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**Global Intellectual Property Rights and Economic Growth**

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# Global Intellectual Property Rights and Economic Growth

By Linda Y. Yueh\*

## I. INTRODUCTION

¶1 Globalization has proceeded at an unprecedented pace in the late 20th and 21st centuries. One of the most dramatic changes with respect to the global economy is the development of international economic law. The advent of an international economic order has fundamentally changed the nature of the global economy, affecting countries as well as the firms and individuals in every nation and region. In particular, the creation of the World Trade Organization (WTO), which succeeded the General Agreement on Tariffs and Trade (GATT) in 1994, heralded the start of international economic law. International economic law, the dispute settlement mechanism of the WTO, and the associated rules that implement the WTO agreement together comprise a new regime of global economic regulation.

¶2 This newly instated legal and regulatory framework raises many questions and has already caused much uncertainty, especially with respect to one of its provisions, trade-related aspects of intellectual property rights (TRIPS). The effects of this new regime deserve some investigation, particularly TRIPS and their effects on technology dissemination. The distribution of technology is essential to the process of economic growth and has several implications for economic development.

¶3 This paper will first provide an overview of the new international regime with the advent of TRIPS. Second, most of the limited literature on TRIPS focuses on the best response of nations under such a trading regime<sup>1</sup> and potential welfare losses from a set of global intellectual property rights (IPRs) regulations.<sup>2</sup> We diverge from this approach and consider the effects of such a regulatory regime on the costs of technology transfers and thus innovation, notably from developed to developing countries. The results will help inform the effects of an economic regulatory regime on innovation and economic growth. Namely, we will argue that the costs imposed by TRIPS on the technology transfer process will increase the cost of technology transfers and reduce the prospect of rapid “catch up” growth. There is a countervailing effect in that a global rules-based system may generate more FDI flows. The net effect is an empirical question, which we assess in our conclusion that examines the likely implications for long-term economic growth for developing countries.

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<sup>1</sup> See, e.g., Gene Grossman & Edwin Lai, *International Protection of Intellectual Property*, 94 AMER. ECON. REV. 1635 (2004).

<sup>2</sup> See, e.g., Alan Deardoff, *Welfare Effects of Global Patent Protection*, 59 ECONOMICA 35 (1992).

¶4 Section II provides an introduction to the framework of global intellectual property rights under the TRIPS provisions. Section III presents the linkages between global intellectual property rights and economic growth. Section IV gives the theory behind growth, technology, and the process of convergence, as well as a discussion of the importance of laws and institutions. Section V presents the evidence concerning growth and inequality in the global economy. The final section concludes.

## II. THE FRAMEWORK OF GLOBAL ECONOMIC REGULATION

¶5 The primary set of institutions related to the United Nations that constitute the international economic order includes the International Monetary Fund (IMF), the World Bank, World Intellectual Property Organization (WIPO), and most recently the WTO. International trade had been previously regulated under a set of multilateral treaty agreements governed by GATT, although GATT did not have legal standing under public international law.

### A. *International Economic Law and the WTO*

¶6 It is often surprising to learn that international economic law largely came into existence around a decade ago, although previous laws had economic content.<sup>3</sup> The Marrakesh Agreement Establishing the WTO (WTO Agreements) signed in Marrakesh, Morocco on April 15, 1994, superseded GATT, which was set up in the aftermath of the Second World War. The Uruguay Round of 1986-1994 created the WTO as the international institution responsible for governing trade relationships.<sup>4</sup> The WTO came into effect on January 1, 1995, and in turn established international economic law, the public legal regime of trade rules among nations who are members of the WTO. As of 2007, 150 countries are members of the WTO and together they account for 95% of world trade. The current round of negotiations in the WTO to extend its mandate is known the Doha Round, initiated in Doha, Qatar in 2001, and is known informally as the Development Round due to its emphasis on furthering the interests of developing countries, though the extent of its success in doing so is yet to be determined.

¶7 Part of the WTO Agreements is a provision governing IPRs which has fundamentally altered the basis of public international law as it pertains to economic relationships. The following section discusses the evolution of the legal doctrine concerning international IPRs.

### B. *Legal Doctrine Governing Intellectual Property Rights: TRIPS*

¶8 The Paris and Berne Conventions of 1867 and 1871 provided a legal framework for IPRs in the international arena that lasted for more than a century. These embodied the two major doctrines relating to IPRs under public international law. The first is territoriality, stating that property rights are to be honoured by each state's rules. The second is the doctrine of independence, which states that the grant of property rights

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<sup>3</sup> Andrew Lowenfeld, *INTERNATIONAL ECONOMIC LAW* (2003).

<sup>4</sup> The WTO agreements are also termed the Final Act of the 1986-1994 Uruguay Round of trade negotiations.

within one country does not have force in another. However, after World War II, an increasing concern of the balance between the innovator and the benefits of diffusing knowledge, particularly to developing countries, challenged the existing legal norm. The needs of developing countries, particularly the least developed countries (LDCs), for technology and industrialization seemed to justify a reduction of benefits to innovators by the LDCs' governments. Two typical examples of limitations imposed on innovators included: (1) a patent could only be granted if the intellectual property was worked and exploited within the boundary of a country (a working requirement) and (2) the terms and royalties for licenses of intellectual property could be determined by the government in the absence of agreement by the innovator (compulsory licensing).

¶9 The two doctrines were rendered irrelevant with the advent of international economic law. International economic law is premised instead on the norm that the harmony or uniformity of laws is the ideal for the free flow of goods and services globally. Since 1995, the LDCs have been compelled to eventually adopt TRIPS, which are closer to U.S. standards of protection. This framework reinforces the view that the justification for granting IPRs is to present to the innovator some monopolistic return from an investment that will benefit society and which would otherwise not occur, with some provisions allowing for the issues of concern to developing countries.

¶10 The WTO, in short, will enforce a set of internationally recognised standards for intellectual property into national laws, while providing both a dispute settlement mechanism, the Dispute Settlement Understanding under the WTO (DSU) and consultation process, the Dispute Settlement Body (DSB), to resolve disputes among nations over these international norms. A one-year transition period for developed countries to bring their legislation and practices into conformity with the TRIPS Agreement was provided. In contrast, developing countries and countries in the process of transition from a centrally planned into a market economy have a five-year period and LDCs, 11 years, which has since been extended. Developing countries that do not have product patent protection in an area of technology would have up to ten years to introduce such protection.<sup>5</sup> Within the next few decades, every member should have adopted the guidelines of TRIPS.

¶11 However, difficult problems remain, particularly in terms of implementation for developing countries. Common features of LDCs' legal systems are that IPRs are subject to inconsistent coverage, uncertain terms of protection, arbitrary transferability, and inadequate enforcement. Early evidence shows that the developed nations use the dispute settlement mechanism more often than developing countries and always against developing countries.<sup>6</sup>

¶12 In terms of TRIPS, as of April 2007, 24 cases were brought before the DSU regarding TRIPS and another four related to TRIPS enforcement, accounting for around

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<sup>5</sup> The exception is with respect to pharmaceutical and agricultural chemical products. They must accept the filing of patent applications from the beginning of the transitional period. The novelty of the invention is preserved as of the date of filing the application. If authorization for the marketing of the relevant pharmaceutical or agricultural chemical is obtained during the transitional period, the developing country concerned must offer an exclusive marketing right for the product for five years, or until a product patent is granted, whichever is shorter. This has been further modified in the current round of WTO negotiations, the Doha Round, concerning the dissemination of drugs to combat the HIV virus.

<sup>6</sup> See Matthijs Geuze & Hannu Wager, *WTO Dispute Settlement Practice Relating to the TRIPS Agreement*, 2 J. INT'L ECON. LAW 347 (1999) for the statistics of DSU invocation.

7.8% of all cases. Every case was brought by the U.S., E.U. and member states, or Canada, except for one by Brazil. Nineteen of these were instituted by the U.S., plus all four of the TRIPS enforcement cases.

### C. *The Relevant Provisions of TRIPS*

¶13 We turn to the main provisions of TRIPS and assess whether the present structure achieves its intentions regarding promoting innovation. In Part I of TRIPS, Articles 3 and 4 set up the principle of the harmonisation of laws. Article 3 provides for National Treatment. This means that domestic and foreign firms must be given the same treatment by a government, which accords with general WTO principles. Article 4 gives Most Favoured Nation treatment, which stipulates that any advantage given to one firm must be given to all other firms, which is again consistent with WTO aims.

¶14 Part II of the agreements specifies the standards concerning the availability, scope, and use of intellectual property rights. First, Articles 9 through 21 govern copyrights, trademarks, and industrial designs, and we focus on some notable provisions. Article 9 articulates the standard for copyright protection, extended to “expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.” This is a formulation in line with the U.S. standard for copyright protection.<sup>7</sup> Article 10 provides that computer programs will be treated as literary works, including compilation of data or other materials, while the actual data or material is not encompassed. Article 12 provides that copyright protection extends for 50 years from publication (other than a photographic work or a work of applied art). This again reflects the standard of the U.S. Article 18 provides for trademark protection that is initially for seven years from registration and is renewable indefinitely. Compulsory licensing of trademarks is not permitted, according to Article 21. Finally, industrial design protection will last for at least 10 years.

¶15 Section 5 addresses the important issue of patents. Patents shall be “available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application” in Article 27. Footnote 5 to Article 27 indicates that the terms “inventive step” and “capable of industrial application” may be deemed to be synonymous with “non-obvious” and “useful” respectively. Patent rights are further to be enjoyable “without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced.” This provision prevents parallel imports.<sup>8</sup> Article 28 provides that exclusive rights are conferred as follows on products and processes, respectively: (1) a patent holder can prevent third parties from making, using, offering for sale, selling, or importing a product and (2) a patent holder can prevent the same action for any products obtained from the process. Patent owners have the right to assign, or transfer by succession the patent and to conclude licensing contracts. A condition for the

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<sup>7</sup> See The Copyright Act of 1976, 17 U.S.C. § 101.

<sup>8</sup> Exhaustion of IPRs refers to the extent to which IPR holders can control the distribution of their protected goods. Once IPR holders sell a protected product in a jurisdiction, they must permit the resale of that product in that place because the IPR has been “exhausted” by the first sale. Parallel imports refer to the goods that were bought and then resold in a jurisdiction other than where the original product was sold or exhausted. Parallel importers are those firms or individuals that purchase an item that has exhausted its IPRs in one jurisdiction and then sell that item in another jurisdiction. There are three types of exhaustion regimes in the world: national, regional and international.

grant includes Member countries demanding an applicant for a patent disclose corresponding foreign applications and grants.

¶16 Article 31 allows Member countries to use the subject matter of a patent without the authorization of the right holder, subject to specific provisions. These include use predominantly for the supply of the domestic market and that the right holder shall be paid adequate remuneration. This latter provision of “compulsory licensing” reflects the use permitted to LDCs subject to a “working requirement,” stated earlier in the article.

¶17 The term of protection extended to patents is no less than 20 years counted from the filing date, according to Article 33. Interestingly, U.S. law provides for protection of 17 years and this is thought to bring the U.S. in line with the rest of the industrialised countries, such as the UK which provides up to 20 years. Another difference is whether the basis of the grant is to the “first to invent” or “first to file.” The U.S. is perhaps the only country which grants patents on the basis of the first to invent the subject matter. The first to file standard is the predominant one. Member countries which do not have a system of original grant are to compute the period from the filing date in the system of original grant.

¶18 The prominent recent issue on this score has been pharmaceutical companies which produce drugs to treat HIV. Their prices are unaffordable for many developing countries, but under the current framework, the firms can refuse to permit generic versions of the drugs to be made by LDCs. Pharmaceutical companies fear that these generic versions will find their way out of the LDCs and into their overseas markets, eroding their profits and reducing their incentive to innovate. As part of the Doha Round negotiations, the TRIPS declaration calls for flexibility to allow LDCs to decide on the extent of intellectual property protection in the face of public health crises which can constitute national emergencies.<sup>9</sup>

¶19 Finally, Article 40 deals with the control of anticompetitive practices in contractual licenses. Member countries are permitted to specify in their domestic legislation those practices which restrain competition and adversely affect trade or impede the transfer and dissemination of technology. Consistent with the TRIPS Agreement, Member countries must enter into consultations with any other Member country to which the IPR owner is a national or domiciliary.

¶20 The remaining articles address enforcement and details of the DSU. Damages and injunctions are possible remedies in a domestic economy. When disputes among nations cannot be resolved, the DSU is invoked. It is important to note that parties to the DSU are countries and not individuals or firms. However, the actions undertaken by a government on behalf of a firm conform to an agency framework where political influence and perceived national interests tend to coincide.

¶21 Therefore, the TRIPS provision provides for IPRs protection in all member countries on a fairly uniform basis with many aspects mirroring the U.S. IPRs system. The intent is to reduce the risk of expropriation and therefore promote innovation. The protection accorded to IPRs though, is of monopoly pricing that will increase the costs of any use of such technology, such as when transferred to a developing country, which no

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<sup>9</sup> The language of the provisos includes: “Each member has the right to determine what constitutes a national emergency or other circumstances of extreme urgency, it being understood that public health crises, including those relating to HIV/AIDS, tuberculosis, malaria and other epidemics, can represent a national emergency or other circumstances of extreme urgency.”

longer has the option of instigating their own terms. Although implementation has been delayed for many developing countries as well as exemptions provided for pharmaceuticals, the growth implications of the eventual adoption of TRIPS warrant consideration.

### III. THE EFFECTS OF TRIPS ON ECONOMIC GROWTH

¶22 The effect of TRIPS on technology diffusion holds significant implications for economic growth. The justification for IPRs generally relates to the need to protect the incentive to innovate weighed against the social cost of allowing monopoly profits to accrue and the loss to society of not having free access to the protected goods. Nordhaus, for instance, finds that the optimal patent policy equates the dynamic marginal benefit with the static marginal efficiency loss.<sup>10</sup> Landes and Posner make similar arguments regarding the scope of protection, which they posit should be narrow in order to lower the cost of innovation.<sup>11</sup> In the simplest case, the appropriate period of protection is that which allows the innovator to cover the risk-adjusted cost of innovative activity.<sup>12</sup> The breadth or scope of such protection will depend on the nature of the market.<sup>13</sup>

¶23 In a closed economy in which this framework is largely based, Arrow showed that the design of IPRs protection poses a trade-off to a welfare-maximising government.<sup>14</sup> However, in an open economy, Grossman and Lai argue that the trade-offs are less clear.<sup>15</sup> Countries do not reap all the global benefits that come from protecting IPRs within their borders and they will differ in their capacities for innovation due to differences in skill endowments and technical knowledge. Further, domestic and foreign firms are likely to have different abilities to innovate. In the context of two trading countries, an efficient patent regime would equalise the marginal deadweight loss in the two countries. They further show that harmonisation of patent protection does not meet this need as this is achieved in their model through one country lengthening its patent protection period.

¶24 Preceding TRIPS, technology transfer agreements were included as annexes to domestic-foreign joint venture agreements. Such agreements provided for the transfer of know-how in manufacturing to managerial practices. These explicit transfers were negotiated in addition to implicit transfers that occurred simply through the introduction of foreign personnel and techniques. This type of transfer had the effect of shifting the productive frontier of an economy and improving short-term economic performance. Any resultant technological progress would be crucial to the long-run growth process.

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<sup>10</sup> William Nordhaus, *INVENTION, GROWTH AND WELFARE: A THEORETICAL TREATMENT OF TECHNOLOGICAL CHANGE* (1969).

<sup>11</sup> William Landes & Richard Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325 (1989).

<sup>12</sup> Stanley Besen & Leo Raskind, *An Introduction to the Law and Economics of Intellectual Property*, 5 J. ECON. PERSP. 5 (1991).

<sup>13</sup> See Paul Klemperer, *How Broad Should the Scope of Patent Protection Be?*, 21 RAND J. ECON. 113 (1990).

<sup>14</sup> Kenneth Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in *THE RATE OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS* (1962).

<sup>15</sup> Gene Grossman & Edwin Lai, *International Protection of Intellectual Property*, 94 AMER. ECON. REV. 1635 (2004).

¶25 For developing countries in particular, technology diffusion provides what is termed in the literature as the possibility of “catching up.” By adopting the technology of more developed nations, developing countries are able to reduce the cost of innovation and introduce productivity advances into their own economies. Through this process, especially when starting at low levels, developing countries are thought to be able to achieve growth at high rates and thus “catch up” to developed ones.

¶26 Since the promulgation of TRIPS, it remains to be understood how the balance between innovating companies and the need for technology diffusion is struck. In terms of optimal mechanism design, a regime which provides for technology diffusion with positive cost will necessarily result in lower levels of efficiency. The question for further consideration is whether the benefits from innovation are evident, particularly with respect to developing countries, which may or may not be expected to move toward global convergence in their growth rates.

#### IV. A LAW AND ECONOMICS VIEW OF CONVERGENCE

¶27 Neoclassical models of long-run economic growth are premised on a number of assumptions, which essentially presume that there are no frictions or institutional barriers in markets. The Solow model, for instance, considers economic growth where there are no barriers to the movement of capital, no impediments in capital markets so that interest rates reflect the internal rate of return to capital, technology is costlessly shared, and there is no movement of people or natural resources, the latter of which is not typically modeled. It is well known that the Solow model does not explain growth well, and that one of the main predictions of the model has not held up when viewed in the growth experience of countries in the post-war period. Namely, the lack of convergence in growth rates of per capita GDP around the world.<sup>16</sup>

¶28 However, the neoclassical framework remains useful, particularly the variants in which technology is modeled and human capital is introduced. New growth theory, especially endogenous growth theory, provides a more complex view of growth, which are richer but also seems not to explain well the main drivers of economic growth.<sup>17</sup>

¶29 Starting with the neoclassical view, economies will reach a steady state level of growth.<sup>18</sup> The two functions which drive this result are the production function and the investment function of the economy. Cross-border aspects are introduced in the Solow model as an extension of the concept of diminishing returns to capital and the free flow of capital and technology. In a Cobb-Douglas production function of the economy,  $Y = F(K, AL) = K^\alpha (AL)^{1-\alpha}$ , where  $Y$  is output,  $K$  is capital,  $L$  is labour and  $A$  is technology, there are constant returns to scale but diminishing returns to a factor, such as capital.<sup>19</sup>

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<sup>16</sup> William Baumol, *Productivity Growth, Convergence, and Welfare: What the Long-run Data Show*, 76 AM. ECON. REV. 1072 (1986); J. Bradford DeLong, *Productivity Growth, Convergence, and Welfare: Comment*, 78 AMER. ECON. REV. 1138 (1988).

<sup>17</sup> Jonathan Temple, *The New Growth Evidence*, 37 J. ECON. LITERATURE 112 (1999).

<sup>18</sup> Charles Jones, *INTRODUCTION TO ECONOMIC GROWTH* (2nd ed. 2001).

<sup>19</sup> The technology variable is viewed as “labour-augmenting” in this formulation. Alternatively, it could take the form of “capital-augmenting” or  $Y = F(AK, L)$ . In a Cobb-Douglas form for the production function where there is zero cross-price elasticity, the distinction is not significant.

¶30 Economies with high levels of capital stock will encounter fewer and fewer returns to capital investment. In contrast, developing countries which have lower levels of capital stock will allow capital to reap a higher return. This well-known mechanism will generate convergence in growth rates as capital moves from countries with lower to ones with higher returns. This theory of “catch up” growth, however, has not borne out completely. For one, if capital can move freely, then there should be no correlation between national savings and national investment. The Feldstein-Horioka paradox, however, finds a positive correlation.<sup>20</sup> The movement of capital is apparently driven by a range of factors not just related to a simple view of returns, but is also dependent on risk and domestic infrastructure, among many others.<sup>21</sup>

¶31 The high transaction costs in capital markets in developing countries and the lack of well defined property rights, because institutional foundations are not established, will reduce the flow of capital that is critical in generating growth. In other words, developing countries are poorer than developed ones, which implies a lower level of national savings. This is due to the poor having a lower marginal propensity to save because more of their income is consumed, as well as having to cope with imperfect credit markets which often exist in developing countries that make it more difficult to channel what savings there is into funds for investment.

¶32 The level of growth in the Solow model is dependent on an investment function that reflects the amount of savings in the economy.<sup>22</sup> The lower marginal propensity to save of poorer and primarily agricultural households in developing countries will lead these economies to have a lower steady state. Two countries, A and B, with different rates of saving, will have different steady state levels of output. Therefore, country A, with a higher level of savings and investment, will also have a higher steady state level of output than country B. This will mean a lower level of per capita GDP for country B unless it has access to foreign capital, which can bolster the level of domestic savings and therefore raise the steady state.

¶33 Where there is technological progress, there is a positive rate of growth. Following an improvement in technology, the economy grows and reaches a new steady state. However, technology in this model is exogenous. It is an important assumption of the model, but one that has been viewed as akin to “manna from heaven.” Somehow technology comes into the economy from the outside regardless of what is happening within the economy.

¶34 Endogenous growth models modify the neoclassical framework by introducing a production function for ideas. The reason is because one of the exogenous components in the neoclassical models is the driver of the rate of economic growth, i.e., technological progress. The Romer model, which introduces the production of ideas, attempts to explain differential growth rates among countries by exploring the differences among countries in the amount of skilled workers who can innovate and create technological progress. Therefore, technological progress is determined within the model.

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<sup>20</sup> Martin Feldstein & Charles Horioka, *National Saving and International Capital Flows*, 90 *ECON. J.* 314 (1980).

<sup>21</sup> Giorgio Navaretti & Anthony Venables, *MULTINATIONAL FIRMS IN THE WORLD ECONOMY* (2006).

<sup>22</sup> See, e.g., Robert Lucas, *On the Mechanics of Economic Development*, 22 *J. MONETARY ECON.* 3 (1989).

¶35 This raises further questions in terms of laws and institutions. One of the main impediments to innovation is the nature of ideas.<sup>23</sup> Because ideas are essentially like public goods where many can benefit from one idea, there is a risk of expropriation. Since the protection of ideas is incomplete, this can deter investment in innovation. On the other hand, because ideas have wider benefits than just to the innovator, there is a social cost to restricting the dissemination of ideas or imposing a cost on them. Thus, innovation is encouraged through protection of IPRs, which reduces the risks of expropriation, but creates an artificial monopoly for a time which increases the cost of using that technology. Other methods involve fiscal incentives and public investment. For instance, the government could offer tax credits to entrepreneurs or give concessions to businesses as well as invest in R&D itself. It is perhaps the IPRs issue which is most relevant to considering the law and economics aspects of growth.

¶36 Both the neoclassical framework and the Romer model of endogenous growth would be affected by the legal framework. The norms surrounding IPRs internationally had differed among countries because the overriding principle was respect for sovereignty. This has changed with the TRIPS agreement. By protecting the innovation globally, it may increase the number of researchers who innovate, as in the Romer model. By doing so, it also increases the cost of acquiring technology relevant to the Solow model, as developing countries cannot simply imitate existing technology in order to catch up in terms of its growth rate. Even before the TRIPS agreement, multinational corporations often received value for any explicit technology transfers that accompanied foreign direct investment. This could provide a further explanation for the lack of convergence in growth rates, since costly transfer would hamper the catching-up process as envisioned by the Solow model, and is in addition to the explanations posited by those seeking to explain the Feldstein-Horioka paradox.

¶37 Moreover, if we moved toward a law and economics framework for growth, we would consider the legal rules that govern property rights, the institutional factors that influence the movement of broad concepts of capital (human, physical, and social), and the multi-faceted economic and legal determinants of technological progress, which are key to understanding growth rates. What evidence has been found has been in respect of conditional convergence, and countries are found to converge to their own steady states determined by a number of factors, including being a leader in technological innovation.<sup>24</sup> The legal and institutional considerations of each country, therefore, can influence the steady state level of growth through its shaping of the factors relevant to growth. And importantly, the formal institutions have and will certainly continue to affect the rate of technological progress that drives differential growth rates. By analysing the effects of TRIPS, we are proposing an additional factor in this type of framework that could shed light on the drivers of divergent growth rates.

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<sup>23</sup> Kenneth Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in *THE RATE OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS*, (1962).

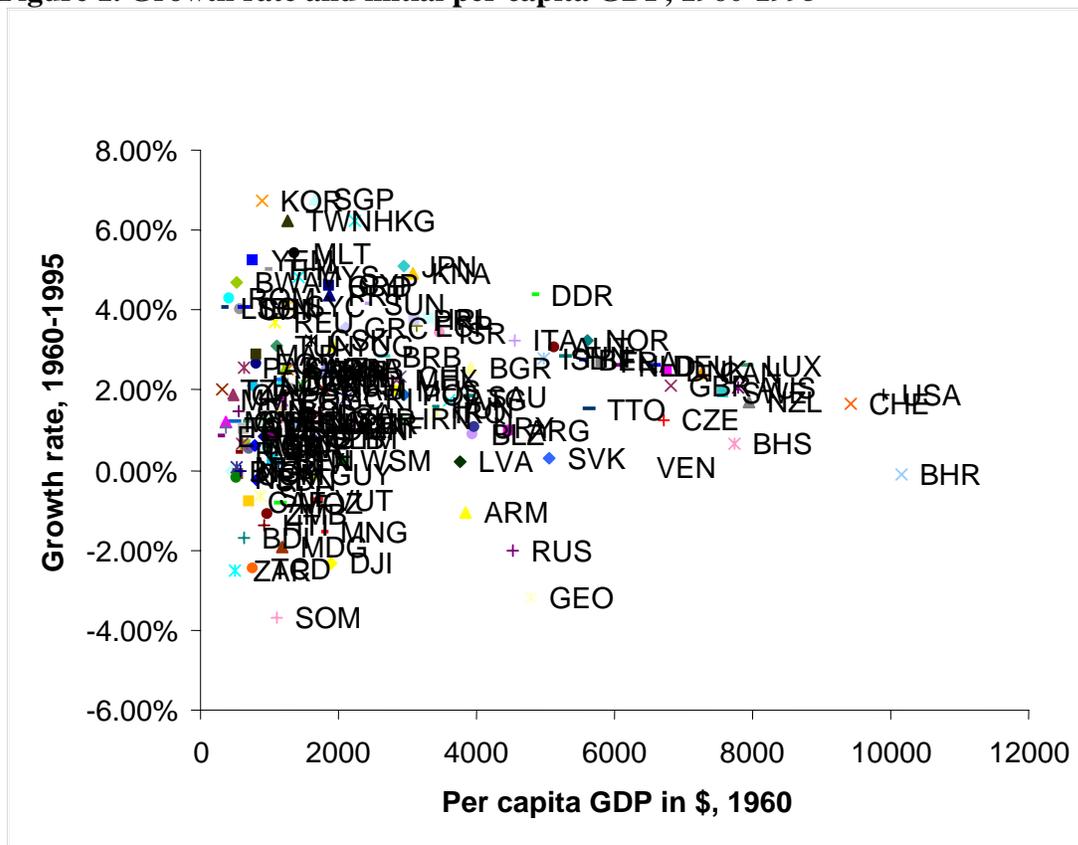
<sup>24</sup> Robert Barro & Xavier Sala-i-Martin, *Technological Diffusion, Convergence, and Growth*, 2 *J. ECON. GROWTH* 1 (1997).

V. EVIDENCE OF GROWTH AND INEQUALITY

138 Even before the TRIPS agreement, it was common for countries to have costly transfers of technology and practices varied. From the multinational corporation’s perspective, it would charge for the use of proprietary knowledge where possible. Technology was simply not costlessly shared, except perhaps through imitation and where compulsory licensing was used, which lowered the costs. Thus, it is possible to predict a lack of convergence due in part to the IPRs system, as seen in Figure 1.

139 Figure 1 gives the growth rates of the world’s economies plotted against their initial levels of income before TRIPS. If there is evidence of convergence, then there should be an inverse correlation between the rate of growth and the initial level of income. This is not seen in the figure which examines, for a large sample of economies, initial GDP per capita in 1960 and growth rates from 1960 to 1995, the year of the adoption of the TRIPS agreement.

Figure 1. Growth rate and initial per capita GDP, 1960-1995<sup>25</sup>

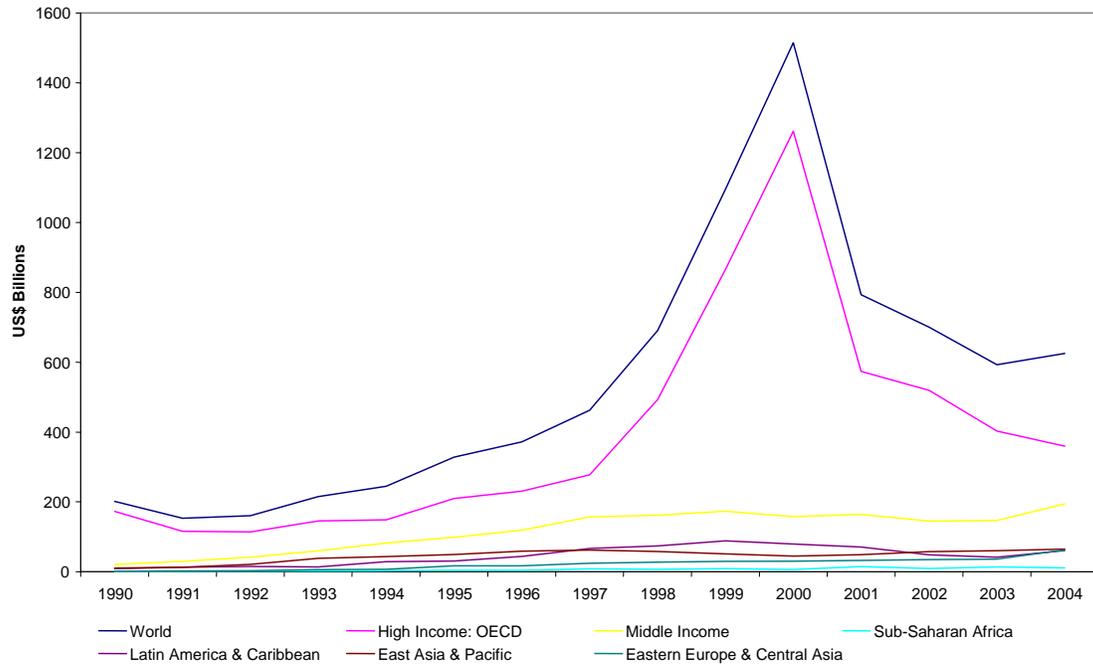


140 It is too soon to examine the evidence of convergence since the advent of the TRIPS agreement as many developing countries have not yet adopted its provisions. Under the TRIPS regime, there would be a more consistent monopoly price for utilising technologies and penalties would be in place for infringement, adding further to the cost, including for imitation. Whether this will be outweighed by the transfer of more

<sup>25</sup> World Penn Tables, <http://pwt.econ.upenn.edu>.

sophisticated technologies or more foreign direct investment (FDI) that could embody technology and knowledge as investors feel more confident under the TRIPS regime or induce more innovation in the developing countries themselves, is an empirical question.

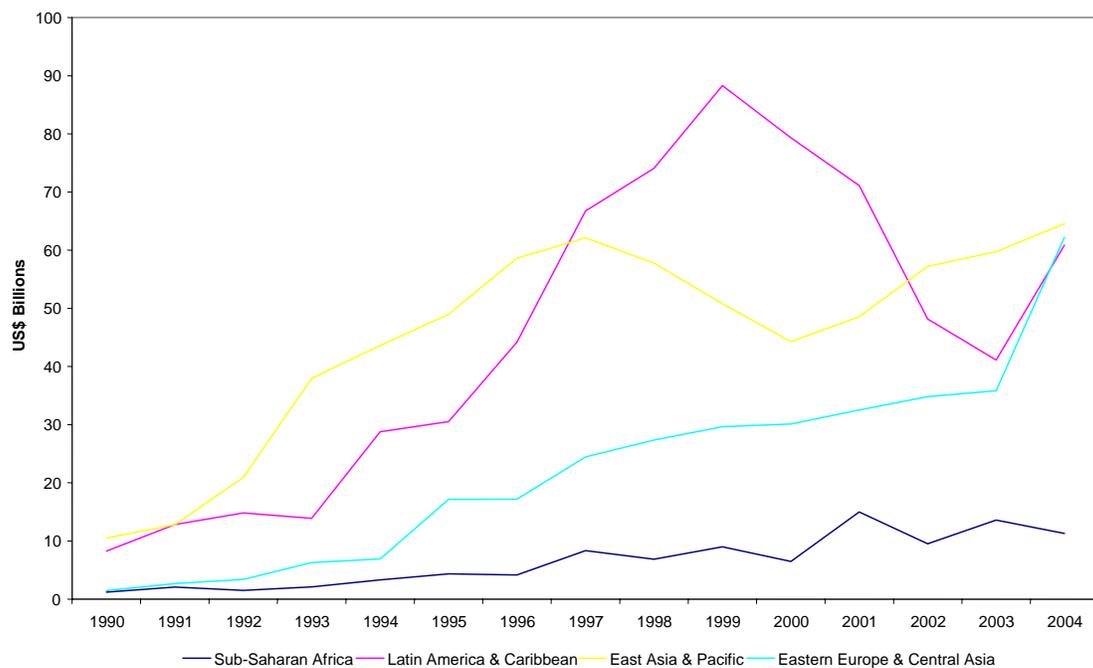
**Figure 2: Global FDI Flows, 1990-2004<sup>26</sup>**



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Figure 2 shows the proportion of FDI to in developing countries relative to the global flows. From 1990 to 2004, developing countries received an average of 28% of global FDI flows. This is concentrated in specific regions. The main recipients, moreover, are still the developed countries and select developing countries such as China (see Table 1 below).

<sup>26</sup> WORLD BANK, WORLD DEVELOPMENT INDICATORS 2007.

**Figure 3: FDI Flows to Developing Countries by Region, 1990-2004<sup>27</sup>**

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There is evidence that growing amounts of capital flow from developed to developing countries, albeit still less than the predictions of the neoclassical model and biased toward some regions as seen in Figures 2 and 3. Nevertheless, the upward trend in FDI in the past decade is clear. In Table 1, it also appears that developing countries are gaining an increasing share of global capital flows, particularly the period since 1996. Since most FDI comes from developed countries as seen in Table 2, it is likely to embody technology. However, as the article has posited, and consistent with the general findings regarding FDI, capital flows alone are insufficient to ensure technology absorption by developing countries. By contrast, where technology is transferred, the costliness of it stands at odds with the presumption of free transfers in growth models; therefore, the implication is of slower convergence than predicted.

**Table 1: Main Recipients of FDI in 1991-2004, \$ bn<sup>28</sup>**

	1991-96	1997	1998	1999	2000	2001	2002	2003	2004
<b>World</b>	254	482	686	1079	1393	824	652	617	730
<b>Developed Economies</b>	156	270	472	825	1121	589	548	442	380
<b>EU</b>	88	128	250	476	684	389	420	339	216
<b>USA</b>	49	103	174	283	314	144	71	57	96
<b>Developing Economies</b>	92	193	191	230	246	209	156	166	233
<b>China</b>	25	44	44	40	41	47	53	54	61

<sup>27</sup> *Id.*<sup>28</sup> *Id.*

**Table 2: Major Sources of FDI Outflow, 1991-2004, \$ bn<sup>29</sup>**

	1991-96	1997	1998	1999	2000	2001	2002	2003	2004
<b>World</b>	280	477	683	1096	1200	711	652	617	730
<b>Developed Economies</b>	240	396	631	1021	1098	660	600	577	637
<b>US</b>	67	96	131	209	143	104	135	119	229
<b>Western Europe</b>	140	244	415	724	806	429	397	390	309
<b>Developing Countries</b>	39	77	50	73	99	47	48	29	83
<b>Brazil</b>	1	1	3	2	2	-2	2	0	9
<b>Hong Kong</b>	17	24	17	19	59	11	17	5	40
<b>Russia</b>	1	3	1	2	3	3	4	10	10

¶43 The rapid increase in globalisation and the WTO have perhaps facilitated global trade and capital flows in a rules-based system. The evidence of increasing integration of the global economy highlights the trade off between a uniform international system of laws and rules that could increase investor confidence, while also making the cost of technology diffusion more costly for developing countries. The rules-based system holds significant promise in governing economic growth, particularly in international trade and facilitating global investment, but the TRIPS provision could contribute to the inability of developing countries to “catch up.”

## VI. CONCLUSION

¶44 In this paper, the main parts of the new global regime as it pertains to intellectual property have been explored as well as the implications for economic growth. Considering the TRIPS provisions and how the resultant harmonisation of laws is likely to affect technology transfers followed. This is then assessed in terms of global growth rates in the post World War II period.

¶45 Although it is too early to examine the evidence concerning convergence since the advent of TRIPS, it is fairly evident that the new regime will impose monopoly prices on technology transfers that are the engine of “catch up” growth. However, the increase in globalisation based on a rules-based system may induce greater foreign investment in developing countries, though the capital still tends to flow to Asia and successful emerging markets, such as China, suggesting that other factors are at play.

¶46 The TRIPS Agreement under international economic law introduced provisions that restrict technology transfers in cross-border transactions. Although the trade provisions are considered as predominate, TRIPS may prove to be the most significant provision concerning economic development derived from international economic law. The diffusion of technology thought to be necessary for economic growth has come up against the legal foundation of IPRs in a new global system that has been otherwise beneficial in providing a rules-based regime supporting globalisation.

<sup>29</sup> *Id.*