short-term investment method for procuring economic development.¹⁶¹ The Chinese partner to a joint venture commonly supplies land, natural resources, labor and real estate, while the foreign partner supplies the technology, a majority of the capital, and some equipment and materials.¹⁶²

Foreign investors, transferring technology to China, face a great risk that their proprietary assets will be pirated. Disclosure to third parties, like contract manufacturers, distributors and suppliers of raw materials, is quite common.¹⁶³ In fact, just the act of registering a patent, copyright or trademark can lead to infringement because of the information that must be disclosed.¹⁶⁴ In the context of licensing, the transferor must deal with the difficulty that Chinese licensees do not always conceive of confidentiality in the same terms as the licensor. Licensees are likely to divulge information to parties the transferor, but not transferee, considers a third party (e.g., a sister factory).¹⁶⁵ In addition, it must be remembered that China maintains the right to the compulsory licensing of any patent that the holder has failed to exploit or license under reasonable terms in China.¹⁶⁶ China has provided a framework through which FDI may be effectively undertaken in China and technology transferred. Limits remain, however, on the industries and regions in which investment can be undertaken, restricting China's access to potential sources of FDI and a variety of technology.

businesses generally, therefore it seems that China may maintain its regulations as to approval procedure, sector restrictions, and foreign exchange controls regulating the repatriation of profits); Kennedy, *supra*, at 165.

¹⁶⁰ Cheng, *supra* note 17, at 2000-01; Yuan, *supra* note 155, at 204.

¹⁶¹ CHOW, *supra* note 104, at 43.

¹⁶² ESCAP, *supra* note 139, at 199.

¹⁶³ CHOW, *supra* note 104, at 5.

¹⁶⁴ *Id.*

¹⁶⁵ Han, *supra* note 140, at 639; *see also* CHOW, *supra* note 104, at 226 (it is crucial, therefore, that the foreign investor makes it clear that it owns the property rights to any IP transferred to any joint venture or licensee).

¹⁶⁶ Han, *supra* note 140, at 631. This practice is limited by WTO accession requirements, *see* Blatt & Miller, *supra* note 83, at 247.

C. *China's Economic Development*

China is well positioned to realize the benefits of FDI induced technology transfers. Unlike many other developing countries, it has a number of important factors working in its favor as it attempts to attract FDI and technology transfers. First, China has a large and growing domestic market that can also provide access to an extensive regional market.¹⁶⁷ In addition, it possesses sufficient natural resources, domestic industries capable of manufacturing inputs and a large pool of educated low-wage labor.¹⁶⁸ Because the domestic market for goods and services is fairly large, it should be able to attract horizontal FDI,¹⁶⁹ thereby benefiting from the availability of foreign technology dependent products in the Chinese market.¹⁷⁰ The size of the domestic market also means China should be able to attract competing foreign investment, counteracting to some extent its own economy's tendency towards monopolies.¹⁷¹ At the same time, because China encourages FDI for export and is well positioned to serve as a base for regional distribution, it is likely to attract vertical FDI, and therefore benefit from an increase in foreign exchange. In addition, due to its high savings rate, China is not plagued, as other developing countries commonly are, by limited capital reserves to invest in technology.¹⁷² This surplus of capital means China is capable not only of purchasing IPRs from abroad, but of investing extensively in domestic R&D, making it the highest investor in R&D in the developing world.¹⁷³ The extent of its domestic R&D facilities, in addition to both the size of its home market and accessibility to other markets in Asia, makes China a logical place for MNCs to invest in R&D.¹⁷⁴ If China continues to serve successfully as a base for export-driven FDI by MNCs, this source of foreign exchange will permit China to continue purchasing IPRs, engage in R&D and undertake the capital investment necessary to further its economic development.

China's poor record in IP protection has, however, discouraged foreign firms from making advanced technology transfers.¹⁷⁵ For example, China's piracy rate for software was 92% in 2001 resulting in a

¹⁶⁷ That is, the rest of Asia.

¹⁶⁸ See generally ESCAP, *supra* note 139, at 3, 16 et. seq.

¹⁶⁹ See discussion of vertical and horizontal investment, *supra* Part IV.

¹⁷⁰ See *supra* Part II (presence of foreign technology products in and of itself provides technology transfer and, therefore, a basis for new innovation).

¹⁷¹ Sherwood, *supra* note 1, at 501-02.

¹⁷² See Su, *supra* note 1, at 197.

¹⁷³ MANSFIELD, *supra* note 16, at 12.

¹⁷⁴ CHOW, *supra* note 104, at 35.

¹⁷⁵ MANSFIELD, *supra* note 16, at 23.

total of \$1.66 billion in lost revenue for IP owners.¹⁷⁶ Also, in 2001, U.S. businesses lost an estimated \$1.9 billion total to copyright piracy.¹⁷⁷ MNCs have indicated that the technologies they transfer to China are usually at least five years old, or likely to soon become obsolete, and that they are particularly reluctant to pursue R&D in China at all.¹⁷⁸ Those companies that do transfer technology to China prefer joint ventures, and increasingly WFOEs, in order to control access to trade secrets and other knowledge-based assets.¹⁷⁹ MNCs will often avoid fully integrating with the Chinese operation due to China's weak IP protection.¹⁸⁰ China's weak IP protection thus results in China losing the influx of foreign resources important to its economic development.

Infringement in China has also undermined the development of domestic industries because the benefits of investing in brand name recognition are outweighed by the cost of infringement.¹⁸¹ Currently, Chinese brands account for about 80% of the counterfeit goods found in China.¹⁸² China's search for greater efficiency in the tenth five-year plan (2000-2005) may be undermined by the extent of IP infringement because weak IPRs discourage innovation, even in the area of petty patents.¹⁸³ Additionally, it is difficult for China to bring the fruits of its domestic institutional R&D to market because high IP infringement rates undermine any fiscal incentive to develop them.¹⁸⁴ China's weak IP protection thus results in the loss of potential domestic resources crucial to its economic development.

China is not unaware of its need to better enforce IPRs, and as discussed above, is somewhat limited by institutional and structural impediments that will only be eliminated over time. China began responding to concerns regarding its IP protection by reorganizing its administrative and judicial structure.¹⁸⁵ It has also acted by strengthening its IP protection in the area of biotechnology in order to secure foreign investment in that area. As a result, its pharmaceutical indus-

¹⁷⁶ Economist Intelligence Unit, Country Commerce China: Key Economic Indicators, Mar. 28, 2003, available at 2003 WL 61232734.

¹⁷⁷ Reid, *supra* note 8, at 66.

¹⁷⁸ Maskus, *supra* note 21, at 487.

¹⁷⁹ CHOW, *supra* note 104, at 143.

¹⁸⁰ MASKUS, *supra* note 33, at 203.

¹⁸¹ Maskus, *supra* note 1, at 461.

¹⁸² Andrew Evans, *Taming the Counterfeit Dragon: The WTO, TRIPS and Chinese Amendments to Intellectual Property Laws*, 31 GA. J. INT'L & COMP. L. 587, 596 (2003).

¹⁸³ Maskus, *supra* note 1, at 459-60; see THE WORLD BANK, *supra* note 11, at 20.

¹⁸⁴ MASKUS, *supra* note 33, at 203.

¹⁸⁵ See generally Cheng, *supra* note 17, at 1983-98.

try has been quite successful.¹⁸⁶ China has also made recent changes to its various IP and contract laws.¹⁸⁷

In as much as possible, China should continue to require that proposed FDI meet the following concerns: (1) the adjustment of the Chinese economy from state directed to a socialist market economy and (2) economic development through an increase in scientific and technological knowledge.¹⁸⁸ China should also be aware, however, that the most expensive and cutting-edge technology may not be appropriate for its current stage of development,¹⁸⁹ whereas importing intermediate products and other equipment with advanced technological components should provide the country with an efficient means of absorbing technology.¹⁹⁰ While China is well positioned to take advantage of technology transferred through FDI, it needs to persist in enhancing its existing system for the protection of IPRs in order to insure its continued access to the advanced technology necessary for its continued economic development.

VII.

CONCLUSION

China's primary motive in opening its market to international trade is the improvement of its technological base and the accompanying benefits of economic development. If it wishes to take full advantage of its entry into the international economy, it will need to improve its protection of intellectual property rights. Stronger enforcement will be necessary to attract foreign direct investment in high technology sectors and research and development activities. Without foreign investment in these sectors, China will be unable to rise to higher levels of economic development and faces the threat of economic stagnation.

¹⁸⁶ Taylor, *supra* note 6, at 169.

¹⁸⁷ See *supra* Part V.B.

¹⁸⁸ ESCAP, *supra* note 139, at 207.

¹⁸⁹ See Yu, *supra* note 8, at 75-76.

¹⁹⁰ THE WORLD BANK, *supra* note 11, at 90.

