



## Rediscovering the Value of Intellectual Property Rights:

*How Brazil's Recognition and Protection of Foreign IPRs  
Can Stimulate Domestic Innovation and Generate Economic Growth*©

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### EXECUTIVE SUMMARY

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## **I. INTRODUCTION - BRAZIL MUST CHOOSE THE RIGHT PATH: INNOVATION vs. OPPORTUNISM**

The purpose of this article is to reintroduce the notion of private property rights into the current global debate about the utility of intellectual property (IP) in promoting scientific and technological invention and innovation. This article argues that, if the Government of Brazil reexamined the elements of and rationale underlying the international recognition and protection of private property rights, including intellectual property rights (IPRs) (i.e., patents, trade secrets, copyrights, etc.) it would see how it could dramatically improve Brazil's future scientific, technological, and economic prospects. This article also argues that, based on the successes experienced in other countries that have rediscovered the value of intellectual property rights, the

Brazilian government would inevitably be able to promote the indigenous innovation, domestic entrepreneurship, foreign direct investment, and R&D-related technology transfers necessary to catapult Brazil to national and international advancement.

The Government of Brazil has opportunistically participated in controversial initiatives within various intergovernmental fora, namely the World Trade Organization and numerous United Nations agencies, which challenge and undermine the established global IPR framework. There, Brazil has assumed a leading role in helping to promote a new global paradigm that calls for scientific and technology-based knowledge and information, and the commercialized products and processes derived from it, to become 'universally accessible, 'open source', and essentially 'free of charge' to developing countries. This new paradigm, which posits that exclusive private property rights are in conflict with human rights, threatens the economic interests of all OECD members, especially the U.S. Brazil has engaged in these activities even though such an anti-IP paradigm is logically inconsistent with and ignores the proven success of the present individual private property-centric legal and economic order.

The Brazilian government is obviously influenced and affected by many internal and external pressures, from developing country diplomatic efforts, to national and international agenda-based civil society and academic movements, to national and regional patent and innovation policy debates. However, these cross-currents have generated more policy conflict than consensus among the various expert groups within the Government of Brazil. One may even speculate that such conflict has emboldened Brazil's ruling party to promote a culture of IP/trade opportunism within Brazil that has now transcended national boundaries. Although there is historical precedent upon which Brazil apparently relies to justify its opportunistic behavior, the previous international order that fostered such conduct no longer exists, and the former protagonist nations themselves continue to politically, legally and economically evolve.

This paper argues that, since patents and trade secrets are economically valuable assets that are important to foreign and domestic investors, namely knowledge and technology-rich internationally-focused corporations, Brazil should aggressively seek to protect them. In support of this premise, the paper provides analyses of numerous studies that describe how, by establishing the proper institutional enabling environment, which includes strong recognition and enforcement of IPRs, Brazil may attract and shape the type and composition of FDI that will promote its domestic industries and satisfy its national innovation needs.

## **II. BRAZIL CHALLENGES THE ESTABLISHED GLOBAL IPR FRAMEWORK: BRAZIL ACTIVELY ENGAGES IN ‘REGIME SHIFTING’ TO REFORM INTERNATIONAL IP LAW**

### ***Universal Access to Healthcare and Information***

Brazil and other developing countries that have become dissatisfied with the WTO TRIPS Agreement and the neo-liberal economic model of ‘risk and reward’ which serves as the basis for the current international intellectual property framework, are now employing, with the assistance of well funded global civil society (activist nongovernmental organizations (NGOs)), a strategy known as ‘regime shifting’. This strategy has also been used with relative success in the fields of international environmental and human rights law by other protagonists similarly enamored of the ‘negative’ socialist paradigm of sustainable development.

Brazil, developing countries, and activist NGOs and academics have sought to curtail intellectual property rights in one international forum after another, whether or not IP is the main issue: the World Trade Organization, the World Health Organization (WHO), the UN High Commission for Human Rights (UNHCHR), the UN Environment Program (UNEP), the UN Development Program (UNDP) and the UN Educational, Scientific and Cultural Organization (UNESCO). Their main contention is that public health, environmental, and information rights are human rights, which are in irreconcilable conflict with, and have primacy over, individual economic property rights. However, this is not true, since individual economic private property rights are also human rights, and all human rights are of equal status. In addition, these advocates have also conceived of an ‘access and benefit sharing’ regime which is conceptually inconsistent with the global IP framework, and even Brazil’s anti-IP rhetoric. It is intended to treat natural flora and seeds developed through ‘traditional knowledge’ practices as a new type of IP for which royalties must be paid, even if such practices do not satisfy international patent and/or trade secret requirements, and would otherwise be considered as falling within the public domain.

### ***‘Open Source’ Methods (OSM)***

Brazil and other nations, along with health and information society activists, are also advancing, at the national and international levels, a new counter-IP paradigm of ‘open source’ methods in international fora to further facilitate ‘regime shifting’. Although the notion of open source methods was not invented by them, the opportunistic Brazilian Government and a group of similar-minded developing nations immediately recognized its value for their own purposes. According to these advocates, open source methods are intended to operate as a ‘gift’ rather than a ‘market’ economy. And, although such methods were originally applied to computer software, they are now being extended nationally and internationally to other industry sectors that have nothing at all to do with software, including biosciences and pharmaceuticals. Indeed, in their view, open source methods are “almost the opposite of traditional intellectual property systems like patents and copyrights which seek to keep knowledge to the creators and people they choose to sell the knowledge to.”

European, Brazilian and South African activists have argued that there exists a sound theoretical basis for the idea of ‘open business’ models whether applied either to copyrights or to patents. And some have persuaded their governments to act on it. Apparently, anti-private property and anti-free market American scientists, academics, activists and politicians, as well, have taken a fancy to open source methods. Viewing open source methods as supportive of intellectual capital rather than intellectual property, they have aggressively promoted open source methods as a new global knowledge paradigm in the information *and* health sectors. Indeed, they are leading a growing open source movement that utilizes new legal tools, utilitarian economic arguments, a sense of professional elitism, and moral suasion to justify the application of an open source/universal access model to information and communication technologies as well as to biotechnology, pharmaceuticals, and medical technology.

However, Brazil and its ‘open source’-minded Friends of Development (FoD) partners fail to explain which of the two predominant models (the General Public License (GPL) or the Berkeley Software Distribution license (BSD) model) utilized to develop computer software they have chosen to pursue. They have also failed to elaborate how they wish to extend that model into the realm of health care.

At the national level, ‘free and open source’ (‘FOS’) business methods have been promoted extensively by Brazil’s Ministry of Culture. And many others within the Brazilian government believe that ‘open source’ methods can and should be broadened far beyond the realm of *copyrighted* content-rich music, films and computer software to also include *patented* healthcare products and technologies, as well as, other scientific and technological know-how.

At the international level, Brazil has promoted open source methods at the International Telecommunications Union’s UN World Summit on the Information Society [WSIS], the World Intellectual Property Organization (WIPO), the UN Education, Science and Cultural Organization’s (UNESCO) proposed Convention on Cultural Diversity, and the UN Development Program (UNDP).

### ***Disguised Trade Protectionism***

Brazil et al. have engaged in regime shifting despite the overall mutual and balanced concessions they agreed to and the specific IPR-related bargains they reached previously at the Uruguay Round of trade negotiations. Their goal is to simultaneously reform WTO law from the inside *and* to develop new customary international law norms beyond the WTO regime from the outside that can eventually swallow up the general principles, norms, and rules that comprise the corpus of WTO IP law. In other words, if regime shifting is permitted to occur, the temporary and provisional exceptions and derogations (e.g., compulsory licensing) to the general rule of strong intellectual property law protection made expressly available in the TRIPS Agreement will ultimately overtake and subsume the general rule. This would result in the establishment of a new treaty-based presumption against the adoption of strong international IP protections, along with a reversal of the burden of proof to show harm – from the party challenging IP protections to the party defending them. Thus, “higher standards of [IP] protection...[would] only [be allowed] when it is clearly necessary...and where the benefits outweigh the costs of protection.”

Arguably, the ostensible public health and knowledge goals that Brazil and other nations assert as being the primary motivation behind such regime-shifting, are likely overshadowed by their more ambitious but less transparent economic and trade policy objectives. More importantly, however, opportunistic activities like these further challenge international confidence in the foundations of GATT-WTO law, increase transaction costs, raise international political and economic tensions and only weaken the resolve of nations to pursue international trade, scientific and technological advancement and economic development to eradicate poverty and to maintain international peace and security – the original goal of the Bretton-Woods system.

The Brazilian government's posturing on the world stage, nevertheless, may not reflect a national consensus. To the contrary, some Brazilian experts believe that such behavior is more likely indicative of a hard-line nationalist and populist ideology held only by a particular faction of the current socialist government. If this is true, the more moderate forces within the Government of Brazil must act quickly to contain and minimize any damage that has thus far been done to Brazil's long-term diplomatic and economic interests.

### **BRAZIL'S CHALLENGE OF THE GLOBAL IPR FRAMEWORK AIMS TO 'TAKE' (REDISTRIBUTE) PRIVATE PROPERTY (ECONOMIC WEALTH) FOR 'PUBLIC USE' WITHOUT 'JUST' COMPENSATION**

To better understand why American patent holders respond in a hostile fashion to Brazil's threats of poorly compensated compulsory licensing or other proposed forms of patent or trade secret abrogation, it is helpful to review the applicable provisions of the U.S. Constitution and its accompanying Bill of Rights and their interpretation by the U.S. Supreme Court. In the United States, the basis for innovation resides in these documents, which recognize the primacy of individual rights over societal rights.

More importantly, the concepts underlying these documents have been embraced by the advanced OECD economies. They recognize individuals' private right to invent and create, as well as, their right to enjoy the fruits of their labors (i.e., the private property he or she invents, creates, acquires, earns, and/or commercializes). They also guarantee individuals that their exclusive private property, including personal intellectual property rights such as, patents, trade secrets, copyrights, etc., will be protected against arbitrary, wanton and unjustly compensated government 'takings' ostensibly intended to serve the public good.

In particular, the U.S. Constitution and the Bill of Rights together ensure protection of personal IPRs to U.S. citizen-inventors and -owners, no matter where their property may be located throughout the world. They consider personal property rights such as IP as inalienable natural and civil rights that transcend U.S. borders. If private property, including IP, is 'taken' for a bona fide public use, whether by the U.S. or any foreign government, its individual owner(s) must be paid fair market value/ reasonable compensation. The WTO TRIPS Agreement and the WIPO Agreement are also based largely on these precepts. In addition, the right to private property, including intellectual property, is considered a fundamental human right, guaranteed to all persons by the Universal Declaration of Human Rights, the



American Declaration on the Rights and Duties of Man, the International Covenant on Economic, Social and Cultural Rights, the Universal Declaration on the Human Genome, and the Vienna Declaration and Programme of Action.

## **BRAZIL SHOULD NOT RELY UPON THE HISTORY OF INDUSTRIAL OPPORTUNISM TO JUSTIFY ITS BEHAVIOR**

In some respects, Brazil's exploitation of foreign patents and trade secrets, particularly those relating to knowledge-based life sciences and information and communication technologies, is no different than the opportunistic practices of other countries during past industrial eras. There are, however, three crucial differences that must be emphasized. First, there are now binding multilateral treaties (e.g., the GATT/WTO/WIPO/BIT Agreements) and politically active international institutions to regulate cross-border industry and government policies and practices relating to tariff rates, dumping, market access and compliance, investments and intellectual property (the Bretton Woods Institutions). Second, there are time-tested industry and mercantile customs and industry standards in place which may be referenced as guidance to determine the shape and direction of evolving industry practices surrounding new hi-technologies. Third, there is documentary evidence of successful national systems of innovation that recognize and protect exclusive private property rights, including IPRs. In other words, Brazil should not take comfort in the old ways to justify its current bad habits, since the countries that previously employed them and the prior informal international order have both continued to evolve.

Indeed, it is arguable that, like the previous governments of Germany and Japan, and, until very recently, the Governments of China and India, Brazil has used its domestic patent laws, in combination with tariffs and other trade barriers to mask a hidden state-centralized agenda and ideology of patent opportunism. Brazil has made no secret of its ambitions to develop its generic drug manufacturing capacity so that it may compete with Chinese and Indian producers and distributors for both the third world and developed world markets. It has also been very willing to interpret international trade, environment, health, and human rights law liberally in order to achieve this objective. Like China and India before it, Brazil has spent many years honoring patented processes, but not patented products, even though both were covered by its 1996 Patent Law. This has permitted Brazil to reverse engineer many foreign drugs and to then reconstitute them through application of new synthetic processes as a completely unique molecule, compound or product susceptible to national patenting. And, Brazil has justified this, as had China and India, by reference to the extreme economic hardships it would endure if it were required to pay the higher market prices that patents typically demand.

According to one prominent Brazilian scientist and intellectual property expert, IPRs are dispensable and may be wielded as both a shield and a sword by the Brazilian government if and when it is convenient and in the national interest to do so. Even some within Brazil's pharmaceutical industry agree. They see the protectionist benefits that may be gained from the Brazilian government's emphasis of the *possible health* risks engendered by according unnecessary protection to foreign patents and trade secrets. Based on this and other evidence, one may credibly argue that Brazil has all along intended to opportunistically acquire foreign technologies primarily to advance both its evolving national industrial and innovation agenda and its international economic (trade) interests.

### **III. THE TOOLS OF INNOVATION: PATENTS AND TRADE SECRETS ARE ECONOMICALLY VALUABLE ASSETS**

This article argues that, since patents and trade secrets are economically valuable assets that are important to both foreign and domestic investors, especially, knowledge and technology-rich internationally-focused companies, the Government of Brazil should aggressively seek to protect them. It supports this conclusion by analyzing a number of recent economic studies.

At least one such study has concluded that the economic value of patents, especially those secured by knowledge-intensive companies operating within the ICT, pharmaceuticals, and biotech sectors, has been rising rapidly over the course of the past decade. This study also recognized that, since the economic value of patents comprises an ever larger share of company market value, successful companies operating within these sectors would need to find the most prudent and economically efficient means to manage their innovation practices (R&D) and related intellectual property portfolios and to then exploit (commercialize) those assets in the marketplace.

This is crucial, the study reasons, because of the new global business environment in which such companies now operate. That environment engenders higher technology development costs, lower profit margins, shorter product lifecycles, and continuing market demand for new and more specialized technologies. As a result, companies' use of patents has assumed a more central and strategic character in their daily businesses. Therefore, industry actors must rely increasingly on strong patent protections internationally to both defend their most valuable assets and expand their already vulnerable market shares. And, these conclusions have been corroborated by other studies.

It is well recognized that patents serve multiple functions within society that can result in public as well as private benefits. First, patent protection can provide inventors with the necessary incentive to generate intellectual creations for economic and social gain (i.e., the incentive function). Second, patent protection "over the inputs to a collaborative research endeavor can facilitate [greater] inter-firm R&D collaboration" to convert inventions into marketable products. Patents also can "facilitate the [orderly] division of profits among contributors to a given stream of research [which,] in turn, affects the extent of incentives available to successive inventors" (i.e., the transactional function) Third, a properly prepared patent application can and must publicly disclose all of the technical information concerning the invention described in a clear enough manner to "enable a skilled person to reproduce the invention" (i.e., the disclosure function). Fourth, ownership of a patent indicates to prospective investors "a firm's innovative capabilities", and thereby increases that firm's ability to secure third-party financing, including from venture capitalists (i.e., the signaling function).

In addition to securing patent protection, life sciences companies rely significantly on their ability to protect, as a separate intellectual property right, the very costly and time-consuming know-how or other confidential and publicly undisclosed safety and efficacy information they have generated, compiled, analyzed, organized and submitted, at their own expense, to government regulators. This usually occurs, subsequent to or in lieu of a patent's issuance, in order to secure commercial marketing approval for the

ultimate product. Generic manufacturers, however, typically do not undergo such a timely and costly development process. Nor are generic copies of patented drugs usually subject to such an exhaustive examination before they are granted country marketing approval. Generic manufacturers need only establish that their version of the innovative drug is ‘bioequivalent’ to the already approved original drug. It is precisely because of this discrepancy in cost, time, and effort, and the otherwise undisclosed (‘secret’) know-how generated in the process, that drug innovators seek to protect their economic investment. In order to eliminate the competitive market advantage that would otherwise inure to the generic manufacturer as the result of using such a ‘fast-lane’ approach, many countries, beginning with the United States, have created a complimentary mechanism of ‘data exclusivity’.

“In essence, data exclusivity refers to a period during which no third party applicant can rely on data filed by the original applicant for a marketing authorization.”

Data exclusivity derives its legal significance as private property from two areas of the common law which have since been codified into uniform state statutes in the U.S. – namely, that of trade secrets and unfair competition. Data exclusivity can be said to be in the nature of an affirmative common law property right of ‘trade secret’, insofar as it protects from disclosure and unauthorized use information that the drug originator has developed over considerable time and as a result of significant expenditure which it otherwise made a reasonable effort to keep secret (from public knowledge), and that has, in fact, remained undisclosed (‘secret’) at the time it is submitted to regulators. A trade secret is legally “anything that gives a competitor an advantage [edge] or head-start” that is not in the public domain. It includes various opportunities that present themselves to a business, is generally developed through substantial time, cost, and effort

and often consists of the knowledge possessed by company executives and key employees. In other words, the economic value of a trade secret resides in the pecuniary and human outlays (costs) associated with its development, along with the effort expended to prevent its disclosure to others – i.e., to maintain its exclusivity.

The character and nature of the affirmative right to data exclusivity is also shaped, in part, by the common law of torts (‘unlawful wrongs’). In this respect, a trade secret is “Any formula, pattern, device or compilation of information which is used in one’s business, *and which gives him an opportunity to obtain an advantage* over competitors who do not know how to use it” (emphasis added). And, this definition can be traced back to the English common law ‘right of prospective economic advantage’. In the environment of free and fair competition evolving during the early twentieth century, the unlawful and willful interference with this right gave rise to an action in tort.

#### **IV. ACQUIRING THE TOOLS OF INNOVATION: BRAZIL MUST ADOPT IPR PROTECTIONS TO ATTRACT FOREIGN DIRECT INVESTMENT**

Due to the significant and growing economic value of patents and trade secrets, it is understandable why developing countries have undertaken considerable efforts to acquire such tools of innovation. One way to do so is to through foreign direct investment (FDI). Arguably, FDI flows are even more important than trade flows in today’s rapidly expanding technology and information society.

This article analyses numerous studies that describe how, by establishing the proper institutional enabling environment, which includes recognition and strong protection of exclusive patents and trade secrets, Brazil may attract and shape the type and composition of foreign direct investment (FDI) that will promote its domestic industries and satisfy its national innovation needs. For example, several recent studies have concluded that a developing country's membership and participation within international treaty regimes that promote IPR protections through establishment of minimum IPR standards (e.g., TRIPS, WIPO and BITS) was more likely than not to facilitate domestic reforms that contribute to such country's ability to secure FDI from foreign capital investors.

And, several other studies have documented how the level of a developing country's IPR protections substantially affects the investment decisions of high-technology and research-intensive industries with products or processes that are relatively easy to imitate. They reveal that in weaker IP regime countries, the type and composition of FDI is more likely to assume the form of sales and distribution outlets or rudimentary production and assembly facilities, than research and development (R&D) facilities and component or finished goods manufacturing plants. And, these studies also reveal that, if any technology transfer is to occur at all in such countries, it is likely to take place with older rather than newer technologies. In fact, companies that have undertaken R&D within developing countries lacking strong IP protections have done so cautiously through intra-firm R&D transfers among affiliates. In such instances, however, firms are usually more covetous of their technologies and know-how, and less willing to share them with local companies (i.e., they internalize rather than externalize IP assets). As a result, there are potentially fewer opportunities for foreign and domestic companies to engage in collaborative R&D, and thus, much less of a possibility for local firms to benefit from technology transfer/diffusion and knowledge spillovers.

Interestingly, the economic freedom and benefits that can be realized by a patent or trade secret owner that has officially 'registered' its rights and collateralized or otherwise exploited (e.g., licensed/franchised) its assets, are analogous to those realized by persons who have registered their informal claims to real property. In this regard, Brazil should study the successful program of Peruvian economist Hernando De Soto. Dr. De Soto's program has helped to secure official registration and recognition of informal title (deeds) to land held by poor people living in various Latin American countries. Given the success of Dr. De Soto's Latin American real property title registration and enforcement program, developing country citizens should expect even greater economic and social benefits to flow from formal government recognition, and enforcement of personal intangible (intellectual) property ownership. In other words, the premise underlying Hernando De Soto's work with real property is equally applicable and analogous to intellectual property. According to at least one legal expert, "De Soto's argument largely focuses on real property, but it applies to intellectual property with equal force. A vast amount of intellectual capital in the developing world is underdeveloped."

A discussion of important additional studies can be found within the full article.

## **BRAZIL SHOULD DEVELOP AN EFFICIENT NATIONAL INNOVATION SYSTEM**

Many experts would agree that what is most urgently needed in Brazil is not creativity, but rather, a well



organized, comprehensive national innovation system capable of harnessing the strengths of private industry. According to one former senior U.S. official, this entails the development of a supportive institutional environment (laws, policies, and culture), capable and efficient organizations, and a positive working relationship (linkages) between industry, the organizations, and the institutional environment.

Brazil already possesses the capacity to innovate, and it appears that the Brazilian government has already committed substantial public monies to create the necessary organizations that generate basic research and scientific and technical know-how – universities, public research institutes and government-funded laboratories. The Government of Brazil may even have most of the essential laws and institutions in place, with some notable exceptions. But, it still lacks the ability to tap the know-how that resides in these organizations, a trusting relationship with Brazilian industry, a reliable track record for implementing its recently adopted IPR laws, and a culture or mindset that is conducive to commercializing private innovations.

In many ways, the Brazilian legal framework for intellectual property, including patents, has evolved in this direction since 1996. It is currently administered by a number of domestic government agencies – the Ministries of Industry, Culture, Agriculture, Environment, Food and Drug, and the Ministry of External Relations when international issues are involved. And it has resulted in the use of patents to promote government-funded development of medicines for neglected diseases, particularly, in culture collections, specific projects, teaching and information, and in agriculture to promote development of bioengineered cultivars. However, Brazilian IP laws, to date, have had only a limited impact on the ground, i.e., on domestic industry innovation, because they have not been consistently implemented.

First, a quirk in the language of the 1996 patent law seems to have made it difficult for Brazilian companies to negotiate technology transfer arrangements. Second, the patents as written by Brazilian inventors have been technically deficient or otherwise incomplete, and thus, not susceptible to application *as is* by industry to create commercially relevant products that could generate a reasonable economic return. In addition, Brazil's current system of administering patents is woefully inadequate to satisfy Brazil's current and emerging needs; as a result, there is approximately a 13-year patent backlog. Despite what may seem poorly conceived and/or executed government policies, the Government of Brazil has recently endeavored to correct this alarming situation.

Furthermore, Brazilian experts have advanced various other reasons explaining the relatively low number of patents filed by Brazilian organizations (as compared to the number filed by foreign applicants). Some have attributed this poor showing to Brazilian industry's limited technological capabilities. Other Brazilian experts have traced the lack of marketable patents to an ideological reluctance on the part of high-minded academics to transfer 'public' technologies to their more 'pedestrian' proprietary-minded colleagues for private commercial gain. In addition, a sometimes disguised political/populist aversion to a patent system based on American-style capitalism may also be partly to blame. As a result, some Brazilian government officials and intellectual property experts have argued that, Brazil's innovations have remained essentially trapped within the nation's universities and government funded laboratories and research institutes on account of ideological biases *and* international competitiveness concerns, and this has had adverse 'downstream' *domestic* impacts. Brazil

is not the only emerging economy suffering from such obstacles; several EU member states and China, too, face such a conundrum.

Such disharmony and lack of understanding also characterizes Brazil's treatment of clinical test data and trade secrets. Brazil first proposed TRIPS-consistent legislation protective of undisclosed test data and other information submitted to government regulators as a condition to obtaining market authorization, back during 2000, and finally enacted such legislation in December 2002. Yet, even though the law has been technically on the books, the Government of Brazil does not appear to be enforcing it.

Hence, one may conclude that the resulting "low integration between scientific and industrial [government] policies" has delayed Brazil's overall scientific and technological development, and that, this has rendered a number of Brazilian industries less innovative and technically proficient than they otherwise could have been and need to be to compete in the fast-paced global markets.

The Government of Brazil has recently undertaken efforts to bridge these ideological and technical gaps. On July 5, 2004, the Brazilian House of Representatives approved a new legal framework (the 'Technical Innovation Law'), the general purpose of which is to provide incentives to increase nationwide innovative activities that yield new commercialized hi-technology products and processes. President Lula signed this legislation into law on December 2, 2004. The framework is "expected...to improve the country's capacity to generate and commercialize technology...to increase the percentage of Brazilian patent applications in the Brazilian National Institute of Industrial Property [INPI] from 30 percent to a figure that reflects the importance of technology and the competitiveness of Brazilian industry..." That the Government of Brazil has endeavored at all to establish a *quasi*-market-based national innovation system is nothing less than spectacular and its significance should be heralded.

A review of this law may yield some tentative conclusions regarding Brazil's treatment of intellectual private property, and what can be expected from it. First, and foremost, this is more a government-centric rather than a market-centric approach to innovation, administered by government funded agencies and instrumentalities from top to bottom and beginning to end. This means that methods, processes and determinations will be amenable more to the objectives and benchmarks of bureaucrats and their civil servants than to those of industry. Second, there is no indication that the Government of Brazil, acting through its STIs, is either politically willing or legally able to cede to private industry full and clear (exclusive) legal title to *any* invention derived from the R&D activities undertaken by any public-private collaboration. Third, while division of IPRs is generally to be made in proportion to the resources each party brings to the table, it is highly unlikely that the STIs will, in practice, often relinquish more than a negligible portion of their rights in primary intellectual property to companies, lest they be accused of squandering "precious" government, and thus, public resources.

The most that participating industry members could hope for, then, would be government-funded subsidies and use of STI facilities (STI's) and personnel (scientists, research etc.). On a lesser note, such companies would also be entitled to a government-determined 'share' in any collaborative R&D project *derivative IPRs* they have subsequently developed and commercialized, alone or with assistance from

private universities. This economic interest would seem to extend beyond the ordinary royalty owed by derivative patent holders to the joint owners of a primary patent, where the primary patent holders (i.e., the joint collaborators) are not involved at all in the commercialization of the relevant know-how. It is well known that the costs of commercialization can, and often do, comprise most of the investment in the entire innovative undertaking. This is borne out by the continual use of the term ‘licensing’ throughout the statute, which seems to cover the profits earned by the commercialization of know-how. Even IPRs contributed by industry inventors to an R&D public-private partnership are subject to economic profit-sharing with the Government of Brazil. And, it is only in this latter case that the legal right of ‘patent’ rather than ‘copyright’ is used or referred to.

This leads curious minds to question whether the Government of Brazil is setting the groundwork for the eventual migration of the nation to GPL-style ‘open source methods’ or ‘creative commons’ open-content licenses for *all* science and technology innovations. If that is indeed the case, why then, would any rational, profit-seeking Brazilian company be interested in participating? What would they own outright, with free and clear title, at the end of the day as the result of their efforts? What economic incentive would a Brazilian business thus have to invest? How, then, will this new law enhance Brazilian industry’s ability to innovate?

## **COMPARING BRAZIL’S EVOLVING INNOVATION SYSTEM TO OTHER SYSTEMS**

At least one economic development expert has compared Brazil’s new innovation system, with the national innovation systems of post-industrial countries, such as Germany, France, and Japan, as well as, with those of Mexico, India and China. His observations are quite revealing. According to this expert, each of these failed innovation systems suffered a similar fate: the absence of individual investment incentives, namely, the protection of exclusive private property rights.

In addition, other studies have criticized France’s more recent innovation-focused ‘poles of competitiveness’ program and the European community’s older and rather unsuccessful IT-focused ESPRIT and related programs, each of which sought “to clos[e] the gap between Europe’s information technologies industries and those of the US and Japan.” This gap was apparently attributable, in large part, to the failure of the then prevalent EU industrial policy/ innovation framework, which rendered European educational and research institutions and industry unable to convert R&D (inventions) into market-relevant products (innovations). More recently, the EU Commission has endeavored to address European industry grievances about its lost regional and global market share and weaker innovative capabilities through pursuit of the ‘Lisbon Agenda’. The political need to satisfy the objectives underlying the Lisbon Agenda has apparently caused the Commission to undergo a painful mid-course review of its longstanding regional innovation strategy. One recent (2004) EU Commission report confirms that ‘the gap’ has continued to grow despite such efforts. And more recent reports confirm that the EU region suffers from a significant human capital gap with the US and Japan. As a result, the EU Commission has recommended that key structural corrections be made to the region’s industrial and innovation policies.

Unfortunately, however, this reality has not prevented populist leaders in Latin America from once again

seeking to nationalize local industries for short-term political gain. Indeed, “Latin America has become the prime staging ground for resource nationalism”. This has occurred, even though its leaders recognize that they still require developed nation science and technological know-how to exploit their ‘newly acquired’ resources for Latin America’s benefit. By contrast, the American Bayh Dole Act, which provides companies with exclusive rights in their intellectual property-based innovations, has, along with a strong higher education system, largely contributed to the U.S.’ global leadership position in science and technology. Its enactment in 1980 has long been recognized as one of a number of significant changes that created global awareness of the utility of IPRs. Therefore, it can and should be held out as a successful benchmark standard by which Brazil should gauge its own progress.

Clearly, the law’s sponsors and their patent law advisers recognized the wisdom of former U.S. President Abraham Lincoln and famous American inventor Thomas Edison. President Lincoln once said that the American patent system —adds the fuel of interest to the fire of genius,“ while Dr. Edison’s invaluable insight was that “The value of an idea lies in the *using* of it”. Yet, they also understood the popular concerns about the potential for monopolistic practices and higher prices, about how the costs of the program could likely exceed its potential public benefits, about the extent to which foreign industry could unduly benefit, and about how the diffusion of knowledge to the public could be impeded by covetous ownership behavior. These concerns were addressed in subsequent legislative drafts which ultimately made their way into the final bill. Taking all of these concerns into account, the Congress arrived at the following policy compromise: it would provide agencies with the means to shift legal title (ownership) of federally funded ideas and patents from the government to those private hands (approved universities, small businesses and nonprofits) most capable of securing the monies and expertise needed to commercialize them. In return for such a grant, the Bayh Dole Act would oblige title recipients (research organizations) to commit to a number of important procedural and substantive conditions.

The success of the Bayh-Dole Act can be measured in various ways. First, hundreds of new entrepreneurial-minded, patent-seeking university and nonprofit-based technology transfer programs have emerged since its enactment. In 1972, only 30 such programs existed. By the end of 2003, there were more than 300. Second, the number of patents that have been filed and the amount of licensing revenue earned since its enactment have risen dramatically – more than 2,000 new patents, 2,200 new licensing agreements, and approximately \$ 1 billion of royalty income. Third, the Act established a formal and secure mechanism to promote future university-industry joint research collaborations. In some cases, it has even yielded productive ‘public-private partnerships. Fourth, the Act has had an overwhelming positive impact on the U.S. economy, as expressed in terms of capital creation, i.e., thousands of new companies were created and new sources of investment tapped, and hundreds of thousands of new jobs were created. Fifth, the Act did not cost nearly as much as opponents had predicted, in terms of application filing and litigation costs. Sixth, a number of other countries have endeavored to imitate the Bayh-Dole Act. They include the United Kingdom, Canada, Germany, Japan, Korea, and Taiwan.

One of the key features of the Bayh-Dole Act is that it rewards the *individual* innovators for their research and commercialization efforts, as well as, the *private* or public university, nonprofit organization or small business which sponsors them. Since the enactment of the Bayh-Dole Act, for

example, “universities became hotbeds of innovation, as *entrepreneurial professors* took their inventions (and graduate students) off campus to set up companies of their own.” This has occurred largely because of the presence of incentives; the individual(s) who actually carries out the research and adapts the know-how is entitled to receive, by law, a ‘piece of the action’ – a share of the licensing royalties. This serves as a powerful motivating force to promote the creation of inventions that have patentable, useable and, thus, commercial value. The knowledge inherent in the invention is made public incident to its distribution throughout the public marketplace and its adaptation by other innovators to different technologies, products and/or processes. This, perhaps, is one of the primary distinctions between the Bayh-Dole Act and the state-centralized innovation model for research and development and product commercialization embraced by many countries, including Brazil.

## **BRAZIL SHOULD UNLEASH THE INNOVATIVE CAPACITY OF ITS IP-RICH INDUSTRIES**

Brazil boasts a number of knowledge-based high technology companies operating within the growing life sciences, computer software, information and communication technologies, aeronautical, and energy sectors, whose balance sheets most likely reveal quite valuable intellectual property assets. It is very likely that these assets would be capable of generating significantly greater revenue and profit for each such company and their shareholders than they now do, and also trigger welfare-enhancing spillover benefits for many Brazilian communities, if only the Brazilian government would choose the ‘right path’ - to recognize and vigorously protect the exclusive nature of the IPRs developed by rule of law.

A case in point is the experience of Laboratorios Ache in developing and patenting a unique chemical compound isolated from a rainforest plant extract. Although the particular compound had been identified and preliminary animal testing had been performed as early as 1980, it was not until 1998 that the company finally applied for *international* patent protection, which it ultimately was granted in both Europe and the U.S. Considering the questionable local enabling environment in which the company has had to operate to commercialize its know-how, its efforts should be applauded. Of greater concern, however, was the motivation underlying the company’s decision *not* to apply *first* for a *Brazilian* patent. Did Ache *not* trust that the Government of Brazil would implement, and did the Brazilian Government actually fail to implement the 1996 national patent law reforms, which supposedly recognize patented products *as well as* processes? Were Ache’s legal and economic interests therefore placed at risk? In addition to Ache, other Brazilian companies also originally applied for *international* rather than Brazilian patents.

There are also many other well regarded industrial sectors in Brazil such as, steel and iron works, automotives, mining, oil and gas, etc. As they become increasingly integrated within the evolving global information and technology society, they, too, are likely to develop and utilize, and/or otherwise exploit via licensing with third parties, their own advanced know-how. And, they will do so to more efficiently and cost-effectively manufacture, process, and distribute their product and services. Consequently, it is extremely likely that Brazil’s leading industries will soon demand for themselves the same strong IP protections for their evolving know-how and technologies that developed OECD country industries, including those based in the U.S., have long struggled to secure.

This paper's analysis of Brazil's IP-rich industries focuses primarily on the life sciences (pharmaceuticals, biotechnology, and chemicals) and computer software and e-commerce sectors. These sectors rely strongly on intellectual property as a valuable economic asset to be commercialized in the marketplace for profit, and thus, they are critically important to the future of the Brazilian knowledge-based information economy.

## **VI. BENEFITING FROM FOREIGN DIRECT INVESTMENT AND IPR PROTECTION BRAZIL'S INCREASING TRADE SURPLUS MAY NOT COMPENSATE FOR ITS DECLINING FDI**

Recent data confirms that —Brazil's ability to lure foreign direct investment has lagged other emerging market giants like China during the last several years“. Such data may even suggest that, in the face of increasing FDI competition, Brazil will likely have future difficulties in securing FDI, unless it makes certain structural changes. Brazil's current —surging trade surplus [might] allow [it] to reduce [somewhat] its dependence on foreign institutional financing“ and to consider IMF and Paris Club funding less critical to its maintenance of balance of payment and capital account surpluses. But, it would be unwise, and perhaps even foolish, for the Government of Brazil to extend this newfound economic and political confidence, which may only be temporary, into the realm of FDI.

FDI is often facilitated by the participation of other international financial institutions. These include the World Bank, the Inter-American Development Bank, the U.S. Export-Import Bank, the Overseas Private Investment Corporation, and other foreign governmental export promotion vehicles that, like the IMF, may impose their own strict conditionalities on loan facilities. Brazil must remember that FDI — continues to surpass other private capital and official development assistance (ODA) to developing countries. As recently as 2004, it was reported that most resources, including funds earmarked for research and development (R&D), continued to flow in the form of FDI. While Brazil may wish to “‘self-insure’ through large reserve holdings and a declining and less volatile stock of debt...[by]... lessen[ing]...the need for external financial support”, it must still provide the necessary enabling environment (e.g., liberalized markets, private property rights and intellectual property rights protections) to attract and reassure multinational corporations. After all, globally-focused companies, including MNCs, with or without government financial backing, remain the key providers of FDI.

Brazil also must not overlook how indispensable corporate-driven FDI funding of intellectual property-rich R&D remains to its ability to secure the types of sophisticated technology and know-how transfers that it seeks. It is well recognized that “The world's largest R&D spenders are concentrated in a few industries, notably IT hardware, the automotive industry, *pharmaceuticals and biotechnology*” (emphasis added). Brazil, furthermore, must not forget that it suffers from serious but largely correctable national deficits in human capital, education, now-how commercialization, and implementation and enforcement of intellectual property right (IPR) protections, which may significantly impair the technology and knowledge diffusion/absorption that experts consider necessary for it to create a truly sustainable national innovation system.

Although two recent reports forecast Brazil's growing desirability as an FDI destination in the short-term, they also express certain important reservations concerning the nature of FDI flows that will likely enter Brazil. In fact, with certain caveats, one of the reports warns that R&D is NOT likely to be among the primary corporate functions to be immediately relocated to Brazil. The report concludes that Brazil can expect to receive mostly 'adaptive' rather than 'innovative' R&D. It attributes this to the importance that FDI sources ascribe to IPR protections and the inability of local businesses to commercialize R&D-based know-how.

### **BRAZIL MAY DERIVE INNOVATION BENEFITS FROM FDI-RELATED KNOWLEDGE SPILLOVERS**

A developing or emerging economy's ability to take advantage of the FDI flows coming from knowledge-rich multinational corporations (MNCs), including small and medium sized enterprises (SMEs), depends on two primary factors: 1) the country's level of economic development; and 2) the country's level of human capital stock. To improve their understanding of this phenomenon, economists have broken down the concept of human capital stock into two distinct elements: a) years of education/schooling; and b) innovative ability. Several studies indicate that beyond the more narrowly focused MNC benefits sought (i.e., protection of their IP interests against unauthorized imitation and expropriation), there are even greater benefits that await local Brazilian companies.

Economists have described the observed impacts that FDI flows can have on developing and emerging economies generally, and on their companies and labor more specifically, as 'spillover effects'. 'Spillovers' can entail "facilitation of technology adoption that may [directly] accompany FDI flowing from a single company", as well as, benefits that "result [indirectly] from the effects of FDI on market structure". The latter may account for any 'follow the leader' or 'copycat' behavior that might and often does occur among corporate competitors who later enter and invest in developing country markets.

A recent report sheds light on these opportunities in the context of SME technology 'clusters' (networks). It found a number of factors that can contribute significantly to the creation of Latin American country SME innovative capabilities. They include: 1) the establishment of a business-friendly market-based enabling environment that can foster MNC embeddedness and local know-how exchanges; 2) a well functioning and integrated national innovation system that encourages R&D investment and commercialization of inventions; 3) the creation of stable *property rights* (i.e., *intellectual property/patents*), regulatory, and dispute settlement (judiciary) systems; and 4) the employment of effective 'good governance' (anti-corruption) mechanisms. The report identifies a number of specific benefits that Latin American/Brazilian cluster-based SMEs can expect to derive from targeted FDI. They include improved "host economy[] productivity and wages generating [local] investment opportunities and production variety in both upstream [supplier] (backward linkages) and downstream [customer] (forward linkages) industries."

However, developing country SMEs may realize their most important FDI-related benefits from the learning opportunities that arise in connection with technology (mostly process-related) transfers – i.e., from 'knowledge spillovers'. "Several empirical studies [have found] a positive correlation between the

[local] presence of...MN[C]s and the acquisition of human capital – that is, the training or upgrading of workers and the transfer of knowledge that makes possible the generation of new firms via spin-off mechanisms.” Such learning may occur by way of exposure to foreign affiliates, through testing and diagnostic feedback related to the use of quality-control techniques. Local companies may also acquire valuable technological knowledge from ‘the competition effect’. “[This] occurs when FDI pushes indigenous firms to use existing technology more efficiently and increases the speed of adoption/imitation of new technology.

Further competition between domestic firms and MNEs in both the home and foreign markets can induce domestic firms to improve their export performance.” In addition, MNC FDI flows may facilitate many other types of knowledge spillovers to local SMEs. They include transfers of product and process technology, financial, management and marketing skills, business practices, know-how, information, and enhanced social and environmental standards.

Available evidence adduced from Latin American country ‘cluster’ studies suggests that an MNC’s ability to successfully facilitate knowledge spillovers, and an SME’s ability to successfully benefit from them, “depends to a large extent on the degree [to which the MNC is] embedded[] in the local relational fabric.” Usually, a good amount of time must pass before a multinational company becomes embedded within a developing country. For example, it must first familiarize itself with the local conditions and develop relationships of trust with local suppliers. In addition, such success depends upon the existence of any technology gaps between local and foreign firms. “Wide technological gaps...lessen the attractiveness of outsourcing, subcontracting, and other forms of interconnections.” Furthermore, the success or failure in effecting such a transfer is determined by the ‘absorptive capacity’ of the local firms which, in turn, depends on the level of their human capital. Gaps in human capital between MNCs and local firms “can make the knowledge transfer itself difficult or impossible.”

One prior study that found that *any* spillover benefits resulting from R&D/IPR-focused FDI would, in large part, depend on the absorptive capacity of firms in the particular developing country in question. Moreover, regional cluster studies have shown that improvements made to a developing country’s underlying socio-economic environment can better enable SMEs operating within a cluster to utilize FDI-generated technology transfers to increase their absorption capacities.

In the event developing country SMEs suffer from huge technological deficits and absorption limitations, then transformational structural changes capable of facilitating MNC knowledge spillovers are in order. The creation of a business cluster-, regional cluster- or even a nation-based innovation system may thus be indispensable to promoting the types of innovative activities needed for such SMEs to compete domestically and globally. These innovation frameworks must involve MNCs as well as local public institutions, including universities, research centers, and technical institutes. And they must be organized consistent with foreign market requirements (as noted previously), be receptive of new technology imports, and be supported by the public.

## **BRAZIL MAY DERIVE INNOVATION BENEFITS FROM BILATERAL SCIENCE &**



## **TECHNOLOGY AGREEMENTS**

Brazil has taken several steps down the path towards creating a new innovation system and industrial development policy capable of unleashing the creative potential trapped within its many IP-rich industries. Whether it is ultimately successful in this endeavor, however, will depend on its ability to increase its FDI flows, strengthen its official bilateral science and technology partnerships, secure continued official project development funding, import financing and insurance underwriting, and maintain important export trade preferences with significant trading partners, such as the U.S.

Brazil has committed significant resources to developing national science and technology capacity. There is also a growing consensus between Brazil and the U.S. concerning the benefits of sharing science and technology know-how and protecting the intellectual property rights that underlie it. In fact, a number of joint projects and initiatives between the two countries have evolved, and they have included the participation of both governmental and private (industry, university and nonprofit) institutions.

The basis for such bilateral cooperation resides in the periodic renewal of the long-term Brazil- US bilateral science and technology agreement. Under the auspices of this S/T “umbrella agreement”, other institutional agreements have been reached that provide for joint Brazil-US R&D technical capacity and knowledge-building activities. A variety of joint research projects and academic exchanges are being pursued, for example, in the areas of energy, earth and space science, biotechnology, engineering, and agriculture.

## **BRAZIL MAY DERIVE BENEFITS FROM CONTINUED OFFICIAL PROJECT DEVELOPMENT FUNDING**

The Inter-American Development Bank (IADB) and its Multilateral Investment Fund (MIF) have long been involved in funding numerous projects to develop the region’s economies, including Brazil’s. These project financings, for example, have helped Brazil to: 1) develop innovative technologies in the agri-food sector, through development and use of intellectual property-rich biotechnology-based processes aimed at increasing food production and the rate of national patent filings/registrations; 2) to improve medicine procurement and distribution; and 3) to develop computer software infrastructure that benefited SMEs. These projects have also allowed Brazil to promote public ownership of patent rights as part of its national agrarian land reform policy, to promote government-funded universal access to medicines as part of its HIV/AIDS policy, and to promote use of open source computer software as part of its national information society policy and its state, and local government procurement policy.

Brazil has thus far been permitted to engage in these activities because it has enjoyed long and positive relationships with the banks and their developed country donors. However, the continuation of these relationships and the availability of such funding should not be taken for granted, especially if the donor governments perceive that Brazil’s policies are threatening their private and national economic interests. Indeed, IADB funding disbursements were withheld, in at least one prior instance, for such reasons.



## **BRAZIL MAY DERIVE BENEFITS FROM INCREASED HI-TECH IMPORT FINANCING AND INSURANCE UNDERWRITING**

The Eximbank, which is the official export credit agency of the United States, has also assisted Brazilian companies indirectly by reducing the likelihood of crises caused as the result of sharp declines in investment flows. Latin America is a priority market for U.S. exporters and has also consistently ranked as Ex-Im Bank's top market, and, Brazil is Eximbank's second largest market in Latin America. The Bank has supported several large public sector infrastructure and private sector commercial projects since the 1940's that have provided Brazilians with social as well as economic benefits. Furthermore, Eximbank financing and/or loan guarantees have also helped to secure important goods and services purchases by Brazilian companies.

Brazil's Eximbank beneficiaries must remember, however, that it is ultimately the U.S. Congress which bears the legal and political responsibility for deciding whether to reauthorize Eximbank appropriations. In fact, Congress will be reconsidering whether to reauthorize such appropriations later this year (2006), and will likely take into account all Brazilian government policies and activities that may be deemed to have exploited individual U.S. private IPRs as well as Eximbank funding at the expense of American taxpayers. Interestingly, U.S. congressional representatives have debated these issues both during and after the 2001-2002 Eximbank reauthorization hearings.

The OPIC, a U.S. government development agency, has also helped Brazilian companies to procure the financing and associated insurance coverage needed to acquire capital assets and investments from U.S. sources without risk of impairment or loss. OPIC effectively compliments the private sector in managing the political risks associated with foreign direct investment. Brazil has remained the largest recipient of OPIC financial backing since at least 1996. However, private investment may diminish, and along with it, OPIC support, if the Brazilian government's activities are perceived to threaten U.S. foreign investment interests, including science and technology-related IPRs.

## **BRAZIL MAY DERIVE BENEFITS FROM CONTINUED EXPORT TRADE PREFERENCES**

Since at least, 1997, Brazil has enjoyed a growing trade relationship with the United States, which still remains Brazil's single largest trading partner. During 2003, Brazil's exports to the U.S. were valued at US\$ 21.3 billion, 14 percent of which (approx. \$3 billion) enjoyed duty-free status pursuant to the U.S. Generalized System of Preferences (GSP).

The U.S. GSP program has provided significant benefits to Brazil and other developing countries to the extent they have shown a commitment to recognize and protect U.S. IPRs, among other U.S. trade policies. This program, however, remains authorized only until December 31, 2006. To justify continuation of the GSP program, the USTR recently solicited public comments aimed at determining how to make it more productive and efficient. In particular, the USTR has questioned how to ensure that GSP benefits are no longer focused on trade from only a few countries. Brazil should be aware that, since it was among the top ten recipients of U.S. GSP benefits in 2004, its future GSP status is not assured.

Furthermore, the Brazilian government should not overlook how its continued failure, since at least 2000, to uphold U.S. film, music, and software copyrights had resulted in its being placed on a USTR Special 301 list. Brazil remains on this list today despite its progress in enforcing its copyright laws. Apparently, there is a growing U.S. frustration with Brazilian governmental policies and activities aimed at weakening U.S. private property interests in life sciences and information technology patents and trade secrets. The Government of Brazil should remember that there is nothing to prevent the USTR from undertaking new investigations of alleged IP opportunism, which can not only jeopardize the eligibility of specific Brazilian exports to receive U.S. GSP preferences, but also Brazil's coveted U.S. GSP nation status overall.

## **VI. CONCLUSION: BRAZIL'S IP OPPORTUNISM COMPROMISES ITS ABILITY TO ACQUIRE THE TOOLS OF INNOVATION; WHAT OTHER COUNTRIES ARE DOING TO STRENGTHEN IPRs AND TO ENHANCE THEIR ABILITY TO INNOVATE**

An increasing number of emerging and developing countries have discovered the important role that patents and trade secrets can serve in establishing the proper enabling environment for promoting indigenous scientific, technological research and development, commercialized innovations, and economic development, and have stepped forward to increase protection of privately owned patents and trade secrets. This article discusses the progress made in this area by China, India, Jordan, Singapore, Chile, Mexico, Morocco and South Korea.

### **BRAZIL MUST EVOLVE**

Economists generally recognize that the developing economy practice of industrial and technology IP opportunism should, to some extent, be expected. Developing countries face enormous pressures to maintain an evolutionary track in a world that continually progresses. These pressures are exacerbated in the current information society, which is taking shape much more rapidly than previous globalization eras due to significant and continuous scientific, technology and communication advances. But, such international practices can neither continue nor be justified forever, because they seriously harm domestic innovation and the international order. Indeed, the previous international order that fostered such conduct no longer exists, and the former protagonist nations themselves are continuing to politically, legally and economically evolve. Brazil, an emerging economy with great innovation potential, must, too, evolve!

Arguably, Brazil is now demonstrating a type of intransigence at international institutions, through its efforts to help reform and replace the current paradigm of private property-based international intellectual property law. It also refuses to enter into regional trade agreements that require it to recognize and enforce private intellectual property rights. While Brazil's bravado has garnered the applause and admiration of less fortunate impoverished nations and socialist-minded activists and advocacy groups, it likely threatens the interests of most other countries, the established global system

of innovation and economic growth, and the economic prospects for Brazil itself.

The failure of Brazil and other emerging economies to vigorously uphold the exclusive private property rights of foreign and domestic individual and corporate owners in intellectual property, has contributed, furthermore, to OECD nations' subsidization of the cost of global innovations. This occurs through payment of the higher prices charged for technology-rich products invented, commercialized, and sold within the U.S. and other developed nations, coupled with stiffer local enforcement of IP laws. Higher prices result chiefly from OECD country industries' inability to recover their costs of investment and to earn a reasonable profit. Strict price controls on health care and other products, and allowance of parallel trade in below-cost and illicit generic drugs and open source computer software also contributes to this problem. Arguably, each of these mechanisms should be the exception rather than the rule – and that exception should apply only to *least* developed countries under exigent circumstances. In other words, aggrieved countries must demonstrate that they are experiencing actual health or knowledge emergencies and/or that they lack actual manufacturing or information dissemination capacity.

If the Government of Brazil and anti-private property, anti-free market and anti-WTO activists and academics are successful in changing the current international IPR paradigm, innovative OECD nation industries will need to employ a global *at-or-below-cost*, fixed-price, volume-based business model that would likely be publicly supported, in some way, by national governmental subsidies or through imposition of international, national and/or local taxes. Pursuant to such a model, innovative product/service providers would essentially be 'guaranteed' a minimum national and/or international market share in return for everyday low-priced products and services.

Once OECD nation companies are no longer able to protect their exclusive private intellectual property from exploitation by others, or to earn an adequate market-rate return on investment, *plus* a reasonable profit to boot, they will have *less* of an incentive to invent and innovate. Tax and financial incentives such as R&D credits and subsidies and other academic-style contests and awards are, indeed, helpful mechanisms - but they do *not* compensate for the opportunity (time and effort) and economic costs incurred to convert basic R&D into commercially relevant innovations. Markets are *profit-*, not cost-driven. Volume-based business models with tight profit margins are an extremely risky investment in the long term, even if supported by government efforts to artificially 'make markets' by providing 'advanced market commitments'. And lump sum low-margin and royalty-free 'patent buy-outs' based on estimated future profits are also unlikely to motivate prospective inventors, innovators or investors, given future market uncertainties.

With governments and civil society activists regulating company profit margins internationally and domestically without truly guaranteeing markets for more than the short-term, a company's (and investors') incentive to enter into any such arrangement is likely to quickly disappear. In fact, 'top-down' government 'market-making' mandates, no matter what form they assume, provide even greater *disincentives* to invest and innovate in the longer term, unless, of course, they can be manipulated by a desperate industry as disguised protectionist devices. Rather, what is most needed is a national *bottom-up*, market-first approach towards innovation. This is not rocket science, but simply, human nature.



Unless all countries, including Brazil, work together to protect IPRs globally, invention, innovation, consumer prices, and public access to critical new life science and information technologies will likely suffer. This could conceivably result in a significant cost-of-living increase for, and a measurable diminution in, the quality of life of, OECD as well as developing nation citizens that will be difficult for them to bear.

Brazil, an emerging economy and an aspiring global power, has arrived at the stage in its development where it is expected to exercise prudence and responsibility in its domestic and international affairs. Therefore, the Government of Brazil must choose the ‘right’ path by pursuing IP-based innovation rather than IP opportunism.