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# COMMENTS OF

# THE INFORMATION TECHNOLOGY AND INNOVATION FOUNDATION

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[1] ITIF is a nonprofit, non-partisan public policy think tank committed to articulating and advancing a pro-productivity, pro-innovation and pro-technology public policy agenda internationally, in Washington and in the states. Through its research, policy proposals, and commentary, ITIF is working to advance and support public policies that boost innovation, e-transformation and productivity.

# Introduction

Intellectual property (IP) enforcement is an essential part of commerce. It is an increasingly urgent matter for the United States because IP is a large component of what the United States produces and because this content is increasingly vulnerable in the global, knowledge-based economy.

In the past, IP has been a domestic issue where victims and perpetrators exist within the same borders. Within this context national governments created IP laws that protected domestic inventors, artists, and industries with little attention to the international legal community. In the old economy, closed networks, regional supply chains and localized consumers created an economic climate that insulated many firms from differing legal frameworks and IP enforcement priorities of foreign countries. Yet as international markets developed and IT has allowed for ubiquitous information exchange across the globe, foreign IP theft has begun to weaken U.S. competitiveness, innovation, jobs and standard of living.

As documented here and elsewhere, IP makes substantial contributions to the U.S. economy and the impact of IP violations harm the U.S. economy, U.S. businesses and U.S. consumers. Policymakers must do more to protect IP domestically and internationally. Toward that end we make a number of recommendations, including:

- Strengthen the U.S. trade enforcement regime,
- Combat digital piracy,
- Educate other nations on the importance of intellectual property, and
- Use technology to better monitor and combat the problem of global IP theft.

# IP in the Global Supply Chain

Protecting IP in the global economy is becoming particularly important for the United States. While U.S. firms increasingly manufacture overseas, an estimated 45 percent of the U.S. GDP comes from the proprietary ideas inside a product rather than the assembly of products.[1] In the past, the majority of the value chain for U.S. products came from within the United States, however today, due to low-cost labor and foreign mercantilist policies, while products are often designed and commercialized in the United States they are assembled elsewhere. This production model is often referred to as the "smiley curve" where the value of a product is U-shaped, with the majority of a product's value going to the "lead firm" through the back end from R&D and the front end from bringing a product to market, with China and other developing nations capturing the low-value production phase in the middle.[2] The lead firm, generally located in a developed country such as the United States, is responsible for conceiving, coordinating, and marketing the final product and therefore reaps the highest economic rewards, but is also exposed to the greatest risk since the value it adds is most vulnerable to theft.

Products produced through this business model often have a few high-value components, such as the visual display or key integrated circuit. These components often represent IP from the lead firm and help to differentiate the final product and therefore create a commensurately high margin.[3] They are also frequently the most costly portion of the final product and account for the largest share of total value added. As these features represent the competitive edge of lead firms

there is generally rapid innovation within these components, which translates into rapidly evolving final products.

The Apple iPod is a good example of this form of business model. While almost all of the iPod is actually produced in China or the Philippines, with some of the largest components coming from Toshiba, a Japanese firm. Apple, a U.S. company, receives by far the largest share of revenue. According to an analysis on the iPod value chain by the Center for Research on Information Technology and Organizations (CRITO), "Apple captures 52 percent of the measured value from U.S. sales and 46 percent from sales outside the U.S. – well beyond the 18 percent captured by all suppliers of key parts or the shares for distribution and non-Apple retail. This underscores the importance of innovation by a lead firm."[4] Moreover, such benefits to lead firms are not unique to the IT industry, U.S. lead firms in the pharmaceutical industry capture roughly 30 percent of value added from the global pharmaceutical market.[5]

As low value-added manufacturing moves overseas, the United States is predominately becoming a lead firm nation and a considerable amount of the value the United States receives from selling goods and services both domestically and abroad comes from IP. Indeed, over 50 percent of U.S. exports depend on some form of intellectual property protection, compared to less than 10 percent 50 years ago.[6]

# The Impact of IP Theft to the U.S. Economy

IP theft is rampant. According to one study of over 1,000 global firms, the average firm lost $4.6 million in 2006 due to IP theft.[7] And the problem seems to be growing: in 2008, the Department of Homeland Security seized $272 million in counterfeit goods, up 38 percent from 2007. Yet this figure represents only a fraction of total IP theft since the majority of IP violations occur overseas.

The importance of IP to the U.S. economy can be seen in the trade statistics. Over the last decade the U.S. trade deficit has grown by an annual compounded growth rate of 15 percent, reaching $700 billion in 2008, or 5 percent of GDP. Even in high-technology products, the U.S. now has a trade deficit. Meanwhile, our surplus in trade in services is small and only holding relatively steady. Moreover, the U.S. positive balance of trade in services is only about 17 percent of the trade deficit in goods. One reason we run such a large trade deficit is because of IP theft, broadly defined.

Even so, the United States is a net exporter of IP, with IP contributing $37 billion to our trade balance in 2006.[8] Specifically, the United States is a net exporter of manufacturing IP. In 2005 U.S. receipts (exports) from licensing transactions in manufacturing know-how were 5 times the amount of U.S. payments to Asia, with Japan and South Korea our biggest customers.[9] And in 2007, 40 percent of U.S. pharmaceutical sales came from overseas. IP industries also contribute to the U.S. trade balance through royalties and licensing fees. In 2006, U.S. receipts from cross-border trade in royalties and license fees (including patents, trademark, copyright, and other intangible rights) amounted to $63.4 billion and payments totaled $26.4 billion.[10]

## IP Theft of Digital Content

Because the U.S. is the nation that is most specialized in the production of digital goods (e.g., music, movies, software, video games, books, etc.) it also the nation that is most vulnerable to

digital piracy. The futile attempts to stop the blatant sale of pirated software, CDs, and DVDs from street vendors in Beijing, Moscow and other cities are well known. But much of the illegal distribution of copyright-protected digital content now occurs online. The Internet provides users all over the world access to piracy websites and it has significantly increased the costs of digital piracy to the U.S. economy. For example, the recording industry has been particularly hurt by online theft because digital song files are small enough to transmit quickly, even over relatively slow Internet connections. In 2005, music piracy was associated with the loss or lack of realization of over 12,000 jobs in the sound recording industry in the United States.[11] It is estimated that the United States recording industry and related industries in 2006 lost over $3.5 billion to online piracy and approximately $1.5 billion in physical piracy.[12] The International Federation of the Phonographic Industry (IFPI) estimates that the figure is as high as 20 illegally downloaded songs for every purchased track.[13] While it is impossible to know exactly how much economic value is lost to global IP theft, it is estimated that the market for counterfeit goods reached $600 billion in 2006, $250 billion of which was for U.S. goods.[14]

Other content industries have been impacted by piracy as well. The motion picture industry has lost significant amounts of money to pirated movies both online and on DVD. According to a report published by LEK Consulting, the U.S. motion picture industry lost $6.1 billion to piracy in 2005, which one report argues eliminated or prevented the creation of 46,597 jobs in the motion picture industry.[15] Neither are software companies immune from piracy. With pirated software equaling 20 percent of legitimate sales, the total value of pirated software is estimated to be over $9 billion in the United States.[16] Moreover, although piracy rates have hovered around 20 percent for the last several years, total software piracy has steadily increased in line with the growth in software sales.

Videogame piracy is a growing problem worldwide. In 2008 the Entertainment Software Alliance detected more than 700,000 copyright infringements a month across more than 100 countries and sent out 6 million copyright infringement notifications. According to a report by the International Intellectual Property Alliance, in December 2008, 13 titles were illegally downloaded 6.4 million times. The top two titles alone accounted for nearly three-fourths of illegal downloads. The report, which evaluated piracy in 219 countries, found that two P2P networks, BitTorrent and eDonkey, were the largest sources of gaming piracy.[17]

Although not as common as music, movie, software, or videogame piracy, e-book piracy is growing, particularly as more content is sold in digital format. While hard data on book piracy is scarce, many publishing industry analysts see evidence of an alarming increase in piracy, due in part to the advent of the e-book reader. For example, John Wiley & Sons (publisher of the Dummies series) reports that in April 2009 it sent out 5,000 notices of online copyright violation—more than double the number of notices sent in the previous year.[18] In addition, e-book piracy appears to be more concentrated on certain websites than music, software, or motion picture piracy. Indeed, some industry observers estimate that as much half of e-book piracy is housed on RapidShare, a Switzerland-based file hosting company that has advertised more than 10 petabytes of user uploaded files.[19] Alexa.com, which provides a global ranking of websites, currently lists RapidShare as the 26th most popular website in the world.[20]

## IP Theft in Non-Digital Industries

While digital piracy has grown rapidly in recent years due to the rapid expansion of the Internet, IP theft in non-digital industries has a significant negative effect on the U.S. economy. Major U.S. industries—including the IT industry, pharmaceutical industry and automobile industry—have all suffered significant losses from global IP theft. For example, in 2003 Cisco filed a lawsuit against Huawei Technologies alleging that the Chinese company copied Cisco's intellectual property and used it in their networking equipment.[21]

Because companies that steal IP do not have to recoup R&D costs, they can often undercut the price of legitimate firms that invest to create IP. For example, in 2004 General Motors discovered that China's Chery Automobile Co. stole mini car plans from General Motors to create a nearly identical car called QQ. Chery's QQ significantly outsold GM's largely due to the earlier launch date and lower price (made possible by a lower R&D cost since the plans were stolen).[22] Likewise, Indian pharmaceutical companies reportedly produce drugs using the intellectual property of U.S. made drugs still under patent.

But it is not only the theft of IP to make competing products that is a problem. Some nations turn a blind eye to outright counterfeiting. Indeed, counterfeited goods represent a huge portion of IP theft and encompass everything from trademark violation to illegally produced goods. For example, six percent of drugs sold throughout the world are counterfeit, and these IP violations cost the pharmaceutical industry $30 billion in 2005.[23] Counterfeiting has a particularly harmful effect on industries with high fixed costs and low marginal costs, including production costs. In these industries producing a high value-added product is relatively inexpensive if the IP can be copied. We see this in the pharmaceutical industry where the costs of developing a new drug can be enormous, where as the costs of producing the actual drug (e.g., the pill) can be relatively low. On average, to bring a new drug to market cost $880 million dollars and 10 to 15 years in R&D. Indeed, in 2007 the pharmaceutical industry collectively invested $4.5 billion in R&D. And counterfeit drugs are on the rise, by the end of 2010 it is estimated that global counterfeit drug sales will reach $75 billion, a 150 percent increase since 2005—or 20 percent annually.[24] The automobile industry also suffers from counterfeiting. Global counterfeit products in the automobile industry cost firms roughly $12 billion a year. One conservative estimate puts the cost to U.S. automakers in lost sales at $3 billion a year, with the impact on employment equaling between 200,000 and 250,000 jobs, each paying $60,000 in wages and benefits annually.[25]

Because the United State receives a majority of the value-added from its products and services from the R&D and design phase and not the production phase, proprietary innovation theft disproportionately hurts the United States.

## IP Theft in Developing Countries

IP theft has actually begun to decline in many developed countries, including the United States, as governments and regulatory bodies begin to ramp up IP enforcement measures. Indeed, much of the growing problem of IP theft is hidden by the small markets within the top IP violating nations. For example, in 2006 while the United States was the leading nation for software piracy in absolute terms, accounting for roughly $7.2 billion in pirated software, piracy in the United States as a percent of the overall software market was far below that of many developing nations. An estimated 20 percent of software in the United States is pirated, compared to 80, 82, 88 and 91 percent in Russia, China, Vietnam and Zimbabwe, respectively. Yet because many of these

markets are small, traditionally the overall monetary impact of such piracy has been insignificant. The problem is IP violations are rampant in these countries not because they have small markets but because they have inactive or indifferent governments. Part of the problem is markets in many developing countries have modernized faster than the legal frameworks guiding them. As these countries continue to expand—some of the fastest growing economies are some of the worst IP violators—the systemic problems of IP theft will grow substantially. Indeed, such growth is already well documented. For example, the Business Software Alliance found that although digital piracy declined or remained the same in 80 percent of countries, global piracy still increased by three percent in 2008 because of rapidly expanding growth in PC ownership in high piracy regions such as Asia and Eastern Europe. Indeed, even though emerging markets only account for 20 percent of the software market, they make up 45 percent of software piracy.[26] Similarly, within the pharmaceutical industry many developed countries have established strong regulatory frameworks that have been responsible for relatively low domestic levels of counterfeit drugs in recent years. Nonetheless, PhRMA estimates that member companies lost over $21 million in 2006 due to illegal drug sales, up from $17 million in 2005.[27]

When many developing nations were small and represented only a sliver of global trade and gross global product, IP violations had little impact on the United States as most global economic powers adhered to the same general legal framework as we did. However as these developing economies grow and continue to cheat, the financial impact to the United States of operating within the law increases.

We see this most explicitly in China, a nation which has made IP theft the cornerstone of its industrial policy. Not only does China fail to enforce its own intellectual property laws, but it also has implemented measures to block the trading and distribution rights of producers of U.S. entertainment products. Even the Chinese government continues to support theft of U.S. intellectual property. For example, although China's State Council ordered all government agencies to use only legal software in 1999, widespread lack of enforcement or monitoring ensures that the Chinese government still favors pirated software, as is reflected in its low levels of government purchases. Computer software theft is just the tip of the iceberg. The entertainment software industry (e.g. video games), which the U.S. leads, suffers from rampant piracy in China. Over 90 percent of video games consumed in China are pirated. But China does not just copy them; it is a leading producer and exporter of pirated cartridge-based entertainment software. Yet, China is by no means the main offender. Russia also is a distribution center for pirated entertainment software into Central and Eastern Europe. Malaysia is a primary source of pirated CDs, DVDs and console games with a capacity of producing over 300 million disks per year.

Unfortunately, international rules like the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) offer little if any protection from countries that want to steal U.S. technology, because TRIPS only offers standards on how countries should protect intellectual property, and it is up to each nation to decide how, and whether, to enforce them.

Just as innovation, productivity, and strategic trade increases the economic comparative advantage of the United States, bending or flat out breaking international IP laws create what could be called an "unethical comparative advantage" amongst abuser nations. Often the criticism is made that trade policy is an inappropriate lever to adjust these asymmetrical ethical behaviors as firms are the perpetrators and not countries. Yet private sector actors are keenly

aware of what governments will and will not regulate and they act accordingly. For example, according to a study of over 2,000 firms, compliance with regulation is the key motivator for information security investments in Dubai, Germany, Japan, the U.K., and the United States, while in China and India where IP theft is rarely prosecuted, 74 and 68 percent of Chinese and Indian respondents reported making decisions based on gaining and/or maintaining a competitive advantage, respectively. Moreover, companies that want to pursue claims of IP violations in countries with weak enforcement are often discouraged. In India, for example, 22 percent of firms do not investigate incidents of IP theft because of a lack of legal cooperation.[28] As the economies of abuser nations grow, in part because of short-cuts around IP law, the impact of their unethical comparative advantage on the U.S. economy also grows. In such a global economy playing by the rules harms the United States and adds fodder to the economic fire of abusive countries.

## Forced Technology Transfer

Developing nations have long argued that intellectual property laws keep them from enjoying the benefits of the intellectual property created by the developed world. This is a bit like the children's story about the Little Red Hen who did all the work to make the bread—including growing the wheat and grinding the grain, making the loaves and baking them—only to have her barnyard mates demand the right to eat it. To appease developing nations, negotiators enshrined the right to access intellectual property in the TRIPS agreement, requiring developed countries to provide incentives for their companies to transfer technology to least-developed countries. But mercantilist nations have decided that this is not enough. Some force companies to transfer technology such as product designs, software code, or technical specifications. For example, some countries make technology transfer a requirement for selling a product or service in the market through certification procedures, or foreign direct investment (FDI) requirements such as joint ventures and R&D. Mercantilist nations use these unfair tactics to give their companies a competitive advantage by enabling them to get their competitor's technology for free, even while they run large trade deficits that could be going to pay for technology.

### Certification

One way to get technology for free is to force companies to transfer it in order to get their products certified to be sold in the market. Japan, China and Korea all have used certification requirements in various ways to force foreign IT companies to give up their source code, technical designs, or other proprietary information. For example, in 1995 the Japanese Accreditation Board (JAB) proposed that all software to be sold in Japan for government procurement should be submitted for evaluation by a quality review board. Japan's standard for certification went beyond the international standard and would have added delays and expense. But of greater concern was the fact that Japanese evaluators would have access to proprietary information as part of the review process. Also, although the JAB claimed the review would be voluntary, it was clear that Japanese government agencies would only procure software that had passed the review.

At that time U.S. software companies had a significant share of the Japanese market, particularly in spreadsheet software, with Microsoft and Lotus at 40 percent and 21 percent respectively. Given the United States' dominance of software in the Japanese market, the quality review requirement seemed to be designed to give a competitive advantage to Japanese software companies by making it harder for foreign software companies to get their products approved for

sale and delaying their time to market.[29] Ultimately, the proposal was dropped after pressure from the United States, which claimed the standard was a significant non-tariff trade barrier that would violate the WTO's Technical Barriers to Trade (TBT) agreement, which prevents WTO members from using certification and standards as a barrier to trade.

Not deterred by Japan's experience, China and Korea have recently established procedures that require foreign companies to submit their IT products for a review that is both time-consuming and costly and one that could give Chinese and Korean IT companies access to U.S. intellectual property. In China, since August 2003 U.S. companies that want to sell IT equipment, devices, appliances, and components must undergo a safety and quality review in order to obtain a China Compulsory Certification (CCC) mark. The CCC is similar to the Underwriters Laboratory (UL) safety certification mark for electronic and other products in the United States, but with two important differences. First, unlike the CCC mark—which as its name suggests is compulsory—the UL is a voluntary industry standard. Second, the UL is a non-profit and independent organization that is not affiliated with either the U.S. government or any U.S. companies. Only UL employees, who are required to sign a confidentiality agreement, perform product evaluations and tests. Conversely, the CCC mark is administered by the China National Regulatory Commission for Certification and Accreditation, a government organization. More importantly the technical committees that evaluate the products for the CCC mark include industrial and other experts that may be affiliated with Chinese competitors which could get access to the intellectual property. While there is no evidence that such theft has occurred, the U.S. government is concerned enough to raised this issue in its annual 2007 National Trade Estimate Report.[30]

Korea's strategy is similar. In July 2005 Korea's National Intelligence Service (NIS) expanded the scope of its Security Review requirement to include all IT products falling under the Common Criteria (CC), an international standard for evaluating IT security. Korea's revision of its Security Review was supposed to prepare it for membership in the CC Recognition Arrangement (CCRA), which allows members to procure products that earn a CC certificate without additional evaluation. For example, if a company wants to sell a software system for payroll processing to the Korean government and it has already received a CC certificate for the product (meaning the product meets international security requirements), then as a member of the CCRA Korea shouldn't require an additional review. However, Korea expanded its requirements to include both the CC review as well as an additional security review performed by the NIS, even if the product isn't being used for sensitive or secure systems. Conversely, the United States accepts the CC security review for IT products for government procurement and only requires an additional review for software used in secure or sensitive systems. Furthermore, in Korea the NIS performs the additional testing, but in the United States independent testing labs conduct the testing.

Korea's requirement was problematic because it violated the CCRE and forced foreign companies to give up their computer software source code as part of the review. Not only did this go beyond the U.S. requirements, it would have given the NIS unwarranted access to valuable intellectual property. When the U.S. government complained, the NIS switched tactics and instead required foreign companies to submit to an evaluation test report—also in violation of the CCRE. Foreign companies and the United States again resisted, so the NIS opted to require companies to comply with "protection profiles." These documents are used as part of the

evaluation process for the CC standard, so they don't violate the CCRE. But the NIS refuses to translate these highly technical documents into English, which makes it difficult if not impossible for non-Korean companies to comply with them since their complexity results in a variety of possible interpretations. This delays and restricts foreign companies' access to Korea's vast market. So Korea has found a way to give its domestic software manufacturers a competitive advantage while violating the spirit—but not the letter—of its membership in the CCRE.

**Joint Ventures/R&D**

Conditioning technology transfer before foreign companies can enter into business alliances, such as joint ventures, or requiring them to set up R&D facilities before getting access to the domestic market are two ways nations get intellectual property for free.[31] While this is not quite theft, it is extortion. These practices violate the WTO when they require companies to comply with certain provisions as a condition for market access. But they are popular tactics with some mercantilist countries because they let them get valuable technological know-how, which they can then use to support domestic technology development in direct competition to the foreign firms originally supplying it. It is one thing if companies want to invest in R&D in other nations as part of their business strategy. It is quite another for them to be coerced into doing so in order to access the market. Since the WTO prohibits forced technology transfer, mercantilist nations that are members have discovered that they can avoid a WTO violation by "encouraging" technology transfer without formally requiring it. One way is for local government officials reviewing investment applications to make it clear that a quid-pro-quo deal is required for approval. Burying these deals in the fog of bureaucracy lets mercantilist countries hide their WTO violations.

China is a master of joint venture and R&D technology transfer deals. In the 1990s when the country began aggressively promoting domestic technological innovation it developed investment and industrial policies that included explicit provisions for technology transfers, particularly for collaboration in production, research, and training.[32] So, rather than doing the hard work to build its domestic technology industries, or better yet focus on raising productivity in low producing Chinese industries, China decided it would be much easier and faster simply to take the technology from foreign companies. It uses several approaches. One is to get companies to donate equipment. Others include requiring companies to establish a research institution, center, or lab for joint R&D in order to get approval for joint ventures. Several large U.S. companies, including Motorola, IBM, and General Motors Corporation, have since built more than 400 R&D facilities in China. China recently approved Intel's plans to build a semiconductor chip fabricating plant in China, although U.S. export control laws will probably prevent China from accessing the company's most sensitive technologies. While these companies haven't publicly said they were forced to make these investments or give up technology, it's likely that many had little choice since China's strategy of extorting technology from U.S. companies as a condition for entering the market is an important source of technology transfer from the United States to China.[33]

Since the WTO prohibits these types of deals and China is a member it now hides them in the informal agreements that Chinese government officials force on foreign companies when they apply for joint ventures. They also still require other WTO-violating provisions, such as export performance and local content, to approve an investment or a loan from a Chinese bank.[34] So

China continues to violate the WTO, only more covertly, getting U.S. technology and paying nothing in return. U.S. companies continue to capitulate because they have no choice. They either give up their technology or they lose out to other competitors in the growing Chinese market.

China is not the only nation that has figured out how to force foreign companies to give up their intellectual property. Brazil is taking a page out of China's book in its new innovation law that encourages public-private R&D collaboration, but does not provide for the protection of the intellectual property resulting from that collaboration. So, a company that invested and participated in the development of a new IT product in Brazil would not be able to exclude others from capitalizing on the invention.[35] If a company could not be sure that it could protect its investment in its invention, it would not have an incentive to innovate. Yet Brazil, like China, is an important market for IT goods and services and one which many companies feel they cannot afford to ignore. Like China, Brazil wants the benefit of gaining the technology without paying for it, while maintaining a $7.2 billion trade surplus with the United States.

## Arguments Made Against Strong IP Enforcement

In spite of the clear cut economic and moral case for strong global enforcement of IP laws, some advocacy organizations argue that the United States should be lax in enforcing IP, with some even going so far as to say that IP protection should be proactively weakened. We strongly reject these arguments. Those making these claims rely on a number of faulty arguments, including:

### IP Protection Only Benefits Corporations

Some argue that protecting IP is unimportant because they claim that revenue from IP goes directly to companies and investors in the form of profits and therefore has little impact on the U.S. economy. To these pundits, IP theft is by-and-large a victimless crime. But this is an incorrect analysis. First, any revenue coming into the United States, regardless of who it goes to, reduces the U.S. trade deficit and will ultimately let U.S. consumers consume more foreign goods and services, leading to a higher standard of living. Second, the returns from IP do impact the economy by increasing productivity and creating new firms, products, and jobs. According to the U.S. Department of Commerce, IP accounts for over half of all U.S. exports and drove over 40 percent of economic growth in 2006.[36] Indeed, in 2005 U.S. intellectual property was worth between $5 and $5.5 trillion, or just shy of 45 percent of GDP.[37] The reality is while some revenue from IP does go to companies in the form of profits (which still promotes economic growth), a sizeable amount of revenue from IP gets reinvested in the form of R&D, inventory, and increased employment. For example, in 2008 the U.S. Department of Commerce found that 18 million Americans were employed in IP-intensive industries, representing 13 percent of total employment.[38] And jobs in IP-intense firms pay more on average than other firms. In 2006 the average worker in IP-intense industries earned approximately 44 percent more than in non-IP-intense industries.[39] And the average manufacturing workers in IP-intensive states earn approximately $7,000 per year more than the average employees in non-IP-intensive states. Moreover, IP firms promote high skilled technology jobs to a greater degree than other firms. In 2004, IP-intensive firms created on average 28 percent more science and engineering jobs than non-IP-intensive firms.[40] And, in 2007, American scientists, researchers, and doctors were responsible for 70 percent of all new medicines. At a time when the United States is losing American educated scientists and engineers to foreign competitors, protecting IP-industries from unfair and even illegal foreign competition will have a positive effect on our high-skilled

workforce. Finally, for the sake of argument even if all the added revenues from reduced IP theft went to profits (an unlikely occurrence if for no other reason than the presence of competitive markets which forces price competition), many U.S. residents (including workers with pension plans and 401K's) are shareholders. Moreover, profits are taxed at a rate of 35 percent and therefore, the federal government (and state governments) benefit directly from increased business revenues.

**Developing Nations Are Too Poor to Pay for IP**

Some may claim that while it might be unfair for rich regions like Europe and countries like Japan to use mercantilist policies to steal IP, it is not unfair for developing nations to do so. After all, their people are poor and need all the help they can get. Moreover, when the United States was a young nation, they argue, it employed policies that helped it create dominant domestic companies by keeping out foreign competition. Also, before there were international copyright rules, the United States supposedly was a haven for piracy—as Charles Dickens frequently complained. So, the argument goes, these poor nations have a right to steal U.S. intellectual property, force U.S. firms to transfer their technology, and subsidize standards to compete against U.S. software companies. But just because developing nations may be poor does not mean we should ignore their unfair trade policies. The nations engaging in illegal practices made a free decision to join the WTO and when they did they agreed to follow international IP laws. The reality is that most of these nations saw membership in the WTO as an avenue to exporting to the U.S. without committing to their responsibilities as WTO members.

Moreover, the problem with the argument that developing nations (or even consumers in developing nations) somehow deserve free access to our technology to get ahead is that it ignores the fact that there are legitimate paths to building a competitive advantage in IP. Yet, because these paths are difficult and politically sensitive, many nations refuse to follow them. So when Asia and Europe failed to develop strong IT firms the fair way they turned to using unfair practices to get ahead. Similarly, the Chinese government creates mandatory domestic standards to block U.S. IT products and services and U.S. companies are forced to turn over their intellectual property if they want to sell software to the Korean government.

All of this is not to say IP law cannot be changed or negotiated. While some governments often do turn a blind eye to explicit IP violations—and when they do the United States and other nations should hold them accountable through trade policy—at times sacrificing some forms of IP on behalf of other societal goals is appropriate. For example, on the one hand it is certainly wrong for Brazil to ignore patents on pharmaceutical drugs in order to run a trade surplus with the United States; on the other hand, creating agreements within the WTO to relieving some developing countries from paying premium rates for costly life saving drugs may be in line with our global priorities and basic human compassion. However, there are appropriate avenues for creating such agreements amongst stakeholders; consciously violating the spirit or even the letter of the law is not one of those avenues. Advocates of opening IP for developing countries outside of international agreements often argue that within these international institutions the deck is stacked against poor nations. While this may at times be the case (it is surely not the case for developing countries like China that do little to hide their efforts to use market size to bully international trade agreements), acting outside the law is not a sustainable solution. Indeed, the surest way to guarantee developing countries fall further behind in IP is for them to not bring their interests to the international bargaining table. For example, such concerns were voiced and

addressed during the TRIPS agreement that required developed nations to create incentives for their companies to transfer technology to developing countries.

The case for IP theft is even weaker when the fact that the United States is running a huge trade deficit and is being challenged in virtually every industrial sector is taken into account. If the United States is going to turn around its massive trade deficit and restore its leadership position in innovation industries, stronger protection of IP will be critical. Indeed, it is hard to feel sorry for countries that are actively turning a blind eye to IP violations while they enjoy huge trade surpluses with the United States. These nations can easily afford to pay for IP with their trade surplus revenues.

**Blocking Web Sites that Engage in Digital Piracy is Akin to the Authoritarian Nations Blocking the Internet**

Some defenders of weak IP enforcement, particularly with regard to digital goods which they see as inherently being "free", hide behind the excuse that filtering or blocking access to unlawful conduct is in some way analogous to the suppression of dissent in authoritarian dictatorships like China. There is clearly an enormous difference between the actions of an undemocratic government and the legitimate desire of liberal democracies to limit the ill-gotten gains of piracy promoters, advertisers, and service providers. The time has come for the law to catch up with technology by adopting a reasonable set of enforcement measures to make piracy less prevalent and less blatant on the Internet.

**Enforcing IP Protection Will Start a Destructive Trade War**

In response to calls for tougher trade enforcement some free traders will argue that getting tough with other nations over their mercantilist and protectionist trade policies is a form of protectionism. Others worry that it is better to be lax on enforcement since being more aggressive risks a trade war. Both views, in our opinion, are wrong.

Aggressively working to reduce other nations' government-imposed trade distortions, including IP theft, is in fact the polar opposite of protectionism. Stronger enforcement is important to preserve the integrity of the global trading system and ensure that trade is based on markets and the decisions of consumers and businesses, not on mercantilism and government intervention.

Moreover, being more aggressive on trade enforcement will not promote a trade war, for at least two reasons. First, many of the practices being focused on are a blatant violation of existing international trade rules. Second, the fact that the United States is running the largest trade deficit in world history is clear proof that these nations have structured their economies so that they are dependent on the U.S. market, and they risk losing more than we do.

Apologists for the current lax enforcement system also argue that the United States is hardly in a position to complain. Invoking the Biblical message of "let he who is without sin cast the first stone," they imply that since the United States has mercantilist policies of its own for some sectors, we have no right to complain about other nations' policies. Yet, while we are "not without sin," the U.S. market is perhaps the most open in the world. Moreover, the very fact that we are running huge trade deficits negates any legitimacy of this argument.

In stepping up trade enforcement, the United States will not only help American workers and firms, it will lead the world down the right path by rigorously enforcing international and

bilateral trade rules and by showing the world that market-driven commerce is the best way to achieve robust and sustainable domestic and global prosperity.

# Recommendations for Creating an Effective IP Enforcement Strategy

The global threat to IP is both substantial and pervasive. Addressing these challenges will require a host of reforms and efforts by the administration and Congress, including strengthening the U.S. trade enforcement regime, combating digital piracy, educating other nations on the importance of intellectual property, and using technology to better monitor and combat the problem of global IP theft.

## Strengthen the U.S. Trade Enforcement Regime

Because the nature of trade has changed and because the stakes are so much higher, nations are able to employ a much wider array of complex and relatively non-transparent means of gaining unfair advantage in the global trading system and they have much stronger motivations to do so. In short, IP theft has become the policy of choice for many nations. Our trade enforcement system has not kept pace with these changes and has failed to adequately respond to both the magnitude and the nature of the challenge.

U.S. trade policy suffers from two major limitations. First, it is largely focused on opening markets through new trade agreements and not enforcing existing agreements. Second, the range of tools other nations can use to erect trade barriers has grown significantly and in many cases they fall under the radar screen of traditional WTO processes.

### Expand Funding for Trade Enforcement at USTR

As ITIF has documented, many nations are engaged in a wide array of unfair trade practices targeted at boosting exports, particularly in high-value added sectors, such as technology industries. These include discriminatory tariffs and taxes, export subsidies, blocking market access by foreign firms, use of regulations and laws (including anti-trust) to discriminate against foreign firms, and importantly intellectual property theft.[41] Unfortunately, U.S. trade policy does relatively little to fight these practices which hurt American competitiveness, preferring instead to focus largely on opening markets through new trade agreements. Enforcement of existing agreements gets short shrift at best. It is time for the United States to go on the offensive when it comes to fighting foreign mercantilist practices. The Obama administration can start by shifting USTR resources more towards enforcement. However, Congress can and should help by increasing funds for trade enforcement and restructuring USTR so it is more focused on enforcement, as the Trade Enforcement Act of 2009 proposes to do.[42]

There are a number of reasons why USTR has let the balance shift away from enforcement. One reason is that it is simply easier to work in cooperation with trade officials from other nations, especially to develop new trade agreements. Taking aggressive action against mercantilist policies is much harder. It is a natural inclination to want to play the "good cop" instead of the "bad cop" who is complaining, confronting and pressing for change. That is why it is important to create a Chief Trade Enforcement Officer and a Trade Enforcement Working Group that institutionalizes within USTR the function of trade enforcement, making it clear that at least one portion of USTR is expected to play the role of the bad cop. Also, in USTR's defense, bringing

trade enforcement actions is time consuming and expensive. And between 1995 and 2010 all six disputes filed with the WTO regarding intellectual property have been filed by the United States.[43] However, boosting the USTR's budget and targeting it specifically toward enforcement will help remedy this deficiency.

### Establish a Tax Credit for Companies that File WTO Cases

Even if Congress gives the USTR more resources, government alone cannot investigate all potential WTO cases. U.S. companies will have to play a larger role. But there are three reasons why U.S. companies do not bring more cases. First, U.S. companies fear retaliation from other nations, particularly China. Second, bringing cases is expensive. Third, the "free rider" problem means that companies can benefit if they can convince other firms in their industry to bear the burden of helping USTR to bring a trade case. In order to remedy that, ITIF proposes that Congress should encourage companies to build WTO cases by allowing them to take a 25 percent tax credit for expenditures related to bringing WTO cases. This tax credit could be piggybacked on top of the R&D tax credit.

### Work With International Development Organizations to Make Aid Contingent on Legitimate Efforts to Protect IP

If countries are going to get the message that stealing U.S. IP is wrong, they will need to experience stronger penalties for doing so. One way to do this is to make foreign aid contingent on serious efforts to stop IP theft. This means that development organizations like the World Bank, the IMF, and USAID will have to tie their assistance to steps taken by developing nations to move away from negative-sum mercantilist policies, thereby rewarding countries who take IP protection seriously.

### Form a United Front with Other Nations, Especially European Nations, to Fight Global Piracy

If the United States is going to make serious progress on combating global IP theft, it cannot go it alone. One key reason why is that large nations, such as China, India, and Brazil use the threat of withholding market access or otherwise punishing individual U.S. companies if the United States acts too strongly. Unfortunately, too many in Europe have looked upon this as a battle between the United States and other nations during which Europe can blithely sit on the sidelines and watch, and then later come in and pick up the market share lost by the United States. This is fundamentally misguided, and fortunately some officials and business leaders in Europe are beginning to realize it. Given that most European economies are also highly dependent on IP, the threat to IP will hurt them as much as it hurts the United States. Toward that end the United States needs to step up its efforts to reach out to Europe (and other nations such as British Commonwealth nations) and develop a common strategy backed by collective vigorous action against IP theft in other nations.

## Combat Digital Piracy

An effective IP enforcement strategy must also address the problem of digital piracy. The Internet is a tremendous enterprise of user empowerment, free speech, and innovation, but it facilitates unlawful acts just as much as lawful ones. While the Internet is a vast, distributed system that has no central point of control, it should not be without any control whatsoever. Rather, the responsibility for maintaining the Internet commons falls upon each user, each service provider, and each business and institution that uses it, operates it, and profits by it. The

U.S. government needs to put in place a framework that facilitates and encourages responsible control.

Because we all share the responsibility for maintaining the health and vitality of the Internet, the time has come for Internet enterprises and governments to take some measure of responsibility for maintaining its integrity.[44] There is no legitimate reason for web sites that directly enable piracy, such as The Pirate Bay or isoHunt, to exist or for there to be piracy-oriented services such as LegalSounds.com. The Internet was not meant to be a gigantic piracy machine. It was not designed or built for the primary, sole, or major purpose of facilitating unlawful transactions.

While industry will take the lead on many of these responses to the challenge of digital piracy, policymakers also have a key role to play. Actions that policymakers should take include the following:

**Support Anti-Piracy Innovation**

Government policies should support technological innovation wherever possible, as innovation is a key driver of economic growth and productivity. Unfortunately, some advocacy groups often object to technical controls designed to prevent piracy, claiming they are a threat to civil liberties or harmful to consumers. For example, the advocacy group Public Knowledge has argued that anti-piracy technology, such as content identification filters for ISPs, should not "allowed, encouraged or mandated" by government even though such technology prohibitions would impair anti-piracy innovations.[45]

Just as government should not restrict multi-purpose innovations that may inadvertently aid illegal activity—such as cryptography, networking protocols and multimedia encoding—neither should it restrict innovations that can reduce illegal activity—such as digital rights management, content identification and filtering, and network management. Restricting such innovation would mean that the technology would not improve over time. Or as a bumper sticker might say, "If you outlaw innovation, only the outlaws will innovate."

But the federal government should do more than not restrict anti-piracy innovation, government agencies like the FCC should affirm that they take piracy seriously and encourage anti-piracy innovation and use. The federal government needs to take a clear position that it supports reasonable industry action to fight digital piracy. And the FCC should also develop a process whereby industry can consult with them on proposed uses of anti-piracy technology and consumer advocates and others can bring forward concerns about actual uses. In addition, the National Science Foundation should sponsor anti-piracy research.

**Encourage Coordinated Industry Action**

In a competitive market, a classic prisoner's dilemma exists where companies would be better off by implementing anti-piracy measures, but may not because the cost of acting alone is too risky. If one ad network refuses to place ads on popular piracy sites, for example, another one will likely choose to do so.

Collaborative action by various industry stakeholders has been able to address this prisoner's dilemma in at least one area. A group of copyright owners and web sites offering user-generated content hosting came together to develop a set of principles to help reduce piracy.[46] These principles included all parties working to "ensure that the Identification Technology is

implemented in a manner that effectively balances legitimate interests in (1) blocking infringing user-uploaded content, (2) allowing wholly original and authorized uploads, and (3) accommodating fair use."[47]

Going forward there is an opportunity for more industry collaboration to fight piracy. The federal government should encourage stakeholders to develop best practices and collaborative self-regulation regimes, such as implementations of a graduated response system by ISPs. However, some anti-piracy measures, such as content filtering, could require government oversight to prevent abuses and ensure consumer rights are protected, especially in the absence of a collaborative agreement among key stakeholders. Other approaches, however, such as blocking websites supporting piracy, may require government approval before industry can act. Toward this end, there is a need for a process by which the federal government, with the help of third parties, identifies websites around the world that are systemically engaged in piracy so that ISPs and search engines can block them, ad networks and other companies can refuse to place ads with them, and banks and credit card companies can refuse to process payments to them. Such actions would not only help by directly cutting off access to websites engaging in piracy, it would also cut off their revenue streams and help make their illegal activities less profitable and sustainable. Finally, the government should also consider providing anti-trust exemptions for collaborative industry action undertaken to address these problems.

### Pursue International Frameworks to Protect Intellectual Property

The United States cannot solve the problem of digital piracy alone. Nations with weak laws to protect intellectual property provide a virtual safe haven for online operations that flout copyright law. More broadly, the lack of a strong international framework for the regulation of Internet conduct means that nations are not held responsible for the data flowing out of their networks. A comprehensive solution to this problem is urgently needed to solve many online issues in addition to Internet piracy, including cybersecurity, spam, malware, and other illegal Internet content. Global partnerships are needed to develop Internet policies that will spur nations to better enforce international standards on issues such as intellectual property rights. In particular, the U.S. government should take a much more proactive position on pressuring other nations to abide by rules regarding digital content. This includes taking more cases to the World Trade Organization (WTO), working more closing with the World Intellectual Property Organization (WIPO) and other global bodies, and including requirements for reducing content theft and penalties for failure to do so in future trade agreements. In short, it is time for the U.S. government to take global theft of U.S. intellectual property generally, and digital content specifically, much more seriously. For example, while the specific terms of the Anti-Counterfeiting Trade Agreement (ACTA) are not yet public, this type of multilateral trade agreement is necessary to create a stronger intellectual property rights regime and protect the rights of U.S. copyright holders globally. Nations that turn a blind eye to piracy should face significant pressure and penalties for doing so.

## Educate Other Nations on the Importance of Respecting IP

America needs to educate the rest of the world on the importance of fair, open, and reciprocal trade, particularly in IT. The U.S. government should undertake a major effort to get our message out to the world that the keys to prosperity are innovation, IT development and usage, and intellectual property protection. We are already losing ground in a global trade war to other nations that have made it a priority to impose their world view on developing countries at every

opportunity. The European Union in particular is undertaking a global effort to convince developing nations of their world view and we need to fight back if we do not want to lose our leadership position.[48]

One way to do this is by expanding our regulatory and legal training programs to bring in students, officials, and businesspeople from developing countries and providing training on the importance of IP protection and the process of enforcement. Several government agencies already run programs to train regulatory and legal officials, such as those at the Federal Communications Commission, the National Telecommunications and Information Administration, the Department of Justice, the State Department and U.S. Agency for International Development's funding for the U.S. Telecommunications Training Institute. But we need to do more. EU and South Korean officials are actively recruiting trainees from other nations and turning them into missionaries to spread their trade message. We cannot afford to be idle while they shape a global competition and trade policy that encourages countries to devalue intellectual property.

## Use Technology to Better Monitor and Combat the Problem of Global IP Theft

The Administration should also harness the power of IT in its effort to fight global IP theft. This effort can be part of the Administration's Open Government Directive which encourages agencies to use technology and the Internet to be more transparent, participatory and collaborative. For example, the Intellectual Property Enforcement Coordinator (IPEC) could launch "crowd-sourcing" tools that allow individuals and companies to submit information, either anonymously or with their contact information, to report instances of piracy around the world. For example, someone in China at a market could use her cell phone to take a picture of a pirated iPod or DVD at a market and submit the geo-tagged image.

The Administration should also develop collaborative tools to be used within government, such as a wiki—an online database that any member can edit. This type of tool would allow the federal government to build a shared knowledge-base of data on IP theft, such as legal practices regarding IP theft in various nations, information about ongoing investigations, and information about foreign contacts. It can also encourage more cooperation and coordination across different agencies and organizations engaged in the fight against IP theft, such as the White House, USTR, Customs and Border Protection, and the FBI by allowing them to more easily share leads and information about their ongoing anti-IP theft efforts. Such a system could function like "Intellipedia" or "Diplopedia"—the wikis that have been successfully used by the intelligence agencies and the State Department. Linking together different government organizations can help generate new ideas to combat global IP theft and help link together databases of information on IP theft for use in data mining efforts to identify bad actors.

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