

The
Economic
Value of
Intellectual
Property

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The Economic Value of Intellectual Property¹

I. Introduction

Knowledge and ideas have always been the vital force in economic development. The natural resources available today in the United States and the entire world – arable land, usable energy sources and minerals, animal life, and so forth -- have existed for decades or centuries. Only successive waves of intellectual and practical innovation have enabled America and other societies to use them productively. In the same way, all of the constituent natural elements used to build today's most advanced supercomputers or treat infections have existed for decades or centuries. It took generations of ideas, building one upon another, to turn those elements into technologies and medical treatments that can change a nation's economic prospects.

The power of ideas to drive economic development and growth is evident throughout the world. Economists have long known that economic innovations have been a more powerful force in determining how fast U.S. productivity and output grew during the 20th century, than either increases in capital investment or improvements in the skills of American workers. Moreover, the current value of the intellectual property which embodies those ideas -- from computer software and musical recordings to patented pharmaceuticals and information technologies -- is enormous. We estimate that U.S. intellectual property today is worth between \$5 trillion and \$5.5 trillion, equivalent to about 45 percent of U.S. GDP and greater than the GDP of any other nation in the world.

While new technologies and new ways of doing business usually are developed in advanced economies such as the United States, their transfer to other societies has been a key factor in the rapid modernization of the world's most successful developing nations, most notably the Asian Tigers and China. Both parts of this equation for growth and productivity – the development of innovations that help raise output and incomes in the advanced nations where they originate, and their transfer to developing nations where they also help drive growth and higher living standards – depend vitally on respect and protection for the intellectual property embodied in every innovation.

Over the last generation, economists have established a series of findings that demonstrate the vital importance of strong intellectual property rights. As we will see, research has established that intellectual property protections in developing societies, especially countries with low *per capita* incomes, directly encourage technology transfers from more advanced economies through both direct imports and foreign direct investment. Moreover, technology transfers to developing nations expand as those

¹ This analysis was supported by USA for Innovation. USA for Innovation is a 501c3 organization. Their mission is to encourage government to defend the U.S. economy. USA for Innovation is intended to educate the public about the value of IP to our economy and to highlight the leading perpetrators of theft against U.S. technological assets overseas. <http://www.usaforip.org/home/>

nations strengthen their patent protections. Data also show that intellectual property protections in developing nations can directly stimulate the pace of innovation in advanced countries. Conversely, researchers have found that countries with weak intellectual property protections receive less direct foreign investment; and the investment they receive is less technologically sophisticated. Moreover, the advanced technologies and products which multinational companies transfer to those developing markets that protect intellectual property rights often diffuse to domestic firms, increasing the rate at which those firms and their countries develop their own intellectual property.

Given the enormous value of economic innovations and the intellectual property embedded in them, it is not surprising that the underlying ideas are often stolen by those who pirate or counterfeit patented or copyrighted technologies and products. The Organization for Economic Development (OECD) has estimated that counterfeiting and piracy costs companies as much as \$638 billion a year, losses greater than the total GDP of all but 12 countries. Around the world, between 35 and 40 percent of all commercial, packaged software and musical recordings sold every year are thought to be counterfeit. Among patented products that are more difficult to duplicate, such as drugs, electronics and semiconductors, the counterfeit rates are lower but substantial. The World Health Organization (WHO) estimates that at least six percent of the pharmaceuticals sold worldwide every year are counterfeit, valued at more than \$30 billion.

In some nations, the vast majority of the software and musical recordings sold are counterfeit versions. More than 90 percent of the recordings sold in China and Paraguay are pirated; and the market shares for counterfeit software are more than 60 percent in Latin America, more than 70 percent in Eastern Europe, and nearly 90 percent in Russia. In addition, experts in pharmaceutical piracy have found that counterfeits account for up to 50 percent of certain drugs sold in China and Pakistan, and more than 10 percent of the entire markets in other Asian countries and Russia.

Despite the critical economic importance of intellectual property rights, since 2001 the U.S. government has taken virtually no action against countries which tolerate wide-scale piracy and counterfeiting of American technologies and other products. From 1996 through 2000, the United States filed 15 cases with the World Trade Organization (WTO) for intellectual-property violations; but from 2001 to the present (September 2005), the U.S. filed just one new case. The U.S. government has also taken no action in response to the Brazilian government's unprecedented move to unilaterally abrogate patents for three new pharmaceuticals. Given both the extent and costs of all of these violations, and their long-run implications for economic growth and development in America and around the world, the international community along with the United States should take aggressive measures to strengthen global enforcement of intellectual property rights.

II. Innovation, Intellectual Property Rights and Economic Growth

The role that ideas play in global economic life may be greater today than at other times in modern history. It is clear that a society's natural resources no longer bear a close

relationship to how fast it develops and grows. For example, from 1960 to 2000, economic output and *per capita* incomes grew more than three times faster in South Korea, with relatively few natural resources, than in Brazil, a country with abundant natural resources.² Much of the difference can be traced to Korea's relative openness to technological and other innovations developed elsewhere and imported to Korea through foreign direct investment or licensing agreements, as well as to Korea's greater commitment to broad-based public education that prepared its future workers to adapt to new technologies and ways of doing business.³

Wherever they originally occur, everyone has an interest in promoting innovations, because most of the benefits are enjoyed by those who use them. For example, there is no doubt that the benefits to workers and corporations around the world from using the Windows operating system far exceed Microsoft's profits; or that HIV medications provide much greater benefits to those who use them. However, both the development and application of economically-powerful innovations depend on legal and regulatory arrangements that protect the intellectual-property rights of those who develop and transfer them, and thereby enable them to profit from doing so.

As Paul Romer, one of the world's leading experts on economic growth, has written,

The knowledge needed to provide citizens of the poorest countries with a vastly improved standard of living already exists in the advanced countries. If a poor nation invests in education and does not destroy the incentives for its citizens to acquire ideas from the rest of the world, it can rapidly take advantage of the publicly available part of the worldwide stock of knowledge. If, in addition, it offers incentives for privately held-ideas to be put to use within its borders (*for example, by protecting foreign patents, copyrights and licenses, and by permitting direct investment by foreign firms*), its citizens can soon work in state-of-the-art productive activities (emphasis added).⁴

There is no controversy among economists about the major role which innovation plays in economic growth and development. Since the 1950s, researchers beginning with Nobel laureate Robert Solow have established that the development and adoption of economic innovation is the most powerful factor determining a nation's underlying growth rate. In the United States, the world's most successful advanced economy, an estimated 30 percent to 40 percent of the gains in productivity and growth achieved during the 20th century are attributable to economic innovation in its various forms.⁵

² World Bank, *World Development Indicators*, Washington, DC: World Bank, 2005.

³ *Op. cit.*

⁴ Paul Romer, "Economic Growth" in the *Fortune Encyclopedia of Economics*, David R. Henderson, ed., Warner Books, 1993.

⁵ Robert M. Solow, "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics*, Vol. 70, 1956; Robert M. Solow, "Technological Change and the Aggregate Production Function," *Review of Economics and Statistics*, Vol. 39, No. 3, 1957; Edward F. Denison, "The Sources of Economic Growth in the United States and the Alternatives Before Us," Committee for Economic Development, Supplementary Paper Number 13, 1962

These innovations encompass the development of not only new technologies, but also new materials and processes, new ways of financing, marketing and distributing goods and services, and new ways of managing a workplace and organizing a business.

The dominant role of ideas in economic life is also documented in an important new study from the Federal Reserve System.⁶ Its authors analyzed the various ways that companies use ideas by examining several categories of business spending on so-called “intangibles,” including: Software programs and databases; scientific and non-scientific R&D, covering costs to develop products subject to patents, licenses and copyrights, as well as new-product development costs by service firms; spending on advertising and market research to create brands; resources devoted to developing new business models and corporate cultures; and expenditures on firm-specific training. By classifying these outlays as capital investments intended to increase future rather than current output, the authors found that U.S. business currently invest as much in these idea-related intangibles – about \$1 trillion a year -- as they do in plant, equipment and other traditional, tangible forms of investment. They further established that in the 1990s, U.S. business spending on this long-lasting, knowledge capital grew faster than any other form of business or personal spending. Finally, they traced more than four-fifths of the gains in the growth rate of U.S. productivity in the latter 1990s to the development and application of new ideas. Over the period 1995-2001, the development of new information technologies accounted for 28 percent of those gains, capital investment in those technologies accounted for another 34 percent, research and development accounted for 10 percent, and changes in the organization of firms and worker training in response to innovations accounted for another 10 percent.⁷ By applying this approach to data for 2001-2003, we calculate that nearly 90 percent of U.S. economic growth during this most recent period can be attributed to increases in the stock of intangible assets.

Economically-powerful innovations originate primarily in advanced economies where commitments to research and development are strong, the political and economic environments are stable, barriers to starting new businesses are relatively low, and intellectual property rights are respected. The close relationship between innovation, growth and these conditions is evident in the recent records of developing economies. In the words of two analysts, “most of income above subsistence is made possible by international diffusion of knowledge.”⁸ In this regard, the World Bank has reported that since 1980, the world’s greatest economic gains have been achieved by developing nations that aggressively opened their economies to foreign technologies and business methods and protected the intellectual property rights of their developers.⁹ From 1980 to 2002, the developing East Asian economies achieved growth averaging more than 7.4 percent per year, and the developing South Asian economies grew by an average of more than 5.4 percent annually. By contrast, Latin American economies with more restrictive

⁶ Carol Corrado, Charles Hulten, Daniel Sichel, “Measuring Capital and Technology: An Expanded Framework,” Federal Reserve Board, *Finance and Economics Discussion Series*, No. 2004-65, August 2004.

⁷ *Ibid.*, Table 3.

⁸ Peter J. Klenow and Andres Rodriguez-Clare, “Externalities and Growth,” National Bureau of Economic Research Working Paper No.11009, December 2004..

⁹ World Bank, *World Development Indicators*, *op. cit.*

foreign-investment policies and lax intellectual property protections grew by less than 2.5 percent per year over the same period. Generally, another recent World Bank study of patenting and growth in 92 countries over the period 1960 to 2000 found that a 20 percent increase in the annual number of patents granted, wherever the technologies originated, was associated with an increase of 3.8 percent in output, an unusually powerful finding.¹⁰

The issue which we examine here is more limited. Given that innovation is the largest single force responsible for changes in rates of growth and productivity in most nations, how critical are intellectual-property protections to the development and spread of those innovations? It may seem obvious that rates of innovation would fall sharply if the innovations developed by one person or company could be copied and reproduced without limit or compensation by any other company in any country. Yet, serious questions have been raised recently about traditional intellectual-property rights, including appeals to the World Intellectual Property Organization (WIPO). These questions argue that those rights actually impair economic progress in developing nations.¹¹ Moreover, one prominent national proponent of this view, the government of Brazil, recently suspended the intellectual-property rights of three pharmaceutical firms to new AIDS medications which they developed.¹²

In fact, the relationship between innovation and intellectual-property rights is well-established in modern economics. To be sure, invention for its own sake has not always depended on those rights. For example, recent research based on data from the catalogues of inventions displayed at three 19th century world fairs found that inventors remained active in Denmark and Switzerland during periods in the 19th century when those nations lacked intellectual-property protections.¹³ However, the research also found that the inventions developed in places without patent protections predominantly involved products in which the inventor could preserve secrecy without a patent, such as new food stuffs with “secret recipes.” Virtually all of the inventions which ultimately hastened economic development and lifted living standards – especially new technologies and manufacturing processes – were developed in societies with strong intellectual-property protections, most notably the United States and Germany.

A portion of the explanation for these dynamics lies in how people normally respond to economic incentives. While a few souls are true altruists, most people expend the effort to develop something that provides economic benefits to others, only if doing so also benefits themselves as well. Moreover, as corporations have come to dominate the development of innovations, the prospect of future gains as an essential incentive has

¹⁰ Derek H.C. Chen and Carl Dahlman, “Knowledge and Development: A Cross-Section Approach, World Bank Policy Research Working Paper No. 3366, November 2004.

¹¹ Group of Friends of Development, “Proposal to Establish a Development Agenda for the World Intellectual Property Organization (WIPO): An Elaboration of Issues Raised In Document Wo/Ga/31/11.” *Submission to the World Intellectual Property Organization*, April 6, 2005, www.ipjustice.org/WIPO/elaborationDA.

¹² “Brazil health minister to break Abbott AIDS drug patent,” Reuters, June 24, 2005; Mary O’Grady, “Brazil Mulls Drug Patent Theft as an AIDS Antidote,” *Wall Street Journal*, June 24, 2005.

¹³ Petra Moser, “How Do Patent Laws Influence Innovation? Evidence from Nineteen-Century World Fairs,” National Bureau of Economic Research Working Paper No. 9909, August 2003.

become conclusive. The development of most modern economic innovations, especially in technology areas, generally requires highly-skilled people and sophisticated equipment and business organizations. The use of that labor and capital is costly. The only reason that a business bears those costs and forgoes more immediate and certain returns from using its labor and capital in other ways is a prospect of larger returns in the future.

The rest of the explanation lies in the essential economic nature of ideas, which make the prospect of earning future returns from them dependent on legal property rights and protections. The ideas that animate economic innovations are what economists call “non-rival goods,” which means that unlike “rival goods” such as a piece of equipment or real estate, an idea can be used by more than one person at a time and easily duplicated. Because an idea cannot be physically possessed like land or equipment, its use by those who develop it does not preclude others from using it at the same time.¹⁴ As a result, the returns from innovations cannot be secure without legal protections for the new ideas that animate them. This dynamic is evident in the results of a recent survey of American R&D executives, who reported that without patent protections, 60 percent of the projects which ultimately produced discoveries in pharmaceuticals would never have happened.¹⁵

III. Intellectual Property Rights and Globalization

The importance of intellectual property and other intangibles presents the United States with unique challenges in a period of rapid globalization. As knowledge expands rapidly and discovery in many areas becomes easier, the period of time that a firm has to offer its innovation or discovery, with little direct competition from substitutes, contracts. Accordingly, American firms have sought to recapture their development costs more quickly by expanding their worldwide market. Since 72 percent of worldwide GDP and demand are located outside the United States, the potential increase in sales from globalization during an innovation’s initial period of high revenues is immense – so long as the developer’s intellectual property rights are respected outside the United States.

Developing countries face different concerns with regard to intellectual property and globalization. These countries have less economically-valuable intellectual property and hence are often significant importers of innovative technologies and expertise. This prospect may trigger protectionist responses in certain developing countries and tempt them to simply ignore foreign intellectual property rights. This is especially true because during the period in which a patent applies, intellectual property rights guarantee that its owner can charge prices substantially greater than its marginal costs to produce the good. Hence, recourse to piracy or counterfeiting can significantly reduce the costs of a given patented product in a developing country. It is sometimes claimed that the market for

¹⁴ In economic terms, ideas are also considered to be “partially non-excludable goods”: An innovator acting as a private agent cannot prevent others from using his idea, as compared to someone who owns a piece of land or a factory who can prevent others from using it by hiring security guards.

¹⁵ Edwin Mansfield, “Patents and Innovation: An Empirical Study,” *Management Science*, Vol. 32, No. 1, 1986. For a literature review of the connections between innovation and intellectual property protections, see Sunil Kanwar and Robert Evenson, “Does Intellectual Property Protection Spur technological Change?”, Yale University, Economic Growth Center Discussion Paper No. 831, June 2001.

many innovative products in low or middle-income countries is too small to affect global investment in R&D, and therefore developing countries can ignore the intellectual property rights of foreign companies and improve their welfare at little cost to the rest of the world. The question is, are developing countries better off if they ignore intellectual property rights?

Many economists have explored various aspects of this issue in great detail. A clear consensus has emerged in this literature. The costs to a developing nation of ignoring the intellectual property rights of foreign companies significantly *exceed* any benefits. For example, in one line of inquiry researchers examined whether innovating firms are sensitive to intellectual-property rights only in the place where they develop their innovations, or whether the strength of their patents in other countries also matters. Once again, the economic logic linking the development of new technologies and strong intellectual-property rights in foreign markets is clear. The prospect of a larger market for an innovator to earn returns directly stimulates R&D by expanding the potential customer base against which an innovating corporation can amortize that R&D spending and by raising the potential rate of return on the R&D. Recent research supports this logic. One study found that strong intellectual-property protections in developing nations directly stimulated the pace of innovation in more advanced economies.¹⁶

Opponents of traditional intellectual property protections have claimed recently that regardless of the impact of patent protections in developing countries on the pace of innovation elsewhere, the innovations benefit primarily those who develop them and not the people in developing countries. This also is an important issue, since innovative activity is largely concentrated in stable, advanced countries that can afford substantial financial commitments to R&D and that encourage firms to commercialize and export the innovative products and processes which result. Moreover, there is evidence of some corporations using their patent protections to maintain monopolies and deter potential competitors from entering the market, focusing their resources on defending their original innovations rather than developing additional new products.¹⁷ Nevertheless, the overall evidence shows that such adverse effects are outweighed by the contributions of innovations to growth and productivity in the developing markets to which they were transferred, as well as the countries where they originated. Those transfers would not have occurred had the innovators doubted that they could claim rights to the returns.

One major study examined data for 95 countries from 1960 to 1988 and found that intellectual-property rights had a significant effect on growth in all cases, with the greatest effects occurring in both the high-income countries where the innovations were developed and those low-income countries where strong patent protections encouraged

¹⁶ Ishac Diwan and Dani Rodrik, "Patents, Appropriate Technology and North-South Trade," *Journal of International Economics*, Vol. 29, No. 1, 1991

¹⁷ These charges, summarized in "Intellectual property Rights and Economic Growth," (Rod Falvey, Neil Foster, David Greenway, Research Paper 2004/12, University of Nottingham, 2004), are made by many opponents of intellectual-property protections, including the Group of Friends of Development in their April 2005 submission to WIPO. (see footnote 11 for citation)

the importation and inward foreign direct investment of innovations.¹⁸ These results are confirmed by another study conducted in 2004 which examined 80 countries over four time periods covering 1975 to 1994.¹⁹ These researchers found that strong intellectual property protections stimulated growth in countries with high *per capita* incomes and *even greater gains* in countries with low *per capita* incomes, by encouraging imports and foreign direct investment from advanced countries.²⁰

Whether these technology transfers occur by export or foreign direct investment usually depends on the product and the market, with intellectual property rights playing a significant role in both cases. The existence of strong intellectual-property rights in a developing country encourages the export of new technologies to that country by both protecting the exporter from local imitations and increasing the size of the exporter's potential market; and several studies have found that countries with relatively stronger intellectual property rights attract relatively more imports.²¹ Foreign direct investment is likely to replace exports as a marketing strategy for innovating companies when the products are relatively R&D-intensive and the market is large, and when the costs of conducting the trade and transporting the goods are high and the costs of establishing new plants are low.²² For example, it is not surprising that foreign direct investment of technologies that are both complex and easily copied or imitated increases as intellectual property rights are strengthened especially compared to technologies and products that are more standardized and labor intensive. The result, as documented in one study, is that the quality of technologies transferred to developing countries generally rises as those countries strengthen intellectual property rights.²³

Generally, researchers have established that technology transfers to a developing market increase as it strengthens patent rights, especially when its domestic companies compete with the foreign innovators,²⁴ and that every one-percent increase in the degree of patent protection in a developing country expands the stock of U.S. investment in that country by 0.45 percent.²⁵ As these studies demonstrate, the issue for foreign direct investments that transfer technologies is ultimately the same as any other investment: Will it raise the

¹⁸ D. M. Gould and William C. Gruben, "The Role of Intellectual Property Rights in Economic Growth," *Journal of Development Economics*, Vol. 48, No. 2, 1996.). M.A. Thompson and F. W. Rushing found these effects only when a country had achieved a certain level of GDP ("An Empirical Analysis of the Impact of Patent Protection on Economic Growth," *Journal of Economic Development*, Vol. 21, 1996.

¹⁹ Falvey *et. al.op. cit.*.

²⁰ *Ibid.* The researchers could not establish the same link for middle-income countries: The positive effects of patents on growth, from imports and foreign direct investment, were offset by negative effects associated with discouraging domestic imitators and slowing the pace with which new knowledge is diffused.

²¹ Keith Maskus and Mohan Penubarti, "How Trade-Related Are Intellectual Property Rights?" *Journal of International Economics*, Vol. 39; Pamela Smith, "Are Weak Patent Rights a Barrier to U.S. Exports?" *Journal of International Economics*, Vol. 48, No. 1, 1999.

²² Keith Maskus, "Intellectual Property Rights and Foreign Direct Investment," Center for International Economic Studies, University of Adelaide, CIES Policy Discussion Paper 0022, May 2000.

²³ Sharmila Vishwasrao, "Intellectual Property Rights and the Mode of Technology Transfer," *Journal of Development Economics*, Vol. 44., No. 2, 1994

²⁴ M. Scott Taylor, "Trips, Trade and Growth," *International Economic Review*, Vol. 35, 2004.

²⁵ Keith Maskus, "The International Regulation of Intellectual Property, *Weltwirtschaftliches Archiv*, 1994, cited in Maskus, "Intellectual Property Rights and Foreign Direct Investment," *op. cit.*

firm's expected profits so that it can earn a higher return on its protected knowledge-based assets through the foreign direct investment than in any other way?

The evidence also shows the other side of the coin. Countries with weak intellectual property rights receive relatively less foreign direct investment, and the investment which they do attract is technologically less sophisticated.²⁶ For example, a survey of 100 U.S.-based multinational firms found significant reluctance among them to do business in India, Brazil, Argentina and Indonesia, all countries cited by the Office of the U.S. Trade Representative for failing to respect or protect the intellectual property rights of American companies and citizens.²⁷ More than 80 percent of the pharmaceutical and chemical companies included in the survey reported that they would not conduct any joint ventures or transfer or license their technologies in India, despite that country's huge market.²⁸ Similarly, among all of the surveyed firms, 62 percent said that they would not license their product's production in Argentina, 69 percent said they would not do so in Brazil, and 73 percent would not do so in Indonesia.

This link between intellectual property protections and foreign investment is also evident in numerous studies of how U.S. multinational firms shift their revenues for tax purposes. It is well documented that multinationals participate in an extraordinary amount of income-shifting across borders, with income derived from intellectual property accounting for about half of the income shifted from high-tax to low-tax jurisdictions.²⁹ In fact, firms transfer their intellectual property to low-tax jurisdictions so aggressively, that low tax-rate countries often collect higher corporate revenues than high tax-rate countries – a genuine Laffer curve effect.³⁰ However, the data show that nations that do not respect a multinational's intellectual property rights receive much *lower* tax revenues from foreign multinationals, demonstrating the significant role that intellectual property rights play in determining if a country is an attractive place for multinational investment.

Intellectual property protections also affect the composition of foreign direct investment. One recent study found that in country-markets with weak intellectual property rights, foreign multinationals tend to focus on developing distribution channels for their products – compared to country-markets with strong intellectual property rights, where multinational focus more on transferring their production technologies and manufacturing.³¹

²⁶ Jeong-Yeon Lee and Edwin Mansfield, "Intellectual Property Protection and U.S. Foreign Direct Investment," *Review of Economics and Statistics*, Vol. 78, 1996.

²⁷ Edwin Mansfield, *Intellectual Property Protection, Foreign Direct Investment and Technology Transfer*. International Finance Corporation, Discussion Paper, cited in Maskus, *op. cit.*

²⁸ Similarly, among the machinery producers surveyed, 73 percent said that they would not license the production of their products in Brazil and 59 percent would not do so in India.

²⁹ Harry Grubert, "Intangible Income, Intercompany Transactions, Income Shifting, and the Choice of Location," *National Tax Journal*, Vol. 56, No. 1, Part 2, March 2003; Eric Engen and Kevin Hassett, "Does the U.S. Corporate Tax Have a Future?" *Tax Notes*, 30th Anniversary Issue, 2002.

³⁰ Engen and Hassett, *op. cit.*

³¹ Smarzynska, B. K., "Composition of Foreign Direct Investment and Protection of Intellectual Property Rights: Evidence from Transition Economies," The World Bank, Policy Research Working Paper No. 2786, 2002.

A number of researchers have found that countries that do not aggressively respect intellectual property rights also have a more difficult time achieving economic growth through technology transfer. One recent study looked at how reforms in intellectual property rights in 16 countries over the period 1982 to 1999 affected technology transfers by U.S. multinational firms to their foreign affiliates.³² The research showed that royalty payments to parent companies for the use or sale of technologies transferred to their affiliates increased at times of the reforms, as did R&D carried out by the affiliates as a complement to the technology imports from their parent companies.³³ The conclusion was that “U.S. multinationals respond to changes in IPR (intellectual property rights) regimes abroad by increasing technology transfers to reforming countries.”³⁴ This response was particularly strong among firms whose revenues prior to the reforms depended most on intellectual property. The data further showed that bilateral trade in manufactured goods also rises sharply when intellectual property protections are enhanced.

These dynamics also may lie behind the findings of a recent World Bank study, which found that during the same period of intellectual property reforms, the share of global trade comprised of knowledge-intensive or high technology products rose sharply.³⁵

There is also substantial evidence that multinational firms often shift some R&D activity to countries which respect intellectual property rights, creating positive feedback effects in those developing countries. Once a multinational locates intellectually intensive activities in a country, those activities can have positive effects on other domestic businesses. For example, one study analyzed investment decisions by firms in a large number of countries and found that as a country’s protections for intellectual property increase, firms focus more of their activity there on the development of intangible assets, with a significant, positive effect on GDP growth.³⁶ These findings establish a clear causal chain and virtuous circle. Countries that respect intellectual property rights encourage foreign multinationals to transfer state-of-the-art technologies to those countries. Once that country’s businesses and citizens become familiar with the new technologies, domestic firms both adopt them and often increase the rate at which they develop their own intellectual property. These developments lead to higher growth by domestic firms, which make the country a more attractive locale for further investment by foreign multinational companies.

In some cases, this virtuous circle has helped produce remarkable economic transformations. In particular, researchers have shown that as a developing country

³² Lee Branstetter, Raymond Fisman, C. Fritz Foley, “Do Stronger Intellectual Property Rights Increase International Technology Transfer?,” National Bureau of Economic Research, Working Paper No. 11516, July 2005.

³³ The countries include Argentina, Brazil, China, Indonesia, Japan, South Korea, Mexico, the Philippines, Spain, Taiwan, Thailand, and Turkey.

³⁴ Branstetter, *et. al.*, *op. cit.*, p. 26

³⁵ Carsten Fink & Carlos A. Primo Braga, “How Stronger Protection of Intellectual Property Rights Affects International Trade Flows,” The World Bank, Policy Research Working Paper Series 2051, 1999.

³⁶ Stijn Claessens & Luc Laeven, “Financial Development, Property Rights, and Growth,” The World Bank, Policy Research Working Paper Series 2924, 2002.

modernizes, its R&D expenditures as a share of its GDP tend to not just increase, but to rise *at an increasing rate*.³⁷ In some countries -- including Finland, Korea, Taiwan and Israel -- both R&D expenditures and economic growth have sharply exceeded global norms. The authors of the study also compared this positive experience with other regions and noted that Latin America in particular underperformed global norms in both regards. This result is linked to the relative disregard for intellectual property rights in many Latin American countries.

Respect for the intellectual property rights of foreign companies may benefit developing in another important way. If multinational firms can expect to have their patents respected in certain regions, they may be more likely to invest in research projects that would be beneficial to those regions. A recent study found evidence for this result in data on increases in research into anti-malaria treatments by pharmaceutical firms following improvements in intellectual property protections in countries subject to malaria outbreaks.³⁸ If those data are confirmed, it may demonstrate that greater respect for intellectual property rights can be literally a matter of life and death in many developing countries.

IV. The Value of Intellectual Property in the American Economy

The value of legally-protected intellectual property to the American economy is enormous. A recent report found that copyright industries alone -- principally music, publishing and software -- accounted for six percent of U.S. GDP in 2002, or more than \$600 billion.³⁹ This estimate does not include the value of the output of patent-intensive industries such as computers and pharmaceuticals. We estimate that including those sectors would increase the share of GDP to 9.2 percent.⁴⁰ These estimates do not include any of the value of the output from industries such as financial services and equipment makers that, while not considered traditional intellectual-property sectors, nevertheless produce goods or services whose value depends substantially on their use of intellectual property. Moreover, a number of studies have found that the value of such "intangible goods" has increased significantly, and now constitute a large share of all U.S. domestic output or production.⁴¹

The value of intangibles to firms also has been widely examined and analyzed. A number of studies have found that companies' future earnings respond positively to R&D

³⁷Daniel Lederman and William F. Maloney, "Research and Development (R&D) and Development," The World Bank, Policy Research Working Paper Series 3024, 2003

³⁸ Jean O. Lanjouw and Iain Cockburn, "Do Patents Matter?: Empirical Evidence after GATT," National Bureau of Economic Research Working Paper No. 7495, January 2000.

³⁹ Stephen Siwek, "Copyright Industries in the U.S. Economy, The 2004 Report," Economists Incorporated, October 2004., www.iipa.com/pdf/2004_SIWEK_FULLL.pdf.

⁴⁰Bureau of Economic Analysis, Value Added by Industry in Current Dollars as a Percentage of GDP, April 2005, www.bea.gov/industry/gpotables/gpo_action; NDC Health, "2005 Pharma Insight," www.ndchealth.com/press_center/uspharmaindustrydata/NDCHealth_2005PharmaInsight.

⁴¹ Leonard Nakamura, ("Intangibles: what put the new in the new economy?," Federal Reserve Bank of Philadelphia, *Business Review*, July 1999) provides a detailed analysis of recent trends in this regard.

expenditures.⁴² Similarly, researchers have also found that public firms' stock market returns tend to rise following significant R&D investments, and the market value of a firm relative to its book value increases following investments in intangibles generally.⁴³ These findings may reflect, in part, the inadequacies of book-value accounting in tracking intangible investments. Nevertheless, the ratio of a company's market value to its book value is a strong and reliable measure of the importance of intangible capital to that firm. Even after all of the turmoil in U.S. stock markets in recent years, the ratio of market value to book value for the S&P 500 today is a whopping 3.32.⁴⁴

This result suggests that intangibles account for 70 percent of the current value of equities in the United States. Moreover, the finding that the intangible assets of American firms are more important today than their tangible assets in determining their market value is supported by the recent Federal Reserve study of the role of intangible assets in overall investment and recent productivity gains, which we described earlier.⁴⁵ Furthermore, by combining these two approaches, we can estimate, at least roughly, both the value of all of the intangible "knowledge capital" in the American economy and how much of it constitutes traditional intellectual property.

The Federal Reserve study found (Table 3) that 47 percent of all intangible investment lies in computerized information (software and databases) and R&D, with expenditures for organization and branding comprising the remaining 53 percent of intangible investment. Using the ratio of market value to book value as a guide, and assuming for simplicity that all forms of intangible investment have the same productivity and depreciation rate, and that the patterns in the latest data reflect historical patterns, we find the value of U.S. firms' intellectual capital comprises 47 percent of their intangible value. Since intangibles are 70 percent of market value, it follows that the intellectual capital of U.S. firms is equal to roughly 0.33 [0.47×0.70] of their market value. According to Bloomberg, the market value of all U.S. equities on September 6, 2005 was \$15.2 trillion. Therefore, the value of intellectual capital on that date would be roughly \$5 trillion.⁴⁶

Alternatively, the Federal Reserve study also found that the value of all U.S. intangible investment is approximately the same as the value of all U.S. tangible investment. If we assume here that tangible and intangible investments depreciate at the same rate, then over time the stock of U.S. intangible capital will approximate the stock of U.S. tangible

⁴² See Baruch Lev and Theodore Sougiannis, "The Capitalization, Amortization and Value-relevance of R&D," *Journal of Accounting and Economics*, Vol. 21, 1996, for a recent example.

⁴³ Pamela Megna and Marck Klock, "The Impact of Intangible Capital on Tobin's q in the Semiconductor Industry," *American Economic Review*, Vol. 83, No. 2, May 1993, is a recent example of a large literature that began with Zvi Griliches, "Market Value, R&D and Patents," *Economics Letters*, Vol. 7, 1981.

⁴⁴ *Barrons*, September 6th, 2005, www.online.barrons.com/page/mlab_index_yields.html.

⁴⁵ Corrado, *et. al.*, "Measuring Capital and Technology: An Expanded Framework," *op. cit.*, See Section II.

⁴⁶ The authors of the Federal Reserve study did not report a comparable number, but in correspondence with us revealed that their estimate for 2003 was approximately \$3.6 trillion. This number is lower than ours for a number of reasons, including reliance on source data that varies by year and different depreciation assumptions. The essential point that we raise here would still hold if we relied upon this estimate, but we prefer ours for the purposes of this discussion as it relies on a simple and transparent approach.

capital. The Bureau of Economic Analysis (BEA) estimates the value of the total stock of U.S. business fixed (tangible) capital in 2003 at \$11.7 trillion.⁴⁷ Assuming that the stock of U.S. intangible business assets already approximates the stock of tangible business assets, then business knowledge capital is worth \$11.7 trillion, and intellectual property would comprise 47 percent of that total or \$5.5 trillion.⁴⁸

This range is also consistent with the new pressures on firms arising from globalization. A company's profitability increasingly depends on the depth and quality of its intellectual property, rather than on simply its level of industrialization or modernization. Therefore, firms with the highest-value intellectual property are most likely to succeed in a highly competitive global environment and will likely have the highest market value.

These developments also point to the grave economic harm posed by counterfeiting and other violations of intellectual property rights. These violations reach across major sectors as well as national borders, inflicting large costs on businesses and individuals. While revenue losses from counterfeiting are the most direct costs for businesses, sales of counterfeit or pirated goods also inflict other costs, such as lost wages by workers from victimized firms, injuries and deaths from counterfeit pharmaceuticals, and the costs to police markets for violations. Given the scale and scope of the value of patented and copyrighted goods, these costs may well constitute a significant drain on both national and world economies and impede the efficient exchange of goods, services, and ideas.

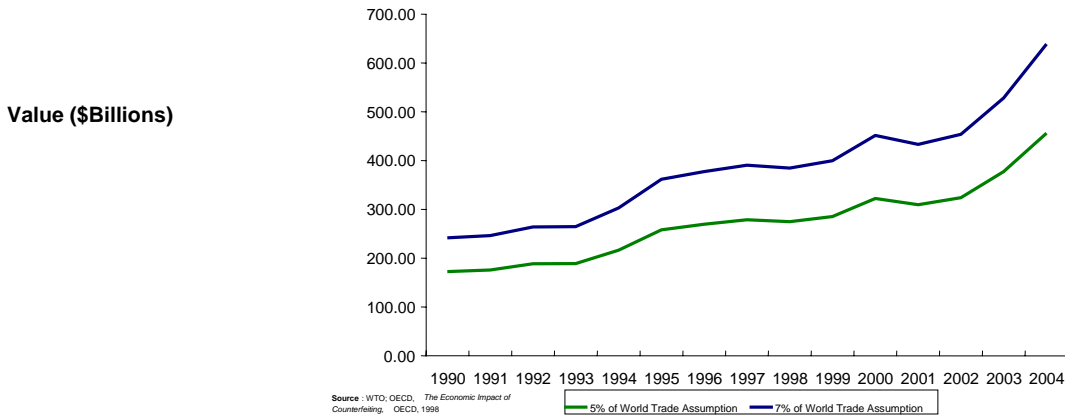
No comprehensive data are collected to assess the full scope and extent of international counterfeiting and other violations of intellectual property rights. Nevertheless, various estimates have been developed to gauge the range of those costs. The Organization for Economic Development (OECD) estimates that the total costs of counterfeiting are equivalent to 5 percent to 7 percent of world trade.⁴⁹ Figure 1 represents these costs over time, based on these percentages of world merchandise exports.

⁴⁷ Bureau of Economic Analysis, www.bea.gov, Table 2.1, Current-Cost Net Stock of Private Fixed Assets, Equipment and Software, and Structure by Type, 1987-2003.

⁴⁸ The convergence of the two stocks likely has already occurred or nearly so, since intangible business investment was equal to more than 80 percent of tangible business investment in the 1980s and more than 90 percent in the 1990s. Unless intangible assets decays more rapidly than tangible assets, which seems highly unlikely, the tangible and intangible stocks are very likely to approximate each other by now.

⁴⁹ Organisation for Economic Co-operation and Development, "The Economic Impact of Counterfeiting," 1998, <http://www.oecd.org/dataoecd/11/11/2090589.pdf>.

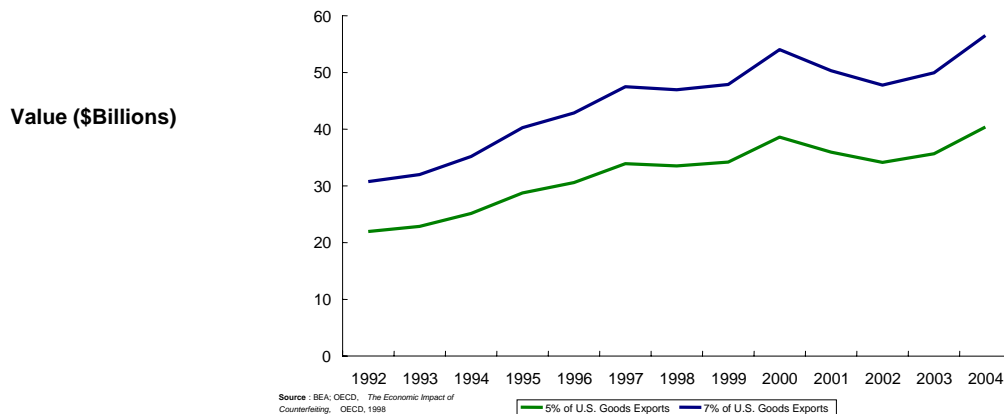
Figure 1. Cost of Counterfeiting Based on Total World Merchandise Exports, 1990 - 2004



Since piracy, counterfeiting and other violations of intellectual property rights are often clandestine activities, the 5 percent to 7 percent estimates of the direct costs of counterfeiting are likely conservative. Applying the 7 percent estimate to the most recent data on merchandise trade from the World Trade Organization (WTO) suggests that the losses to businesses and workers resulting from counterfeiting alone came to more than \$638 billion in 2004. For purposes of comparison, those losses are greater than the GDP of Australia, the world’s 13th largest economy.⁵⁰

The United States, as the world’s largest economy with the greatest levels of patenting and copyright activity, is especially harmed by counterfeiting. Based on U.S. good exports of more than \$807 billion in 2004 and the OECD’s 7 percent estimate of direct costs, counterfeiting alone cost the American economy more than \$56 billion in 2004.⁵¹ Figure 2, below, represents the costs of counterfeiting to the United States over time.

Figure 2. Cost of Counterfeiting Based on a Percentage of U.S. Merchandise Exports, 1992 - 2004



⁵⁰ World Bank, “Total GDP 2004,” <http://www.worldbank.org/data/databytopic/GDP.pdf>.

⁵¹ Bureau of Economic Analysis, “U.S. International Trade in Goods and Services,” www.bea.gov/bea/newsrelarchive/2005/trad0605.xls, June 2005.

The impact of modern counterfeiting is particularly severe for businesses and workers in certain sectors. Core copyright industries including software, musical recording and motion pictures, represent some 6 percent of U.S. GDP.⁵² These industries have benefited enormously from recent technological innovations, including the internet and modern data-writing technologies which enable them to produce compact disc and digital versatile disc media that are easier to use and higher quality than older technologies. However, these same innovations increase their vulnerability to counterfeiting. The software industry estimates that their \$50 billion in global sales of commercial, packaged software for personal computers in 2003 represented less than two-thirds of the almost \$80 billion in commercial, packaged software actually installed on PCs in that year.⁵³ This suggests that more than one-third of all commercial, packaged software installed on PCs is counterfeit. In some countries, rates of theft of software intellectual property are much higher. For example, one study estimated that some 61 percent of installed software in Brazil is counterfeit.⁵⁴ According to the same research, American companies alone lost \$6 billion to software counterfeiting in 2004, followed by Chinese firms with estimated counterfeiting-related losses of more than \$2.6 billion.

Violations of intellectual property rights are also rampant in musical recording. One study of piracy in the global recording industry found that one-third of all compact discs sold are counterfeit.⁵⁵ Again, some countries evidence even higher rates of piracy. It is estimated that 52 percent of the recordings sold in Brazil are counterfeit, with sales of pirated recordings there topping 73 million units, compared to 66 million units in the legitimate market. Based only on the sale prices of counterfeit recordings, the global counterfeit recording market in 2004 topped \$4.6 billion, a calculation that does not include losses from internet file-sharing and other related forms of counterfeiting.⁵⁶

The worldwide counterfeit market for pharmaceuticals is both large and troubling, given the potentially-dangerous health effects of counterfeit drugs. While traffic in counterfeit recordings and software causes significant economic harm, counterfeit medicines cause injuries and death. For example, at least 30 people in Cambodia died from using counterfeit anti-malaria drugs in 2000, and at least 59 children died in Haiti in 1997 after taking counterfeit fever medications.⁵⁷ In 2003, the WHO reported that 10 percent to 20

⁵² Stephen Siwek, *op. cit.*

⁵³ Business Software Alliance and IDC. "First Annual BSA and IDC Global Software Piracy Study," July 2004, www.bsa.org/usa/research.

⁵⁴ *Ibid*

⁵⁵ IFPI, "The Recording Industry Commercial Piracy Report 2005," June 2005, www.ifpi.org/site-content/antipiracy/piracy-report-current.

⁵⁶ *Ibid*; The June 27th U.S. Supreme Court decision against file sharing, is only the most recent example of the scale at which copyrighted materials can now be disseminated over the internet without the consent of the copyright holder. It also indicates that counterfeiting has likely grown since a number of these recent industry studies were conducted.

⁵⁷ See www.gphf.org/web_en/projekte/minilab/hintergrund_arzneimittelfaelschungen.htm, German Pharma Health Fund.

percent of all drugs used in developing countries are sub-standard, indicating that the problem of counterfeited pharmaceuticals is very serious.⁵⁸ Many researchers have tried to quantify the global market in counterfeit drugs. For example, *Business Week* estimated the value of counterfeit drugs sold in 2001 at between \$6 billion and \$19 billion, while another study calculated that counterfeiting costs pharmaceutical companies some \$12 billion per year.⁵⁹ The actual costs may well be substantially greater. For example, the WHO has estimated that counterfeit drugs comprise 6 percent of the worldwide pharmaceutical market.⁶⁰ If the counterfeiting is distributed evenly across all drugs, the WHO estimate suggests that pharmaceutical counterfeiting costs some \$30 billion a year, based on worldwide sales of \$492 billion (2003).⁶¹ Since the incentive to counterfeit rises with the price and market size of a good, the actual cost of counterfeit pharmaceuticals may well be even greater still.

These violations of intellectual property rights also tend to be concentrated in certain countries and regions. While current data on the trade and sales of counterfeit goods are insufficient to assess all of the major sources, industry studies provide significant data on the countries and regions that are most heavily involved in some of the major areas of counterfeiting. For example, one industry report identified Latin America as the hub of counterfeiting in musical recordings, with piracy rates of 50 percent or more in every Latin American country surveyed.⁶² The worst offender is Paraguay where counterfeits comprise an estimated 99 percent of the entire recording market. China also has had extraordinarily high levels of counterfeiting in this area. In China a piracy rate of 85 percent in recordings in 2004 cost record companies an estimated \$411 million in 2004 in that one market. The recording industry also reported that counterfeits comprised up to 66 percent of the recording market in Russia and 68 percent of the market in the Ukraine.

Thefts of intellectual property in software follow a similar regional pattern. The software industry has estimated that 36 percent of sold-and-installed software worldwide is counterfeit, with pirated software comprising 71 percent of the East European market, 63 percent of the Latin American market, 87 percent of the Russian market, and 91 percent of the market in the Ukraine.⁶³ The same study also found that counterfeit software is very common across much of Asia, especially in China, Vietnam and Indonesia.

While these studies provide limited data on certain segments of world trade in counterfeit goods, they point to some consistent patterns. Developing countries in Latin America, Eastern Europe and Asia are persistent violators of intellectual property rights in software and recordings. Moreover, there is evidence that this pattern applies to other forms of intellectual property. For example, the European Federation of Pharmaceutical Industry

⁵⁸ *Ibid.*

⁵⁹ Kerry Capell and Suzanne Timmons "What's in That Pill?," *Business Week*, June 18, 2001 and Geoff Power, "Pharmaceutical Counterfeiting," *International Criminal Police Review*, No. 476-477, 1999. Cited in Adam Scheer, "Pharmaceutical Counterfeiting, Tampering and Diversion," American Bank Note Holographics Inc., December 2002, <http://www.abnh.com/security/Pharm_WhitePaper_WEBSITE.pdf> .

⁶⁰ EFPIA, *Counterfeit Medicines*, www.efpia.org/2_indust/counterfeitdrugs.pdf.

⁶¹ IMS Health, reported at www.acrpnet.org/resources/acrpwire/apr_2004/apr_ims.htm

⁶² ifpi., *op. cit.*

⁶³ BSA and IDC. *op. cit.*

Associations reports that counterfeits account for up to 50 percent of certain pharmaceuticals sold in China, more than 50 percent of the drug market in Pakistan, and 10 percent of the market in other Asian countries and Russia.⁶⁴ All of these findings point to significant rates of intellectual property theft in many developing countries.

V. The Bush Administration Record

In the face of these findings, the U.S. government in recent years has compiled a disappointing and troubling record. During President George W. Bush's first term, his administration took few steps to sanction the illegal appropriation of American intellectual property in Asian and Latin American markets,⁶⁵ and failed to even formulate and announce a formal strategy for enlisting allies in efforts to enforce intellectual property rights until 2005.⁶⁶

The record shows that since January 2001, the U.S. Government's commitment to pursue those violating the intellectual property rights of American companies has declined significantly. The clearest evidence comes in the number of cases filed by the United States with the World Trade Organization for such violations. Under the agreement on Trade-Related Intellectual Property Rights (TRIPS), any government can use the dispute settlement process of the World Trade Organization (WTO) to pursue countries that fail to protect the intellectual property rights of its companies. Under WTO rules, developed nations were required to fully implement TRIPS and protect the intellectual property rights of companies from other countries by January 1996. Developing nations were required to complete this process by January 2000, while the least-developed countries were directed to be in full compliance by January 2006.

The current administration has consistently failed to use this process effectively. From 1996 to 2000, the United States filed *15 cases* with the WTO charging foreign nations with failing to ensure that the intellectual property rights of American companies are respected in their countries. The countries charged with these violations included Brazil,

⁶⁴ EFPIA, *op. cit.*.

⁶⁵ By contrast, the Clinton administration was fairly aggressive, for example, in pressuring China's government to crack down on piracy in various markets, successfully threatening to impose \$2 billion in new tariffs in 1995 and again in 1996 to stop Chinese production and export of counterfeit apparel, electronics and CDs (Robert J. Samuelson, "Punishment For Piracy," *Washington Post*, May 22, 1996). China ultimately responded by closing down more than a dozen factories producing counterfeits (Paul Blustein, "China, U.S. Smooth Rough Spots In Trade; Bush Touts Plan; Democrats Don't," *Washington Post*, April 22, 2004). The Clinton administration also used a 1998 presidential visit to Beijing to press President Jiang Zemin to protect U.S. intellectual property rights ((Joe McDonald, "U.S. Official: Clinton Visit Adding Urgency To Trade Talks," *Associated Press*, April 14, 1998) and issued an executive order making intellectual property protection a major priority for the United States Trade Representative ("Sink The Web Pirates," *Investor's Business Daily*, October 9, 1998).

⁶⁶ U.S. Trade Representative, "US Expands Outreach in Campaign to STOP! Trade In Fakes," 6/6/2005, www.ustr.gov/Document_Library/Press_Releases/2005/June/US_Exps_Outreach_in_Campaign_to_STOP!_Trade_in_Fakes; "US To Determine If Quotas Should Be Reimposed On China's Textile Products," *Xinhua General News Service*, April 4, 2005; Alexa Olesen, "U.S. Officials: China Promises To Prosecute More Pirates, Ease Software Rules," *Associated Press*, July 11, 2005.

Argentina, Greece, India, Pakistan, Portugal, Japan, Sweden, Denmark, Ireland and Canada, as well as the European Community. Yet, from 2001 to the present (September 2005), the number of new cases U.S. filed with the WTO for violations of intellectual property rights dropped to one single case. Since 2001 has the U.S. government has failed to pursue most of the 15 intellectual-property cases filed by the preceding administration from 1996 to 2000.⁶⁷ In 2005, the Bush administration even proposed to give least-developed nations an additional ten years, beyond their January 2006 deadline, to comply with the WTO-TRIPS protections, a proposal which those countries readily accepted

This lack of commitment to protect U.S. intellectual property rights is also evident in the recent record of the United States Trade Representative (USTR). Each year, USTR issues a “priority watch list” of countries that have substantially failed to either protect the intellectual property rights of Americans or to provide reasonable access to U.S. patented or copyrighted products.⁶⁸ Since 2001, six countries -- Argentina, India, Indonesia, Russia, Lebanon, and the Philippines – have been listed every year for substantial violations while suffering no retaliatory action by the United States. A seventh major country that USTR added to the priority watch list in 2002, Brazil, also has remained on the list every subsequent year without incurring any penalties.

USTR can not control how much protection other countries accord to the intellectual property rights of American businesses and citizens. But when serious and persistent violations are identified, the United States government can impose sanctions. The U.S. can withdraw tariff preferences provided under the General System of Preferences (GSP) or, in less serious cases, impose penalties equal to the losses arising from the violations. Since the current administration took office in 2001, it has applied sanctions to only one country, the Ukraine. Apart from that one case, the United States has imposed no penalties on any country for tolerating or committing serious and persistent violations of the intellectual property rights of American companies.

A similarly lax attitude is apparent in the recent record of the International Trade Commission (ITC). Since January 2001, American companies have filed 107 “Section 337” complaints with the ITC, alleging that imports of pirated or counterfeit goods into the United States violated their intellectual property rights.⁶⁹ Of those 107 cases, 75 have been settled or otherwise disposed of. More than 50 percent of those 75 settled complaints were ultimately withdrawn, often because the complainant found the ITC process very protracted, expensive to pursue, and relatively unlikely to produce satisfying results. In addition, in 17 percent of those 75 cases, the ITC sided with the foreign importer in another 17 percent of those 75 cases. In the end, less than 30 percent of the Section 337 cases filed with the ITC since 2001 and subsequently settled resulted in cease-and-desist orders against the importers.

⁶⁷ World Trade Organization, www.wto.org/english/tratop_e/dispute/find_dispu_cases_e.html, "Dispute Settlement: The Disputes," September 22, 2005.

⁶⁸ U.S. Trade Representative, “2001 Special 301 Report,” 2001

⁶⁹ U.S. International Trade Commission, www.info.usitc.gov/ouii/public/337inv.nsf/All?OpenView.

Finally, the U.S. Government recently has tolerated a new and unprecedented challenge to U.S. intellectual property rights by the Brazilian government. In 1997, after Brazil passed a law authorizing domestic production of five U.S.-patented drugs, the Clinton administration imposed sanctions that headed off any actual production of the copies.⁷⁰ In June 2005, however, Brazil renewed this approach, announcing plans to breach the U.S. patents on three drugs and permit the domestic production and importation of their generic copies. These are the only instances on record of a government friendly to the United States officially and formally breaching the recognized patent rights of American companies. Yet, the Bush administration has failed to respond to this unprecedented attack on U.S. intellectual property rights. Secretary of State Condoleezza Rice visited Brazil immediately following the announcement and declined to criticize the action. Since that time, no American official has denounced Brazil's decision. In April 2005, two months before that decision was announced, the USTR began a formal review of Brazil's record on intellectual property rights to determine whether it warrants official sanctions. Given the Brazilian government's latest and most extraordinary breach of intellectual property rights, the administration's decision regarding sanctions will provide another important measure of its commitment to protecting those rights.

VI. Conclusion

The critical importance of intellectual property to the American economy is clear and well-established. Today, intellectual property accounts for some one-third of the market value of all U.S. stocks -- \$5 trillion to \$5.5 trillion. That total is equivalent to 42 percent of America's GDP and greater than the GDP of any other economy in the world. Moreover, intellectual property and their protections play a critical role in economic progress throughout the world.

Extensive economic research and analysis have established that economically-powerful forms of intellectual property, embodied in innovations, are the largest single factor driving economic growth and development, and that intellectual property protections are critical for the development and diffusion of those innovations. The evidence further demonstrates that the pace at which developing nations grow and modernize depends substantially on the transfer of these innovations from advanced nations, and that intellectual property protections in developing nations play a critical role in determining the extent of those transfers.

In many parts of the developing world today, lack of respect for intellectual property rights or lax enforcement of those rights remains the rule rather than the exception. Moreover, since 2001, the United States government has effectively neglected these issues. If the American government did so, the pace of innovation in the United States would accelerate and the diffusion of new technologies to the world's developing nations would increase, ultimately promoting faster and broader global growth and modernization.

⁷⁰ United Nations, "Brazil May Face Trade Sanctions If IP Negotiations Fail," *Daily International Pharma Alert*, May 25, 2005, www.un.org

In July 2005, the Bush administration created a new “Coordinator of International Intellectual Property Enforcement” at the Department of Commerce and named Chris Israel to the post. We believe that the National Intellectual Property Law Enforcement Coordination Council, which Mr. Israel now heads, should be directed to create special task forces on compulsory licensing, piracy and counterfeiting of U.S. patented or copyrighted goods. These task forces would examine foreign enforcement in each of these areas and issue recommendations for sanctions or new filings against foreign governments with the WTO. In this way, the United States could make a serious commitment to protect the single most important element for the country’s future growth and development, the ideas and innovations of American citizens and companies.

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