

United States International Trade Commission

**China: Intellectual Property
Infringement, Indigenous
Innovation Policies, and
Frameworks for Measuring
the Effects on the U.S.
Economy**

Investigation No. 332-514
USITC Publication 4199 (amended)
November 2010



U.S. International Trade Commission

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China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy

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ABSTRACT

Intellectual property rights (IPR) infringement in China reduces market opportunities and undermines the profitability of U.S. firms when sales of products and technologies are undercut by competition from illegal, lower-cost imitations. Intellectual property (IP) is often the most valuable asset that a company holds, but many companies, particularly smaller ones, lack the resources and expertise necessary to protect their IP in China. “Indigenous innovation” policies, which promote the development, commercialization, and purchase of Chinese products and technologies, may also be disadvantaging U.S. and other foreign firms and creating new barriers to foreign direct investment (FDI) and exports to China.

China’s World Trade Organization (WTO) accession in 2001 marked a milestone in the country’s integration in the global economy. China has developed into one of the world’s most important growth markets and is now the second-largest U.S. trading partner (after Canada). As one important aspect of WTO accession, China committed to complying with the requirements of the WTO Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement. However, IPR infringement in China—including violations of copyrights, trademarks, patents, and trade secrets—remains a central area of U.S. concern in the bilateral trade relationship.

This is the first of two reports requested by the U.S. Senate Committee on Finance (Committee) on the effects of IPR infringement and indigenous innovation policies in China on U.S. jobs and the U.S. economy. In this report, the U.S. International Trade Commission (Commission or USITC) was requested to describe the principal types of reported IPR infringement in China, describe Chinese indigenous innovation policies, and outline an analytic framework for determining the effects of both IPR infringement and indigenous innovation policies on the U.S. economy.

Editor’s note: Information received after initial publication has resulted in a correction to page 2-13 of the report.

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ACRONYMS

863 program	State High-Tech Development Plan
AIC	Administration for Industry and Commerce
AML	Anti-Monopoly Law
ANSI	American National Standards Institute
API	Active pharmaceutical ingredient
AQSIQ	Administration of Quality Supervision, Inspection, and Quarantine
ATP	Advanced technology products
ATV	All-terrain vehicle
BASCAP	Business Action to Stop Counterfeiting and Piracy
BEA	Bureau of Economic Analysis
BSA	Business Software Alliance
CATT	China Academy of Telecommunications Technology
CBP	Customs and Border Protection
CC	Common Criteria
CCC	China Compulsory Certificate
CCTV	China Central Television
CD	Compact disc
CDMA	Code Division Multiple Access
CEPR	Center for Economic and Policy Research
CGE	Computable General Equilibrium
CNCA	Certification and Accreditation Administration
CNIS	China National Institute of Standardization
CNR	China National Railway Corporation
CRS	Congressional Research Service
DC	Direct current
DVD	Digital video disc
ECAT	Emergency Committee for American Trade
EU	European Union
E-waste	Electronic waste
FAS	Foreign Agricultural Service
FBI	Federal Bureau of Investigation
FDA	Food and Drug Administration
FDI	Foreign direct investment
FIE	Foreign-invested enterprise
FTZ	Free trade zone
FY	Fiscal year
GAC	General Administration of Customs
GAO	Government Accountability Office
GAPP	General Administration of Press and Publications
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GFCI	Ground fault circuit interrupter
GIPC	Global Intellectual Property Center
GMAC	Graduate Management Admission Council
GNI	Gross national income
GPA	WTO Government Procurement Agreement
GTAP	Global Trade Analysis Project

ACRONYMS—*Continued*

HNTE	High- and New-Technology Enterprises
IC	Integrated circuit
ICC	International Chamber of Commerce
ICT	Information and communication technology
IDC	International Data Corporation
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IIPA	International Intellectual Property Alliance
IMF	International Monetary Fund
IP	Intellectual property
IPEC	Intellectual Property Enforcement Coordinator
IPR	Intellectual property rights
ISO	International Organization for Standardization
IT	Information technology
ITIC	Information Technology Industry Council
ITU	International Telecommunications Union
JCCT	U.S.-China Joint Commission on Commerce and Trade
M&A	Mergers and acquisitions
MIIT	Ministry of Industry and Information Technology
Mil-spec	Military-specification
MLP	Medium- to Long-Term Plan for the Development of Science and Technology
MLPS	Multilevel Protection Scheme
MNC	Multinational Corporation
MOE	Ministry of Education
MOF	Ministry of Finance
MOFCOM	Ministry of Commerce
MOST	Ministry of Science and Technology
MP3	Moving picture experts group 1 or 2, Layer 3 audio, digital audio encoded format
MPAA	Motion Picture Association of America
NAM	National Association of Manufacturers
NBC	National Broadcasting Company
NCAC	National Copyright Administration of China
NDRC	National Development and Reform Commission
NFTC	National Foreign Trade Council
NIPS	National Intellectual Property Strategy
NIST	National Institute of Standards and Technology
OECD	Organisation for Economic Co-operation and Development
OEM	Original equipment manufacturer
OMB	Office of Management and Budget
PC	Personal computer
PSI	Pharmaceutical Security Institute
P2P	Peer-to-peer
R&D	Research and development
RAND	Reasonable and nondiscriminatory
RMB	Renminbi
ROW	Rest of the world
SAC	Standardization Administration of China
SAIC	State Administration for Industry and Commerce
SAR	Special Administration Regions

ACRONYMS—*Continued*

SASAC	State Assets Supervision and Administration Commission
SAT	State Administration of Taxation
SEC	U.S. Securities and Exchange Commission
SEZ	Special Enterprise Zone
SFC	Senate Committee on Finance
SFDA	State Food and Drug Administration
SIPO	State Intellectual Property Office
SME	Small and medium-sized enterprises
SOE	State-owned enterprise
SVIA	Specialty Vehicle Institute of America
TBT	WTO Technical Barriers to Trade Committee
TCG	Trusted Computing Group
TCM	Trusted Cryptography Module
TD-LTE	Time Division Long Term Evolution
TD-SCDMA	Time Division Synchronous Code Division Multiple Access
TIA	Telecommunications Industry Association
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UAE	United Arab Emirates
UNODC	United Nations Office on Drugs and Crime
USAGE	U.S. Applied General Equilibrium model
USCBC	U.S.-China Business Council
USDA	U.S. Department of Agriculture
USITC	U.S. International Trade Commission
USTR	U.S. Trade Representative
WAPI	Wired Authentication and Privacy Infrastructure
WCDMA	Wideband Code Division Multiple Access
WHO	World Health Organization
WIPO	World Intellectual Property Organization
Wi-Fi	Trademark of the Wi-Fi Alliance
WLAN	Wireless Local Area Network
WTO	World Trade Organization
3G	Third generation
4G	Fourth generation

Executive Summary

China's World Trade Organization (WTO) accession in 2001 marked a milestone in the country's integration into the global economy. China has developed into one of the world's most important growth markets, and is now the second-largest U.S. trading partner (after Canada). As one important aspect of WTO accession, China committed to complying with the requirements of the WTO Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, which addresses intellectual property rights (IPR). However, IPR infringement in China—including violations of copyrights, trademarks, patents, and trade secrets—remains a central concern in the U.S.-China bilateral trade relationship. To reach its findings in this report, the Commission has relied on information from a wide variety of sources, including industry, government, and academia.

IPR infringement in China reduces market opportunities and undermines the profitability of U.S. firms when sales of their products and technologies are undercut by competition from illegal, lower-cost imitations. Intellectual property (IP) is often the most valuable asset that a company holds, but many companies, particularly small ones, lack the resources and expertise necessary to protect their property in China. China's "indigenous innovation" policies, which promote the development, commercialization, and purchase of Chinese products and technologies, may also be disadvantaging U.S. and other foreign firms and creating new barriers to foreign direct investment (FDI) and exports to China.

This is the first of two reports requested by the U.S. Senate Committee on Finance (Committee) on the effects of IPR infringement and indigenous innovation policies in China on U.S. jobs and the U.S. economy. In this report, the Committee asked the U.S. International Trade Commission (Commission or USITC) to describe the principal types of reported IPR infringement in China, describe Chinese indigenous innovation policies, and outline an analytic framework for determining the effects of both IPR infringement and indigenous innovation policies on the U.S. economy and U.S. jobs. Major findings are summarized below. The second report will describe the size and scope of reported IPR violations in China and provide, to the extent possible, a quantitative analysis of the effect of reported IPR infringement and indigenous innovation policies in China on the U.S. economy and jobs. The second report is due May 2, 2011.

Major Findings

Enforcement of IPR laws remains a serious problem in China. Significant structural and institutional impediments undermine effective IPR enforcement in China. These include a lack of coordination among government agencies, insufficient resources for enforcement, local protectionism, and a lack of judicial independence. Administrative IPR enforcement, consisting of raids and seizure of infringing goods, generally results only in temporary slowdowns in production; penalties are not sufficient to deter repeat offenders. Criminal prosecutions, which could have a deterrent effect, are rare. There are also difficulties in prosecuting civil IPR cases, including relatively low damage awards, the lack of a robust system for discovery of evidence, sporadic application of contempt citations for uncooperative or dishonest defendants, an inexperienced judiciary, and onerous requirements for the use of evidence from abroad. However, there are some signs

of improvement in IPR enforcement, especially with respect to courts in major cities in China.

Ineffective enforcement contributes to widespread IPR infringement in China. The illegal distribution of copyrighted works is common, both physically, for goods such as CDs and DVDs, and, increasingly, through digital means, such as Internet downloads of software, music, and movies. For example, about 240,000 Internet cafés in China reportedly rely on illegal copies of entertainment software. Similarly, trademarks for goods and services of all kinds are routinely counterfeited; from luxury goods to high-volume commodities, few products are immune from illegal imitation in China. The patents and trade secrets of U.S. firms are also infringed in China, although concrete information on this topic is more difficult to obtain.

China is implementing indigenous innovation policies that U.S. and foreign firms view as potentially reducing business opportunities in China's fast-growing economy. These policies—often embedded in government procurement, technical standards, anti-monopoly, and tax regulations or laws—aim to achieve several long-term goals. These goals include building domestic research and development (R&D) capabilities to facilitate Chinese firms' innovative capacity, limiting dependence on foreign technology and companies, and generally increasing the value that domestic companies add to China's economy. The indigenous innovation “web of policies” is expected to make it difficult for foreign companies to compete on a level playing field in China.

U.S.-China IP-Related Trade and Investment

IP creation and technological innovation drive economic growth. They also increase the competitiveness of firms, through the creation of new or improved products and processes, greater efficiencies, and enhanced returns on capital goods investment. Measures of IP's contribution to the U.S. economy suggest that IP-sensitive industries outperform non-IP-sensitive industries on a variety of economic measures, including sales, output, exports, wages, and capital expenditures. For example, IP-sensitive industries reportedly pay their employees nearly 60 percent more, and output and sales per employee are more than double those of non-IP-sensitive industries.

IP-sensitive products and services span a broad range of sectors. They range from technology-intensive products, such as computers and semiconductors, to the creative arts (e.g., books and films), and branded products (e.g., apparel and footwear). IP-sensitive services include such intangible assets as the design of manufacturing processes and the brands that franchisees rely upon to sell their services. Table ES.1 provides examples of IP-sensitive sectors and products.

The effect of IPR infringement in China on the U.S. economy should be viewed in the context of the significant trade and investment relationship that links the United States, one of the world's most innovative countries, and China, a globally dynamic manufacturing base. During the past decade, China's economy grew by roughly 10 percent per year, and many Chinese firms are attempting to strengthen their competitive position by moving to more profitable stages of production. Much of the increase in China's sophisticated manufacturing capacity has been made possible by IP-sensitive technology provided by foreign investors from advanced industrial countries,

including the United States. For example, total U.S. FDI stock in China increased from \$9.4 billion in 1999 to \$49 billion in 2009. Despite certain benefits that multinationals might gain from producing in China, they also face an array of IPR infringement problems in their supply chain operations. These include increasing competition from Chinese counterfeiters who use sophisticated manufacturing capabilities and cheaper prices to gain market share in China and external markets.

TABLE ES.1 Examples of potential IP-sensitive sectors and products

Sector/product
Aerospace product and parts manufacturing
Apparel manufacturing
Breweries, wineries, and distilleries
Computer and electronic product manufacturing
Computer systems design and related services
Electrical equipment, appliance, and component manufacturing
Footwear manufacturing and other leather products
Game, toy, and children's vehicle manufacturing
Internet publishing and broadcasting and Web search portals
Jewelry and silverware manufacturing
Machinery manufacturing
Medical equipment and supplies manufacturing
Motion picture and video industries
Motor vehicle equipment manufacturing
Newspaper, periodical, book, and directory publishing
Chemical manufacturing
Pesticide, fertilizer, and other agricultural chemical manufacturing
Pharmaceutical and medicine manufacturing
Research and development
Semiconductor and other electronic component manufacturing
Software publishing
Sound recording industries
Television broadcasting
Tobacco manufacturing
Watch, clock, and part manufacturing

Source: Compiled by USITC staff from industry and academic sources.

Note: Sectors and products correspond to NAICS classifications.

Bilateral trade and investment in IP-sensitive sectors are difficult to measure because of the complexity and scope of IP in traded goods and services; however, some metrics provide insights. There are three primary channels by which IP-sensitive goods and services flow between the United States and China: merchandise trade, royalty and license fee services, and FDI. Merchandise trade in advanced technology products (ATP), which serves as a proxy for high-tech, IP-sensitive products, expanded rapidly during 2000–09. U.S. ATP exports to China, which doubled in value during the period to \$17 billion in 2009, were concentrated in aircraft and parts, electronics products (including semiconductors), and computers. U.S. ATP imports from China increased nearly eightfold, to \$90 billion, with computers and cellular phones accounting for 90 percent of such imports. However, ATP categories cover only leading-edge technologies, so this proxy does not fully capture the broader scope of IP-sensitive high-technology trade or trademarked and copyrighted goods.

U.S. Customs and Border Protection (CBP) seizure data provide insight into U.S. imports of certain trademark-infringing goods from China. According to CBP, China was the source of 79 percent of all U.S. Customs seizures in FY 2009, and Hong Kong was the source of an additional 10 percent. As in previous years, footwear and apparel together accounted for the bulk of seizures (table ES.2). However, Customs data underrepresent the degree of IPR infringement, in part because trademarks generally must be recorded with CBP to be enforceable at the border, and most trademark owners do not take this step. Only about 26,000 of 1.6 million active trademarks in the United States have been recorded with CBP. Moreover, most CBP seizures are of products that are easily identifiable; many infringing products are more difficult to distinguish.

TABLE ES.2 U.S. border seizures of counterfeit and pirated goods from China, FY 2009

Commodity	Domestic value (Million \$)	% of total
Footwear	98.0	48
Handbags/wallets/backpacks	19.6	10
Consumer electronics	18.5	9
Wearing apparel	17.9	9
Computers/hardware	8.8	4
Jewelry	7.3	4
Pharmaceuticals	6.7	3
Media	5.5	3
Watches/parts	4.9	2
Toys/electronics games	4.5	2
All other commodities	13.1	6
Total	204.7	100

Source: U.S. Customs and Border Protection.

Relatively limited U.S. receipts of royalties and license fees from IP-sensitive services exports to China suggest IPR infringement and market access problems. U.S. companies receive these payments, primarily from affiliated businesses in China, on such intangible assets as industrial processes; books, records, and tapes; broadcasting services; and computer software. Stronger IP protection generally is associated with larger flows of such payments. U.S. receipts of these payments from China were over \$2.3 billion in 2008—a small figure compared with the \$89 billion in U.S. receipts from the rest of the world (ROW). Notably, 2008 receipts of \$2 million from China for certain copyrighted materials were a fraction of the \$1.5 billion in such receipts from the ROW. This disparity likely reflects IPR infringement and market access restrictions in China.

FDI is another channel by which U.S. companies transfer IP to China. Weak IPR protection in China reportedly depresses the level of U.S. FDI in China. Even though the stock of U.S. investment in China has been increasing in recent years, it was a small share (1.4 percent) of the total stock of outbound U.S. investment in 2009.

Copyright and Trademark Infringement in China

The copyright industries (including music, movies, software, and publishing) produce both physical and digital goods, and both forms are subject to substantial infringement in China. Unauthorized transfer of copyrighted materials may occur through the use of physical media, such as a CD or DVD, or it may occur entirely online, through the electronic transfer of files. The growth of digital piracy is an increasing concern for copyright-intensive industries. Infringing products that are distributed digitally can quickly reach consumers in markets around the world, since they are produced and consumed through decentralized global networks. Enforcement against digital piracy is particularly challenging for smaller firms that do not maintain a physical presence in China. As China's population of Internet users has grown, both foreign and Chinese copyright holders have become increasingly concerned about digital infringement, and there have been some notable cases of strong copyright enforcement.

Shenzhen and Guangzhou are production and distribution hubs for copyright-infringing products. Organized, large-scale production and distribution of infringing optical discs and other media is especially common in the southern cities of Guangzhou and Shenzhen, which have been targeted by Chinese authorities as major sources of infringing materials. Industry sources also identify these cities as being among those most important in the illegal distribution of video game systems, which are banned in China yet are widely used there to play copyright-infringing video games.

Copyright infringement in China is closely linked to government delays and bans of copyrighted works because limited supply shifts demand to pirated versions. For example, in China, films, publications, music, and home entertainment products must be reviewed for prohibited content before being released. In some copyright-intensive industries, a foreign company must have a Chinese partner to distribute content. Moreover, certain distribution channels (such as online music distribution) are completely closed to foreign companies. For content that is delayed or never released through legal channels, the market may only be served by pirated copies. Several of these distribution restrictions have been found by the WTO to be inconsistent with China's WTO commitments.

Many U.S. companies doing business in China consider trademark counterfeiting to be one of their most serious problems. The effects of counterfeiting on trademark owners include lost sales and revenue, tarnished brand reputation, and substantial enforcement costs. The overriding concern for legitimate brand owners is that their products are effectively priced out of markets in China and other countries by low-cost imitations. Counterfeiters in China reportedly vary widely in size and sophistication, ranging from mom-and-pop operations to former or even current joint venture partners, large private and state-owned enterprises, and organized crime syndicates.

The counterfeiting problem can be particularly difficult for smaller firms because they have a smaller volume of sales over which to spread enforcement costs and often lack the experience and resources necessary to address counterfeiting in China. Smaller firms often know little about how to resolve IPR infringement problems in China, are skeptical about the effectiveness of pursuing a resolution, and are concerned about potentially high costs.

Counterfeiting is concentrated in the industrialized southeastern region, particularly the provinces of Guangdong and Fujian. FDI inflows to these provinces in recent decades have contributed significantly to this problem. As foreign companies built factories, transferred production technology, and trained employees, manufacturing know-how and processes migrated to counterfeit establishments in this region. The Internet also plays a central role in the purchase and sale of counterfeit goods. E-commerce and auction sites originating in China facilitate the shipment of smaller and less detectable quantities of counterfeit goods around the world.

Patent Infringement and Trade Secret Misappropriation in China

U.S. and foreign firms in China rely on patents to protect inventions in a broad range of industries, including pharmaceuticals, telecommunications, electronics, chemicals, footwear, food and beverages, and construction and fixtures. Industry representatives express mixed opinions on whether there is antforeign bias in the issuance or enforcement of patents in China. However, some non-Chinese firms reportedly find it more difficult to obtain patents in sectors that the Chinese government considers of strategic importance, such as pharmaceuticals, renewable energy, and biotechnology.

The Chinese government’s focus on indigenous innovation has spurred a boom in patenting by Chinese inventors. Although filings of all types of patents in China are on the rise, Chinese inventors particularly focus on utility model and design patents, while U.S. and other foreign inventors almost completely ignore such patents (table ES.3). Utility model and design patents are inexpensive and easy to obtain, as they are not substantively examined by patent examiners. Once a Chinese company has received such a patent, it can bring suit against foreign companies that manufacture similar goods in China or export them to China, or use the patent to defend against infringement allegations. Some utility model patents obtained by Chinese firms are alleged to be opportunistic and predatory.

TABLE ES.3 Categories and features of patents under Chinese law

	Invention	Utility model	Design
Subject matter	New technical solution relating to a product, process, or improvement thereof	New technical solution relating to the shape, the structure, or their combination, of a product which is fit for practical use	New design relating to the shape, pattern, color, or their combination, of a product which creates an aesthetic feeling and is fit for industrial application
Patent term	20 years	10 years	10 years
Examination	Substantive	Nonsubstantive	Nonsubstantive
Patents granted and domestic and foreign ownership (2009)	Total grants: 15,640 Domestic: 54% Foreign: 46%	Total grants: 32,382 Domestic: 99% Foreign: 1%	Total grants: 41,000 Domestic: 94% Foreign: 6%

Sources: U.S. Embassy, Beijing, and State Intellectual Property Office (SIPO).

Weaknesses in the Chinese judicial system can be particularly challenging in complex patent infringement cases. The lack of a robust discovery system, for example, means that patents covering production methods are difficult to enforce because defendants cannot be compelled to disclose how their products are made.

Industry representatives have identified factors that affect against whom and where a foreign firm brings suit for patent infringement in China. These factors include the possibility of bias in favor of large state-owned enterprises (SOEs) or local firms, as well as the substantial risk of noncompliance with court judgments in cases brought against small firms. Although suing a defendant in the jurisdiction where it is located can be problematic because of the role that favoritism may play, choosing a different jurisdiction may increase the difficulty of actually enforcing the judgment.

U.S. firms employ a variety of non-litigation strategies to protect their technologies in China. Some U.S. firms rely to a greater degree on trade secrets or reportedly avoid developing or producing their most critical innovations in China, instead placing these “crown jewels” in locations with more effective enforcement. Other firms, particularly in industries where the capital costs of production are substantial and where product lifetimes are short, strive to stay one step ahead of infringing competitors through rapid innovation.

Information about the protection and enforcement of trade secrets in China is harder to obtain than that for patents and trademarks. Trade secret owners do not register their trade secrets with administrative agencies, but protect secrets through internal measures. However, the misappropriation of trade secrets may be addressed through administrative and judicial actions. Reportedly, the judicial preference in China for written evidence rather than witness testimony can make it difficult to establish the elements of a trade secret case.

Trade secret misappropriation in China reportedly is carried out by employees, business partners, computer hackers, and regulatory agencies. Employees may steal company secrets and take them to competitive ventures. Problems also arise when companies that are setting up new production facilities in China are required to partner with a Chinese design firm; some design firms reportedly have no qualms about disclosing trade secrets learned in the process. The misappropriation of trade secrets through computer hacking originating in China is an area of growing concern to firms in the United States and throughout the world. Trade secrets may also be leaked from data provided to regulatory authorities in certain industries such as pharmaceuticals, medical devices, plant varieties, and software. Some software encryption companies have been required to disclose their trade secret source code in order to obtain the China Compulsory Certification (CCC) approval needed to market their products in China.

U.S. courts have addressed the alleged misappropriation of trade secrets for the benefit of Chinese companies. The U.S. Department of Justice, for example, has prosecuted cases involving the theft of trade secrets related to the manufacture of auto parts, paints, and light-emitting diodes. The cases have resulted in substantial fines and imprisonment.

Indigenous Innovation and Standards Policies in China

The Chinese government is using policies in wide-ranging areas, including government procurement, technical standards, anti-monopoly policy, and tax policy, to raise the level of domestic innovation. However this effort may lead to a “web of policies” that will make it more difficult for foreign companies to compete in China. Industry representatives have voiced concerns that an integrated web of Chinese policies works together to build a small number of SOEs into “national champions,” which China intends to become large and technologically-advanced enough to compete globally with today’s high-tech market-leaders (figure ES.1). The policies at issue are evolving very quickly, and future effects remain uncertain.

The government procurement area is reported to represent the clearest manifestation to date of China’s use of indigenous innovation policies to favor Chinese companies and the products of Chinese innovation at the expense of foreign companies. Many observers agree that the Chinese government is actively using government procurement contracts to create a market for the products of Chinese companies and to foster a general acceptance of Chinese brands over foreign brands. The Chinese government is expected to release a central government catalogue of indigenous innovation-accredited products. Observers anticipate that it will include few products made by foreign firms, as is true for catalogues already in effect in certain provinces. However, in several recent policy speeches, leading Chinese government officials have indicated that goods produced by Chinese affiliates of U.S. and other foreign firms will be considered indigenous innovation products. Thus, it remains to be seen how the policy will be implemented.

As part of the push for indigenous innovation, China has developed national standards specifically to compete with existing international standards, and, in some instances, has mandated the use of the new standards in Chinese markets. These standards act as market access barriers and force foreign companies to adopt Chinese technologies to conduct business in China.

According to standards experts, although China has made significant progress in improving its standard-setting processes, procedures can still be nontransparent and often continue to exclude meaningful opportunities for foreign companies to participate. Standards development in China occurs through a top-down system, and U.S. and other foreign firms are often entirely excluded from the process or are permitted to participate only as observers. This is in contrast to the U.S. approach to standards development in which the private sector tends to lead, with more limited government involvement.

U.S. firms argue that the Chinese standards-setting process often results in technical standards aimed at supporting the interests of domestic firms, rather than incorporating the best technology into new products. In particular, Chinese national standards are often developed for the purpose of including Chinese-developed IP in those standards. This practice reduces the royalties that Chinese firms must pay to foreign firms whose technology often forms a critical component of the global standard, while increasing royalties that foreign firms must pay to Chinese IP holders.

FIGURE ES.1 One view of creating Chinese “national champion” companies through indigenous innovation policies



Source: Industry and academic representatives.

Frameworks for Quantifying the Effects of IPR Infringement and Indigenous Innovation in China on the U.S. Economy

The Commission is examining a variety of approaches for use in its second investigation to assess the quantitative effects of IPR infringement and indigenous innovation policy in China on the U.S. economy and U.S. jobs. The Commission is in the process of surveying U.S. firms and sectors that may be affected by China's IPR infringement and indigenous innovation policies. The results will be supplemented by econometric analyses, either derived from the available literature or conducted specifically for the second investigation. In addition, insights into economy-wide and sectoral effects can be gained by simulating the effects of improved IPR enforcement in China on the U.S. economy. The results gained from the questionnaire responses, econometric methods, and simulations should inform and serve as cross-checks on each other while providing a more comprehensive assessment of the effects on the U.S. economy of IPR infringement in China.

The questions analyzed in the second investigation will involve novel areas of research and quantification, and the Commission's approach, as proposed in this report, will likely evolve as issues are identified. Moreover, in the case of indigenous innovation policies that are of recent origin and rapidly evolving, quantitative methods may provide partial assessments of the effects of such policies on the U.S. economy or U.S. firms rather than definitive or complete ones.

The effects of IPR infringement and indigenous innovation policies vary according to the type of IP and the market channel involved. Patents, trade secrets, trademarks, and copyrights have different economic rationales, and their infringement affects IP owners and consumers in different ways. The wide variety of Chinese policies covered under the term "indigenous innovation" may act as a mechanism for import substitution in technology by favoring Chinese firms in relevant industries while reducing access to the Chinese market for foreign firms.

While econometric methods and survey methods have been used in previous studies that attempted to quantify the economic effects of IPR infringement, few studies have estimated the effects on the U.S. economy and jobs. The econometric literature indicates that countries with stronger IPR enforcement pay more in royalties and license fees to foreigners and attract more FDI. The United States generally exports more to countries with stronger IPR enforcement, although this is not true for all products equally. Previous econometric work also has made use of a variety of measures of the quality of a country's IPR environment. Some of these studies have focused on existing legal provisions, while others have attempted to capture the degree of enforcement. A variety of surveys have been used to quantify the effects of IPR infringement, although the surveys have significant limitations. Finally, relatively little work has been carried out to assess the effects of IPR infringement using the types of simulation methods, such as computable general equilibrium models, often used to estimate economy-wide effects of changes in trade policies.

CHAPTER 1

Introduction

China's World Trade Organization (WTO) accession in 2001 marked a milestone in the country's integration in the global economy. China has developed into one of the world's most important growth markets and is now the second-largest U.S. trading partner (after Canada).¹ With a population of more than 1.3 billion people, China is an important source of economic opportunity for U.S. farmers, manufacturers, service providers, and their employees. There are, however, ongoing areas of concern in the bilateral economic relationship, including intellectual property rights (IPR) infringement and "indigenous innovation" policies in China. IPR infringement in China reduces market opportunities and undermines the profitability of U.S. firms in China, the United States, and third countries, where their products and technologies are undercut by low-cost imitations.² Indigenous innovation policies may disadvantage U.S. firms by favoring Chinese products and technologies over those of foreign companies, creating new barriers to U.S. foreign direct investment (FDI) and exports to China.³

"Intellectual property" (IP)⁴ is a broad term that encompasses creations of the mind such as literary and artistic works (protected by copyrights), symbols and names used in commerce (trademarks), inventions (patents), and confidential business information developed by firms (trade secrets).⁵ The value of IP and other intangible assets to the U.S. economy is substantial. According to a 2006 Federal Reserve Board analysis, investment in intangible assets in the United States—which includes IP, research and development (R&D), computer software, workforce training, and corporate spending to enhance brands—exceeds investment in tangible property.⁶ Moreover, these intangible assets increasingly drive the competitiveness of U.S. firms and opportunities for U.S. workers.⁷

IP and other intangible assets drive competitiveness in various ways, including by enabling the creation of new products and processes and improving the quality of existing products; enhancing returns on investment in capital goods, such as computers and telecommunications equipment; and promoting efficiency by generating better ways of doing business.⁸ Several industry-sponsored studies have specifically measured the contribution of IP to the U.S. economy and jobs. A 2005 study found that industries that rely on IP are major sources of economic growth and are among the largest and best-

¹ U.S. Census Bureau, Foreign Trade Statistics, "Top Trading Partners," n.d. (accessed August 27, 2010).

² See chapters 3, 4, and 6.

³ See chapters 5 and 6. See also Geithner, Statement to the Senate Banking and House Ways and Means Committees, September 16, 2010, 4; Kirk, Statement to the Senate Finance Committee, June 23, 2010; Locke, Statement to the Senate Finance Committee, June 23, 2010.

⁴ IP and IPR are used interchangeably in this report (and in common parlance), although generally IP refers to the property itself and IPR to the rights associated with the property.

⁵ World Intellectual Property Organization (WIPO), "What Is Intellectual Property?" n.d. (accessed August 5, 2010).

⁶ Board on Science, Technology, and Economic Policy and Committee on National Statistics, *Intangible Assets*, 2009, 1.

⁷ *Ibid.*

⁸ U.S. Department of Commerce (USDOC), "Patent Reform: Unleashing Innovation," April 2010.

paying employers in the United States.⁹ More recently, a 2010 study found that from 2000 through 2007, IP-intensive industries outperformed non-IP-intensive industries on a variety of economic measures, including sales, output, exports, wages, and capital expenditures.¹⁰

Given the substantial contribution of IP to the U.S. economy, and the importance of China as a market, IPR infringement in China can negatively affect U.S. firms of all sizes. Small and medium-sized enterprises (SMEs) may be especially vulnerable to IPR infringement in China for at least two reasons: first, IP may be their most valuable asset; and second, they may lack the resources and expertise necessary to protect their IP and respond to infringement in China.¹¹

China's indigenous innovation policies are also an important competitive issue for U.S. firms. China has introduced a number of policies aimed at increasing the level of scientific and technological innovation that originates within the country, as well as increasing the domestic share of the value embodied in goods made by Chinese companies. In a nutshell, China would like to shift from "made in China" to "created in China."¹² Policy arenas through which China is implementing indigenous innovation-related policies include government procurement, technical standards, and the enforcement of China's Anti-Monopoly Law (AML). U.S. firms are concerned that the policies may preclude their full participation in business opportunities arising from the fast-growing Chinese economy.¹³

Scope and Approach

This is the first of two reports requested by the U.S. Senate Committee on Finance (Committee) on the effects of IPR infringement and indigenous innovation policies in China¹⁴ on U.S. jobs and the U.S. economy.¹⁵ In this report, the U.S. International Trade Commission (Commission or USITC) has been asked to describe the principal types of reported IPR infringement in China, to describe Chinese indigenous innovation policies, and to outline an analytic framework for determining the effects of both IPR infringement and indigenous innovation policies on the U.S. economy and U.S. jobs. This first report provides the framework for the second, which will describe the size and scope of reported

⁹ Siwek, "Engines of Growth," 2005, 3. Siwek defines IP industries as including those sectors of the economy that depend on copyright or patent protections to function as viable commercial industries, and a portion of the distribution services industries needed for the physical and commercial delivery of IP products throughout the United States. The identification of U.S. industries that rely on IP is complex (see chapter 2).

¹⁰ Pham, "The Impact of Innovation," 2010, 4. Wages, for example, are reportedly 60 percent higher in IP-intensive industries. Pham uses R&D expenditures as a proxy for reliance on IP. Industries with R&D expenditures higher than the national average are identified as IP-intensive.

¹¹ D'Addario, written testimony to the U.S. International Trade Commission (USITC), June 16, 2010, 3; NAM, written testimony to the USITC, June 15, 2010, 4; USITC, *Small and Medium-Sized Enterprises*, July 2010, 3–15; Barfield and Calfee, *Biotechnology and the Patent System*, 2007, 27.

¹² Industry officials, interviews by USITC staff, Shanghai, September 15, 2010.

¹³ See chapter 5.

¹⁴ For purposes of this report, "China" refers to mainland China and does not include Hong Kong or Macau. Hong Kong and Macau are special administrative regions (SARs), which operate under autonomous systems of government and constitutions. U.S. State Department, "Background Note: Hong Kong," August 3, 2010; U.S. State Department, "Background Note: Macau," July 26, 2010. They are included in this report only to the extent that firms or individuals from Hong Kong or Macau may play a role in IPR infringement in mainland China. See chapter 3.

¹⁵ App. A.

IPR violations in China and provide, to the extent possible, a quantitative analysis of the effect of reported IPR infringement and indigenous innovation policies in China on the U.S. economy and jobs. The second report will be provided to the Committee by May 2, 2011.

The information and data in this first report were gathered from a wide variety of sources. The Commission held a public hearing for both reports on June 15–16, 2010. Witnesses during the two-day hearing included representatives of companies and trade associations located in the United States and China, as well as individuals with significant U.S. government, nonprofit, and academic experience. A diverse group of trade associations, law firms, think tanks, and companies also provided written submissions. Through more than 60 in-person and telephone interviews conducted in the United States and in travel to China, the Commission obtained information from additional companies, associations, academics, standards bodies, and other experts in the field.

Commission staff also consulted with U.S. government officials to gain insight from their expertise in Chinese IPR and indigenous innovation issues, including representatives of the Department of Commerce’s International Trade Administration, the U.S. Patent and Trademark Office (USPTO), U.S. Customs and Border Protection (CBP), the Office of the U.S. Trade Representative (USTR), the National Institute of Standards and Technology, the Federal Trade Commission, the U.S. Department of Justice, and the U.S. embassy and consulates in China. Commission staff also reviewed published information on China’s IPR and indigenous innovation policies and practices, including submissions made as part of the USTR’s Special 301 review of the global state of IPR protection and submissions to the Intellectual Property Enforcement Coordinator (IPEC).¹⁶ The Commission’s review of data and information was complicated by the speed with which China’s indigenous innovation and IPR policies are evolving, with new interpretations and policies issued frequently. The report includes published data and information available through September 2010.

Organization

This report is divided into six chapters. Chapter 1 provides definitions of key concepts and an overview of China’s IPR enforcement structure. Chapter 2 describes the role of IP in the bilateral trade and investment relationship, focusing on three channels through which IP-sensitive goods and services flow between the United States and China: international trade, royalty and license fee services trade, and FDI. Chapter 3 describes reported copyright and trademark infringement in China, including affected industries and products, locations where piracy and counterfeiting are prevalent, the persons or groups involved, the methods by which the infringement may be carried out, and enforcement challenges. Chapter 4 provides similar information for patent infringement and trade secret misappropriation. Chapter 5 defines and describes major elements of China’s indigenous innovation policies in the areas of government procurement, standards, and the enforcement of China’s AML, among others. Chapter 6 outlines analytic frameworks potentially useful in determining the quantitative effects of IPR infringement and indigenous innovation policies in China on the U.S. economy.

¹⁶ The office of the IPEC was created by Congress in the Prioritizing Resources and Organization for Intellectual Property Act of 2008 and is located within the Executive Office of the President, Office of Management and Budget. OMB, “About the Office of the IPEC,” n.d.

Key Concepts: IPR and Indigenous Innovation in China

This section describes two key concepts in this investigation: IPR and indigenous innovation. With regard to IPR, the WTO Uruguay Round Agreements signed in 1994 included the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), and established comprehensive standards for IPR protection and enforcement in WTO member countries. China joined the WTO in December 2001 and assumed the obligations set forth in TRIPS.¹⁷ It is important to recognize, however, that although TRIPS establishes standards for IPR protection and enforcement, the rights are granted and enforceable on a national basis.¹⁸ For example, to receive patent protection in China, an inventor must satisfy the patent requirements contained in Chinese law, and a patent must be granted by Chinese authorities.¹⁹

The four principal types of IP reportedly infringed in China are copyrights, trademarks, patents, and trade secrets, according to the Commission's research and fieldwork.²⁰ The following definitions are based on Chinese law as generally described in the IPR toolkit prepared by the U.S. Embassy, Beijing.²¹ An explanation of the concept of indigenous innovation follows the IPR definitions.

Copyrights

Copyrights generally encourage creative endeavors by prohibiting original works from being copied without the author's permission. China's Copyright Law protects a range of works, including written, oral, photographic, and dramatic works; fine art and architectural works; movies; graphic designs; and computer software. Under Chinese law, the copyright owner holds a broad set of exclusive rights, including the right to reproduce, distribute, perform, and adapt the work for a period of up to 50 years for corporate authors, or the life of the author plus 50 years for individual authors.²² Copyright infringement, which may occur when any of the exclusive rights of the owner are violated, is sometimes referred to as copyright piracy. Copyrights do not have to be registered to be entitled to protection, although registration can facilitate enforcement.²³

¹⁷ See Final Act Embodying the Uruguay Round of Multilateral Trade Negotiations, Marrakesh, April 13, 1994, Annex 1C, 319, as reprinted by the U.S. Government Printing Office, 1994; Uruguay Round Agreements Act, Statement of Administrative Action, House Document 103-316, 103rd Cong., 2d Sess. (1994), 312, as printed by the U.S. Government Printing Office, 1994.

¹⁸ U.S. Embassy, Beijing, "Intellectual Property Rights in China," n.d. (accessed August 5, 2010).

¹⁹ Ibid.

²⁰ See also Congressional Research Service, "Intellectual Property Rights," February 5, 2009, 1-3; StopFakes.gov, "Intellectual Property: What Is It?" n.d. (accessed August 5, 2010); U.S. Embassy, Beijing, "Intellectual Property Rights in China," n.d. (accessed August 5, 2010). All these identify copyrights, trademarks, patents, and trade secrets as the major types of IPR. While other *sui generis* types of IPR covered by TRIPS obligations, such as plant variety protections and semiconductor design protection, may also be infringed in China, the Commission received little specific information with respect to them.

²¹ U.S. Embassy, Beijing, "Intellectual Property Rights in China," n.d. (accessed August 5, 2010).

²² Copyright terms are longer in the United States. For works created after 1978, protection lasts for the life of the author plus 70 years or for works made for hire, 95 years from first publication or 120 years from creation (whichever comes first). 17 USC Sec. 302.

²³ U.S. Embassy, Beijing, "Intellectual Property Rights in China," n.d. (accessed August 5, 2010); industry official, telephone interview by USITC staff, August 30, 2010; Maskus, *Intellectual Property Rights*, 2000, 45.

Trademarks

Trademarks generally protect the right to use a distinctive mark or name to identify and distinguish a product, service, or firm. In China, trademark registration is available for words, designs, letters, numbers, three-dimensional signs, and color combinations, as well as combinations of these elements. Trademark registration is also available in China for certification or collective marks, which may be used to protect geographical indications (e.g., Idaho potatoes).²⁴

Under Chinese law, a mark is eligible for registration if it is distinctive, easily distinguishable, does not conflict with prior rights obtained by a third party, and is not otherwise prohibited by China's Trademark Law. Registration is generally required for effective protection of a trademark in China. While the United States grants trademark rights to the first party to use a trademark in commerce, China follows a first-to-file system, with no requirement that the filing party demonstrate prior use or ownership of the mark. Thus, a U.S. mark that is not registered with the China Trademark Office may be usurped by someone who files first but does not have an existing commercial interest in the mark.²⁵

The violation of a trademark is generally referred to as infringement or counterfeiting. Under Chinese law, violations may involve:

- Using a trademark that is the same as or similar to a registered mark on the same or similar goods without authorization;
- Selling products that violate the exclusive right to use a registered mark;
- Counterfeiting or modifying a mark or a symbol that is part of a registered mark and putting products on the market with the counterfeited or modified mark; and
- Using words, graphics, or packaging that are identical or similar to those of a registered mark in connection with identical or similar goods in order to mislead others.²⁶

As in the United States, a registered trademark in China is valid for 10 years but, unlike a copyright, may be renewed indefinitely if it is being used in commerce.²⁷

²⁴ In China, a certification mark is one controlled by an organization capable of monitoring the use of the mark to certify the geographical origin, material, mode of manufacture, quality, or other specific characteristics of the goods or services. A collective mark is one registered in the name of a group for use by the members of the group to indicate their membership. U.S. Embassy, Beijing, "Intellectual Property Rights in China: Trademark," n.d. (accessed August 5, 2010).

²⁵ For this reason, trademark experts recommend that companies seeking to distribute their products in China register their marks (including Chinese-language versions of their marks) and promptly register appropriate Internet domain names. Unregistered marks may be entitled to protection if the owner can establish that they are "well-known." However, only a small number of foreign marks have been so recognized (15 well-known foreign marks were certified in 2008). U.S. Embassy, Beijing, "Intellectual Property Rights in China: Trademarks," n.d. (accessed August 5, 2010); State Intellectual Property Office (SIPO), *China IPR Annual Book 2009*, 2010.

²⁶ U.S. Embassy, Beijing, "Intellectual Property Rights in China: Trademarks," n.d. (accessed August 5, 2010).

²⁷ *Ibid.*

Patents

A patent generally provides a set of exclusive rights granted to the inventor for a limited time period.²⁸ Chinese law recognizes three kinds of patents: invention, utility model, and design (table 1.1). Invention patent applications (analogous to U.S. utility patents) are reviewed by a patent examiner to ensure that the invention is novel, is inventive, and has practical utility. Utility model and design patent applications are not substantively examined before the patent is granted; they are reviewed only for compliance with formalities. Utility model and design patents have a term of 10 years, compared to a 20-year term for invention patents.²⁹

TABLE 1.1 Categories and features of patents under Chinese law

	Invention	Utility model	Design
Subject matter	New technical solution relating to a product, process, or improvement thereof	New technical solution relating to the shape, the structure, or their combination, of a product which is fit for practical use	New design relating to the shape, pattern, color, or their combination, of a product which creates an aesthetic feeling and is fit for industrial application
Patent term	20 years	10 years	10 years
Examination	Substantive	Nonsubstantive	Nonsubstantive
Patents granted and domestic and foreign ownership (2009)	Total grants: 15,640 Domestic: 53.6% Foreign: 46.4%	Total grants: 32,382 Domestic: 99.4% Foreign: 0.6%	Total grants: 41,000 Domestic: 94.2% Foreign: 5.8%

Sources: U.S. Embassy, Beijing, and SIPO.

Utility model patents are sometimes known as “petty patents.” Many countries (including Japan, Taiwan, Korea, and Germany) have petty patents that are not substantively examined or that require a lower standard of inventiveness for their grant. The United States, however, does not offer this type of patent protection.³⁰ Virtually all utility model and design patents in China are held by domestic patentees; non-Chinese firms rarely seek such protection in China. U.S. firms reportedly do not usually apply for utility model patents, in part because they are less familiar with them than invention patents.³¹ Some U.S. firms, however, are reported to be developing patent portfolios in China that include all types of patents, particularly in light of well-publicized cases against foreign companies based on the alleged violation of Chinese utility model patents.³²

Patent infringement in Chinese law refers to patent exploitation without the authorization of the patent owner, including manufacturing patented products; using patented processes; offering to sell or selling patented products; using products directly acquired

²⁸ China, like most other countries but unlike the United States, follows a first-to-file system under which priority for an invention is determined by the first application filed with the patent office rather than by the first to conceive of the invention.

²⁹ U.S. Embassy, Beijing, “Intellectual Property Rights in China: Trademarks,” n.d. (accessed August 5, 2010). Like invention patents in China, utility patents in the United States have a 20-year term.

³⁰ Richards, “Utility Model Protection,” 2010.

³¹ Industry official, interview by USITC staff, Washington, DC, July 14, 2010; Weisun, “Intellectual Property Laws in China,” 2010, 2.

³² Industry official, interview by USITC staff, Washington, DC, July 14, 2010; industry official, interview by USITC staff, Shanghai, China, September 15, 2010. See chapter 4.

through patented processes for production or business purposes; and importing or exporting patented products or products directly acquired through patented processes.³³

Trade Secrets

Trade secrets generally protect technical or business information that is unknown to the public and brings economic benefits to the owner, and for which the owner has adopted measures to maintain its confidentiality. As in the United States, trade secrets in China are not registered with an administrative agency. Instead, they are protected internally through procedures and steps taken by the owner to maintain secrecy, such as requiring employees or others to sign confidentiality agreements and limiting access to secret information through computer passwords and other preventive measures.³⁴

The violation of trade secrets is generally referred to as misappropriation. Similarly to the United States, trade secret misappropriation in China includes obtaining trade secrets from the owner by improper means such as theft, promise of gain, or coercion, or disclosing, using, or allowing others to use trade secrets obtained through these improper means or through breach of an agreement or confidentiality obligation.³⁵

Indigenous Innovation

The term indigenous innovation may be traced to China's Medium- to Long-Term Plan for the Development of Science and Technology (the MLP), released in January 2006, which calls on China to become an "innovation-oriented society" and a global leader in science and technology. The MLP introduced for the first time the term *zizhu chuangxin*. *Chuangxin* means innovation; *zizhu* has generally been translated as "indigenous," but also as "independent," "homegrown," or "self-owned."³⁶ The term *zizhu chuangxin* encompasses several policy goals of the Chinese government, including promoting the contributions of domestic companies to the Chinese economy rather than relying on foreign know-how and technology, building domestic R&D capabilities, and generally increasing the value that domestic Chinese companies contribute to the products and services they produce.

Some observers see a link between China's indigenous innovation policies and IPR infringement activity. In this view, China uses indigenous innovation policies to create an environment "that enables it to intervene in the market for IP, help its own companies to re-innovate competing IP as a substitute to American and other foreign technologies, and potentially misappropriate IP from U.S. and other foreign companies as components of its

³³ U.S. Embassy, Beijing, "Intellectual Property Rights in China: Patents," n.d. (accessed August 5, 2010). Other types of patent violations in China include patent passing off and patent counterfeiting. Commission fieldwork did not identify specific U.S. industry concerns in these areas.

³⁴ U.S. Embassy, Beijing, "Intellectual Property Rights in China: Trade Secrets and Unfair Competition," n.d. (accessed August 5, 2010).

³⁵ Trade secret misappropriation is included in China's unfair competition law, which also addresses passing off, trade dress infringement, and other types of violations. U.S. Embassy, Beijing, "Intellectual Property Rights in China: Trade Secrets and Unfair Competition," n.d. (accessed August 5, 2010).

³⁶ Cao, Suttmeier, and Simon, "China's 15-Year Science and Technology Plan," December 2006, 38, 40; foreign government official, telephone interview by USITC staff, July 9, 2010.

industrial policies and internal market regulations.”³⁷ Potential connections between indigenous innovation and IPR infringement are discussed in Chapter 5.

IPR Enforcement in China

USTR and other U.S. government agencies generally consider the IP laws in China described above to be substantially TRIPS compliant.³⁸ It is the enforcement of these laws that is considered most problematic: China’s enforcement regime “remains a major challenge” and has been described as ineffective and nondeterrent.³⁹

IPR enforcement methods in China can generally be considered to fall into four categories: administrative enforcement, criminal prosecution, civil litigation, and customs enforcement.⁴⁰ Significant structural and institutional impediments reportedly hamper the enforcement capacity of the Chinese IPR system. These impediments include a lack of coordination among national agencies and between subnational authorities and the central government; inadequate training and resources for enforcement; and corruption and local protectionism.⁴¹ Local protectionism refers to local Chinese governments’ potential conflict of interest in enforcing IPR. Where counterfeiting industries are important contributors to the economy and jobs, local governments, which control the local markets, police, and judges, may have a strong incentive to overlook and protect infringement activities. As a result, criminal penalties are infrequently applied, and administrative and civil penalties are often weak and nondeterrent.⁴²

Administrative Enforcement

IPR enforcement is most frequently pursued through administrative action in China, outside of the court system. While quick and inexpensive for the IPR holder compared to civil litigation, administrative enforcement has its limitations. Administrative enforcement is generally limited to injunctive relief, the seizure of infringing goods, and the imposition of small administrative fines; compensation for damages is unavailable,

³⁷ USITC, hearing transcript, Washington, DC, June 15, 2010, 171–72 (testimony of Jeremie Waterman, U.S. Chamber of Commerce).

³⁸ USTR, National Trade Estimate 2009, 100; USDOC, “Doing Business in China,” 2010, 105.

³⁹ *Ibid.*

⁴⁰ See, for example, Lee and Murdock, “Enforcement in China,” April 1, 2009. Other commentators categorize the enforcement mechanisms in different ways. Dimitrov (*Piracy and the State*, 2009, 12) states that “there are five different kinds of enforcement in China: judicial enforcement, three kinds of routine enforcement, and a campaign style enforcement.” The categories in this chapter have been chosen because they best highlight the similarities to and differences from U.S. practice.

⁴¹ USTR, National Trade Estimate 2009, 103; industry officials, interview with USITC staff, Washington, DC, August 2, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

⁴² Chow, “Organized Crime, Local Protectionism,” 2003, 476–77; USITC, hearing testimony, June 15–16, 2010, 36–38 (testimony of Professor Daniel Chow); USDOC, “Doing Business in China,” 2010, 106; Dimitrov, *Piracy and the State*, 2009, 156–58; industry officials, interview with USITC staff, Washington, DC, August 2, 2010; industry officials, interviews with USITC staff, Shanghai, China, September 15, 2010; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

and proceedings generally have little deterrent effect.⁴³ Although many agencies have the authority to levy administrative fines, those fines are paid to the agencies themselves and are not transferred to the IPR holder. Fines are usually low: one industry representative tracked nearly 800 IPR administrative actions between 2005 and 2009 and found that in fewer than half of administrative actions were fines awarded at all, and when awarded the fines averaged approximately \$2,500.⁴⁴

More than a dozen Chinese agencies have administrative jurisdiction over IPR protection. At least six agencies share in trademark enforcement.⁴⁵ Some focus on sector-related public health and safety, while others, such as the State Administration for Industry and Commerce, are generalists tasked with enforcement of trademark counterfeiting laws more broadly. Copyright enforcement is handled by several agencies as well, including the National Copyright Administration of China. The State Intellectual Property Office of China (SIPO) has the authority to handle patent invalidation and patent counterfeiting in administrative proceedings. The overlapping and complicated jurisdiction of the myriad agencies with an IPR function is often described as inefficient and counterproductive.⁴⁶

Another problem noted with administrative proceedings is that officials have limited investigatory powers, requiring IPR holders to conduct substantially all investigative work themselves, a process that can be expensive and difficult, especially for smaller companies.⁴⁷ Moreover, IPR holders often complain that administrative crackdowns result in only temporary closures of production or other facilities, and that penalties are not serious enough to deter repeat offenders.⁴⁸ Seized or confiscated products can return to the market, and it is difficult to seize equipment used to produce counterfeit products.⁴⁹ Infringers reportedly view administrative seizures and fines merely as a cost of doing business, and even increase production totals to account for the risk of seizure.⁵⁰

Criminal Prosecution

Certain acts of trademark counterfeiting, copyright piracy, and trade secret theft are crimes under Chinese law; patent infringement is not a criminal offense in China or the

⁴³ Lee and Murdock, “Enforcement in China,” April 1, 2009; USITC, hearing testimony, June 15–16, 2010, 39 (testimony of Professor Daniel Chow); International AntiCounterfeiting Coalition (IACC), “Submission: Special 301 Comments,” February 18, 2010, 23; industry officials, telephone interviews with USITC staff, July 13 and 14, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

⁴⁴ Industry official, email message to Commission staff, September 25, 2010.

⁴⁵ Dimitrov, *Piracy and the State*, 2009, 188.

⁴⁶ Dimitrov, *Piracy and the State*, 2009, 144–45, 186; see also USTR, *2010 Special 301 Report*, 2010, 23; IACC, “Submission: Special 301 Comments,” February 18, 2010, 7.

⁴⁷ IACC, “Submission: Special 301 Comments,” February 18, 2010, 23; USITC, hearing testimony, June 15–16, 2010, 179 (testimony of Christian Murck, president, American Chamber of Commerce in China); industry official, interview by USITC staff, Washington, DC, August 2, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

⁴⁸ IIPA, written submission to the USITC, July 9, 2010, 23; industry official, interview by USITC staff, Washington, DC, July 1, 2010; industry officials, telephone interview by USITC staff, July 9 and 13, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

⁴⁹ Sun, *Evolving and Unique Nature of Chinese IP Law*, July 2009; industry official, telephone interview by USITC staff, August 3, 2010; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

⁵⁰ USTR, *2010 Special 301 Report*, 2010, 21; USITC, hearing testimony, June 15–16, 2010, 40 (testimony of Professor Daniel Chow).

United States.⁵¹ The boundaries for criminal IPR offenses in China are narrowly drawn. For example, there is no end-user liability for criminal copyright piracy in China, which prevents some enterprises that engage in massive IPR infringement—by using illegal copies of business software, for instance—from being criminally liable for that infringement.⁵² Criminal copyright liability requires a for-profit motivation, and criminal trademark liability may require the use of identical trademarks.⁵³

The laws themselves are often vague as to the thresholds at which IPR violations become criminal, although judicial authorities purported to clarify the thresholds in 2004 and 2007.⁵⁴ According to judicial guidelines, trademark infringement can be criminal where the counterfeit goods are worth more than RMB 50,000 (\$7,497) or there are illegal gains of more than RMB 30,000 (\$4,498).⁵⁵ Copyright infringement may be criminal when these same thresholds are met and when more than 500 copies of a work are distributed. Trade secret theft may be criminal when the harm caused exceeds RMB 500,000 (\$74,969).⁵⁶ The guidelines have not led to an increase in the number of criminal prosecutions; industry representatives express concern that the guidelines are not sufficiently clear or consistently enforced, and that the value and volume thresholds at which police will actually start criminal investigations are too high.⁵⁷

Criminal IPR cases are still relatively rare in China, despite some high-profile cases that have arisen as a result of coordinated effort with the U.S. Federal Bureau of Investigation (FBI) and other international law enforcement agencies.⁵⁸ Although criminal cases theoretically can be self-initiated by the police or can be brought to court through private prosecution, criminal IP cases in China are almost always transferred from an administrative agency to the police. However, agencies reportedly are disinclined to transfer cases, in part because they may keep administrative fines but not criminal fines.⁵⁹ For example, less than 1 percent of trademark cases were transferred from administrative agencies to the criminal system each year during 2005–07.⁶⁰ Once the police receive the case, they must transfer it to the procuratorate (similar to a prosecutor), who decides

⁵¹ U.S. Embassy, Beijing, “Intellectual Property Rights in China: IPR Toolkit,” n.d. (accessed August 5, 2010).

⁵² IIPA, written submission to the USITC, July 9, 2010, 9; USTR, *2009 Report to Congress on China’s WTO Compliance*, December 2009, 85.

⁵³ USTR, *2009 Report to Congress on China’s WTO Compliance*, December 2009, 85.

⁵⁴ Supreme People’s Court and Supreme Procuratorate, “Interpretation on Several Issues,” April 5, 2006; WTO, “China—Measures Affecting IPR,” January 26, 2009.

⁵⁵ Based on the 30-day average exchange rate (October 13–November 12, 2010) reported in IMF, IMF Exchange Rate Database.

⁵⁶ Supreme People’s Court and Supreme Procuratorate, “Interpretation on Several Issues,” arts. 1, 3, 5 and 7, April 5, 2006; WTO, “China—Measures Affecting IPR,” January 26, 2009, 82–87.

⁵⁷ Dimitrov, *Piracy and the State*, 2009, 150–51; USTR, *2009 Report to Congress on China’s WTO Compliance*, December 2009, 85; USTR, *2010 Special 301 Report*, 2010, 20; IACC, “Submission: Special 301 Comments,” February 18, 2010, 7; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010. Moreover, recent guidances from Chinese law enforcement agencies reportedly have not affected actual criminal enforcement in China. SIPO, “China Lowers the Threshold,” June 12, 2010.

⁵⁸ See chapter 3 discussion of high-profile copyright and trademark enforcement cases; USITC, hearing transcript, June 16, 2010, 338–39 (testimony of Chris Israel, PCT Government Relations).

⁵⁹ Dimitrov, *Piracy and State*, 2009, 147–48, 157–58; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

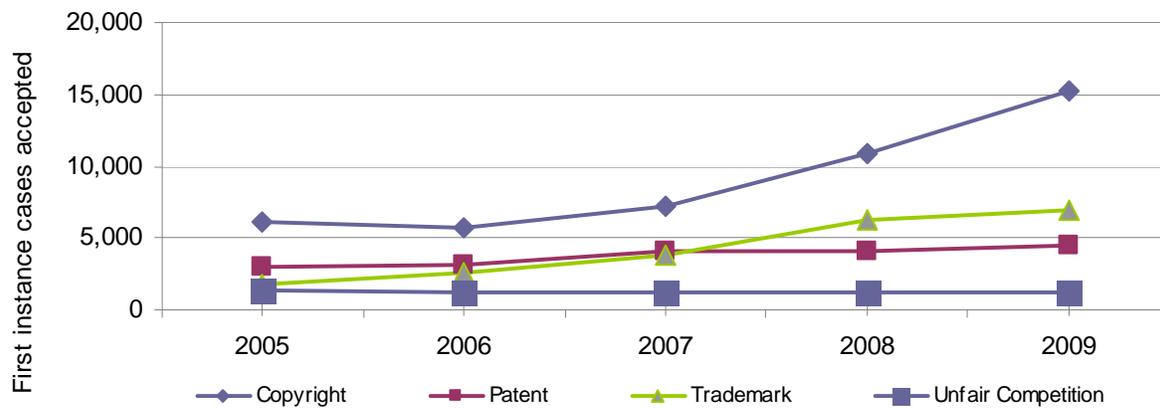
⁶⁰ SIPO, *China IPR Annual Book 2009*, 2010; SIPO, “China’s Intellectual Property Protection,” 2010.

whether to indict or arrest the suspect.⁶¹ Moreover, the willingness of the police and other state actors to enforce the criminal IP laws varies geographically, with most of the cases brought in the coastal provinces.⁶²

Civil Litigation

IPR owners, Chinese and foreign, can also pursue a civil action in China’s court system to enforce their rights. The number of civil actions brought to enforce IPR violations has grown rapidly in recent years, particularly in comparison to other civil cases in China. IPR cases increased by 128 percent during 2005–09; in comparison general civil cases increased by only 7 percent during 2005–07, the most recent data year.⁶³ In 2009, 30,626 IPR cases were initiated, of which 27,912 involved copyrights, trademarks, patents, or unfair competition claims (which include trade secrets); the remainder involved IPR contract disputes and “other” claims. Copyright cases represented approximately half of all IPR cases initiated each year and, along with trademark cases, have increased rapidly during the period. Patent and unfair competition cases (which include trade secret cases) have remained relatively unchanged (figure 1.1).

FIGURE 1.1 Civil IPR case filings in China are growing, 2005–09



Source: SIPO

Note: Based on initial actions in the year noted.

⁶¹ In his detailed study of China’s IPR enforcement, Dimitrov found that prosecutors often elect not to go forward with a criminal case. Dimitrov, *Piracy and State*, 2009, 146, 152–53; IIPA, written submission to the USTR, 2009, 92–93 (describing the small number of criminal copyright cases that are prosecuted).

⁶² Dimitrov, *Piracy and State*, 2009, 158; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

⁶³ SIPO, *China IPR Annual Book 2009*, 2010, and “China’s Intellectual Property Protection,” 2010.

China's civil IPR litigation is dominated by domestic parties; only about 4 percent of cases reportedly involve foreign parties.⁶⁴ Systemic concerns about the limitations of the Chinese system may play a role in foreigners' infrequent use of the courts. One often-mentioned concern relates to the lack of independence of the Chinese courts, which report directly to the central or local governments and where judges are elected, reappointed, paid, and removed by the legislatures.⁶⁵ Due to this connection, it is reportedly common for judges to follow instructions from the local government in particular cases.⁶⁶ There is also concern that the Communist Party exerts subtle control over the outcomes of cases deemed sensitive by the government.⁶⁷ Industry representatives further report that they are reluctant to seek relief for infringement against Chinese state-owned enterprises (SOEs), both because of the risk that the judiciary or administrative authorities, reacting to political pressure, will deny relief, and because of the fear of government retaliation.⁶⁸ Meanwhile, it is often perceived as fruitless to pursue smaller infringers, who can disappear and set up shop elsewhere or under a different name even if the IPR holder prevails.⁶⁹

Industry representatives report a number of procedural difficulties with China's IPR civil litigation system. First, there is no robust system for evidentiary discovery; litigants cannot require the other side to produce evidence in its possession.⁷⁰ The lack of discovery poses substantial problems for IPR holders.⁷¹ For example, without the ability to compel a defendant to disclose information about its production processes, method patents—while issued in China—are virtually impossible to enforce.⁷² The lack of discovery is exacerbated by the Chinese courts' lack of power to hold uncooperative defendants in contempt or, where such power exists, the refusal to exercise it.⁷³ Therefore, there is concern that Chinese defendants, particularly smaller defendants, can commit perjury and falsify records without risk of punishment. Such activities hamper

⁶⁴ Supreme People's Court, "Intellectual Property Protection," April 2010. It is unclear how the Supreme People's Court defines cases that involve foreign parties. For example, cases brought in the name of a joint venture partner or foreign-invested enterprise may not be included in this statistic. Industry official, telephone interview by USITC staff, August 30, 2010. A recent survey conducted by a firm that assists IPR holders with management and enforcement of their IPR in China showed that approximately ten percent of Chinese IP cases with published judicial decisions involved foreign firms, almost always as plaintiffs. Rouse, "CIELA: China IP Litigation Analysis," 2010.

⁶⁵ Zhang, "International Civil Litigation in China," 2002, 59, 94; Von Lewinski, *Copyright Throughout the World*, 2009, sec. 8.46(6) (noting also that "in financial respects, the local courts are highly dependent on the local governments"). See also Waterman, written testimony to the USITC, June 15, 2010.

⁶⁶ Zhang, "International Civil Litigation in China," 2002, 94.

⁶⁷ Von Lewinski, *Copyright Throughout the World*, 2009, sec. 8.46(6); Castellucci, "Rule of Law with Chinese Characteristics," 2007, 35, 50–51; industry officials, interviews by USITC staff, Washington, DC, July 15 and August 2, 2010; industry officials, telephone interviews by USITC staff, May 27, July 9, July 27, and August 3, 2010.

⁶⁸ Industry officials, telephone interviews by USITC staff, July 9, 22, 29, and August 3, 2010; Waterman, written testimony to the USITC, June 15, 2010; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010. See also Zhang, *International Civil Litigation in China*, 2002, 91.

⁶⁹ Industry officials, telephone interviews by USITC staff, July 22, 29, and August 3, 2010; Industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

⁷⁰ Sepetys and Cox, "Intellectual Property Rights Protection," 2009, 6; Duncan et al., "A Comparison between the Judicial and Administrative Routes," 2008, 535.

⁷¹ Industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

⁷² Industry official, telephone interviews by USITC staff, July 22 and 29, 2010.

⁷³ Industry officials, telephone interviews by USITC staff, July 22, 27, and 29 and August 3, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

the ability of IPR holders to prove their case and to prove damages.⁷⁴ Foreign firms also are disadvantaged by onerous Chinese requirements that all evidence obtained abroad be notarized in the country in which it was obtained and then forwarded to the Chinese embassy in the foreign country for legalization.⁷⁵ Such requirements impose significant cost and delay, and can make the presentation of documentary evidence from abroad extremely difficult.⁷⁶

Industry representatives also report that civil cases in China offer ineffective remedies. For instance, civil damages in IPR suits when awarded are low. A recent survey found median damages of approximately \$7,500 in civil actions brought by foreigners in Chinese courts from 2006–09.⁷⁷ Damages often are based on lost profits, which can be difficult to prove if Chinese counterfeits and other infringing products are sold at lower prices than the IPR holder’s products, or through less formal channels.⁷⁸ Absent proof of lost profits, Chinese law generally permits recovery of the infringer’s unjust enrichment, but the lack of discovery makes the infringer’s profits difficult to determine and obtain.⁷⁹

Even when plaintiffs prevail in civil actions, they may face obstacles. Damage awards are difficult to execute, especially when the defendant’s assets are located in a different province from the court.⁸⁰ Although China’s courts have the power to issue preliminary and permanent injunctions, there is some concern that they are increasingly hesitant to award such relief.⁸¹ Even if a court were to award injunctive relief in favor of an IPR holder, the effect of such relief is often questionable, given that Chinese courts lack contempt power to punish noncompliance with an injunction.⁸²

Notwithstanding the difficulties faced by foreign firms seeking to enforce their IPR in Chinese courts, some industry representatives are optimistic. They observe that the Chinese judicial system has improved dramatically since China’s accession to the WTO in 2001, and express confidence that the courts will further improve with more time and experience.⁸³ This optimism is most frequently expressed with regard to courts and

⁷⁴ Industry officials, telephone interviews by USITC staff, July 22, 27, and 29, and August 3, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

⁷⁵ Von Lewinski, *Copyright Throughout the World*, 2009, sec. 8.46(b) (citing Rule 11 of the Supreme People’s Court’s *Several Provisions on Evidence in Civil Proceedings*).

⁷⁶ Cutshaw, Burko, and Wagner, *Corporate Counsel’s Guide to Doing Business in China*, 2009, sec. 24.9 (3d ed.); industry officials, telephone interviews by USITC staff, July 27 and 29, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

⁷⁷ Rouse, “CIELA: China IP Litigation Analysis,” 2010. The median recovery to foreigners was higher for patent cases (approximately \$14,000), trademark cases (approximately \$12,000), and unfair competition cases (approximately \$13,000) and substantially lower for copyright cases (approximately \$4,500).

⁷⁸ Industry officials, telephone interviews by USITC staff, July 22 and 29, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

⁷⁹ Yasong and Connor, “An Overview of the Judicial Protection,” 2008, 163, 172; Duncan et al., “A Comparison Between the Judicial and Administrative Route,” 2008, 535; industry officials, telephone interviews by USITC staff, July 22 and 29, 2010.

⁸⁰ Industry officials, telephone interviews by USITC staff, July 22 and 29, 2010.

⁸¹ Industry official, telephone interviews by USITC staff, July 27 and August 3, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

⁸² Industry officials, telephone interviews by USITC staff, July 22 and 29, 2010.

⁸³ Industry officials, telephone interviews by USITC staff, July 22 and August 3, 2010; industry officials, interviews by USITC staff, Shanghai, September 15, 2010; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

judges in major cities, such as Beijing and Shanghai; it is reportedly more difficult to find experienced judges and predictable procedures in Western provinces.⁸⁴

Customs Enforcement

Unlike the United States, where CBP's IPR responsibilities focus solely on keeping out infringing imports, in China the General Administration of Customs (GAC) primarily focuses on preventing the export of infringing goods.⁸⁵ Accordingly, foreign rights holders can use customs authorities in China to prevent the export of infringing merchandise.

For copyright and trademark enforcement, an IP owner can invoke customs protection in China in two ways. First, the owner can alert the GAC to a known infringing shipment, which will then be detained if the IP owner satisfies a bonding requirement.⁸⁶ More commonly, for a nominal fee the owner may record his or her IP in a database that assists the GAC in identifying infringing goods.⁸⁷ According to several industry representatives, the GAC has been proactive in encouraging IP owners to record and to assist in the identification of authorized suppliers so as to improve customs enforcement. Indeed, the value of infringing goods seized by the GAC has increased sharply in recent years.⁸⁸ However, customs enforcement in China apparently is still viewed as a second-best solution by IP owners: infringement continues, and only a small portion of infringing goods can be intercepted.

The United States challenged aspects of China's IPR enforcement system, including criminal thresholds and certain customs measures, in a recent WTO case (box 1.1).

BOX 1.1 Resolution of WTO Challenge to Certain China IPR Measures (DS362)

In April 2007, the United States filed a complaint under the WTO dispute settlement provision challenging certain Chinese IPR protection and enforcement measures in China, alleging that the measures are inconsistent with China's obligations under the TRIPS Agreement. The United States challenged, among other things, China's lack of criminal procedures and penalties for commercial-scale counterfeiting and piracy in China; compulsory customs measures that permit seized goods to be released into the channels of commerce; and China's denial of copyright and related rights protection and enforcement to creative works of authorship, sound recordings, and performances that have not been authorized for publication or distribution within China.

In a report circulated on January 26, 2009, the dispute settlement panel concluded that certain provisions of China's copyright law and customs measures are inconsistent with the TRIPS Agreement and recommended that China bring them into conformity with its obligations under the TRIPS Agreement. The WTO Dispute Settlement Body (DSB) adopted the panel report on March 20, 2009. On June 29, 2009, China and the United States agreed that China should implement the DSB's recommendations and rulings by March 20, 2010. On March 19, 2010, China notified the DSB it had done so.

Sources: USITC, *Year in Trade 2009, 2010*; WTO, "China—Measures Affecting IPR," January 26, 2009.

⁸⁴ Industry officials, interviews by USITC staff, Shanghai, September 15, 2010.

⁸⁵ Zhang, "International Civil Litigation in China," 2002, 72, 92.

⁸⁶ Lee and Murdock, "Enforcement in China," April 1, 2009.

⁸⁷ Dimitrov, *Piracy and the State*, 2009, 78.

⁸⁸ In 2009, the GAC seized goods valued at RMB 450 million (approximately \$67 million), a 350 percent increase over the value of 2005 seizures. SIPO, *China IPR Annual Book 2009, 2010*; SIPO, "China's Intellectual Property Protection," 2010.

CHAPTER 2

U.S.-China IP-Related Trade and Investment

This chapter provides context for the broader U.S.-China trade and investment relationship as it relates to IP and innovation. It also describes the three primary channels by which IP-sensitive goods and services are traded: international trade of merchandise goods (such as advanced technology products); royalty and license fees; and foreign direct investment (FDI).

The U.S.-China IP-Related Trade and Investment Relationship

The U.S.-China IP-related trade and investment relationship is globally significant due to the magnitude of global innovation that originates from the United States and China's growing capacity for both IPR infringement and innovation in its burgeoning and internationally connected manufacturing sector.

U.S. Economic Strength and the Importance of Innovation

Over the past 30 years, the United States has produced a dominant 23–30 percent of the world's gross domestic product (GDP) when measured at market exchange rates.¹ Innovation has been key to sustaining this distinction: the U.S. Commerce Department has estimated that the creation of new products and processes in the United States, through capital investment and increased efficiency, has accounted for as much as three-quarters of the United States' average annual growth since the mid-1940s.²

Data on global research and development (R&D) expenditures and patents granted support the notion that the United States is one of the world's innovation leaders. For R&D—a broad measurement of long-term investment in innovation—the United States spent more than \$407 billion in 2007.³ This was more than what was spent in either Asia or the European Union (EU), and was roughly equivalent to the combined R&D expenditures of the next four most innovative individual countries: Japan, China, Germany, and France.⁴ R&D expenditures in the United States as a share of the country's economic output have been around 2.5 percent over the past decade, higher than in comparable markets such as the EU (1.8 percent). It is also considerably higher than China's relative R&D spending, which has grown from 0.6 percent of GDP in 1996 to 1.5 percent of GDP in 2007.⁵

¹ The U.S. share of world GDP is approximately 20 percent in recent years when measured using purchasing power parity instead of market exchange rates (to account for the relative cost of goods and services), but remains higher than that of any other country. World Bank, World Development Indicators database (accessed June 1, 2010).

² Increased efficiency is often referred to as increases in total factor productivity. USDOC, "Patent Reform: Unleashing Innovation," April 2010; Aizcorbe, Moylan, and Robbins, "Toward Better Measurement of Innovation and Intangibles," January 2009.

³ USDOC, BEA, National Accounts, Satellite Account Database (accessed September 24, 2010).

⁴ National Science Board, *Science and Engineering Indicators*, 2010.

⁵ Ibid.

The United States is also an important location for the filing and grant of patents—which are broad indicators of the usefulness of inventions. In 2008, the U.S. Patent and Trademark Office (USPTO) granted approximately 20 percent (157,772) of the 777,556 patents granted worldwide, second only to Japan (176,950). China was third, with approximately 12 percent of patents granted worldwide (93,706); however, patent grants in China have been growing at a faster rate than in any other region.⁶

China’s Growing Manufacturing Capacity and IPR Infringement

China’s economy represented 7 percent of world GDP in 2008, compared to only 2 percent at the inception of its market-oriented reform process in 1978.⁷ China’s economic growth averaged 10 percent in real terms between 1981 and 2007 alone,⁸ faster than that of any other economy over the past three decades,⁹ and has been largely driven by China’s evolving role as a global manufacturer.

China as a Global Manufacturing Hub

China’s economic growth has been largely export-led, fueled mainly by its manufacturing sector. Between 1985 and 2008, China’s manufacturing exports increased from 26 percent to 93 percent of its merchandise exports,¹⁰ attributable mainly to increases in the production of goods—such as consumer electronics, computers, and appliances—that were assembled in China using imported intermediate inputs.¹¹ Since the mid-1980s, China’s abundance of lower-cost labor and tax incentives distinguished it as an attractive manufacturing source for the production and export of labor-intensive goods such as footwear, toys, and apparel.¹² Spurred by large FDI and technology inflows from foreign-invested firms in incentive zones and other conduits, China’s manufactured goods have progressively become more technically sophisticated. The processing of these manufactured goods now accounts for 40 percent of China’s total trade, and has helped bring it to the forefront of global production.¹³

China’s emergence as a global manufacturer is likely to have increased its capacity for counterfeiting, given its burgeoning, increasingly sophisticated, and internationally connected manufacturing sector operating within a business environment broadly characterized as ineffective in IP protection.¹⁴ Despite the benefits multinationals reap from producing in China, they also face an array of IPR infringement problems in their supply chain operations, including illegal transfers of product specifications and

⁶ Approximately half (49 percent) of the U.S. patents granted were to domestic residents (that is, the official residence of the first named applicant on the original patent application was a U.S. resident). By contrast, in Japan, 86 percent of patents granted were to domestic residents, and in China, 50 percent were to domestic residents. WIPO, *World Intellectual Property Indicators*, 2010.

⁷ On a purchasing power basis, China represented 11 percent of world GDP in 2008. World Bank, World Development Indicators database (accessed August 1, 2010).

⁸ Economist Intelligence Unit, *Country Profile* 2009, 25.

⁹ Bergsten et al., *China The Balance Sheet*, 2006.

¹⁰ Kianian and Yi, “China’s Emergence,” Q4 2009; World Bank, World Development Indicators database (accessed August 1, 2010).

¹¹ Amity and Freund, “An Anatomy of China’s Export Growth,” April 6, 2007.

¹² Kianian and Yi, “China’s Emergence,” Q4 2009; WTO, “Trade Policy Review: China (2010),” 2010.

¹³ WTO, “Trade Policy Review: China (2010),” World Bank, World Development Indicators Database (accessed August 1, 2010).

¹⁴ USTR, *2010 Special 301 Report*, April 2010, 19.

unauthorized overproduction of goods on “midnight shifts” (see chapter 3).¹⁵ This IPR infringement reportedly has decreased multinationals’ market shares and returns on R&D investment, both inside and outside of China.¹⁶

Multinationals with supply chain operations in China reportedly must compete against counterfeiters who are using increasingly sophisticated manufacturing capabilities, high-tech distribution channels, product differentiation (to better adapt to local preferences), and lower prices to gain domestic market share.¹⁷ Moreover, strong demand from external markets for cheaper counterfeit products has eroded multinationals’ market shares and R&D investment returns outside China.¹⁸

China’s Transition Toward Greater Innovation

Despite the rapid progress China has made integrating into the global economy, the manufacturing stage of production in which it is dominant is typically associated with a limited share of the value of the final product and, consequently, profitability, as seen in the “smiling curve” in figure 2.1.¹⁹ Upstream stages, such as R&D and product development, as well as downstream stages, which include marketing and services, are typically associated with greater profitability. Accordingly, many Chinese firms have attempted to strengthen their competitive positions by migrating to more profitable stages of production, as seen in the value chain migration section of figure 2.1.²⁰ Some multinationals have transferred certain higher-value functions to their Chinese partners, including basic R&D functions (associated with product development) and marketing and sales operations. This, however, still appears to be happening on a limited scale.²¹

China’s indigenous innovation policies (see chapter 5) are, broadly speaking, seeking the same objective of transferring more of the profitable stages of production, such as R&D, to China. However, these policies are predominantly aimed at facilitating the development of domestic Chinese firms that work independently of multinationals’ supply chain operations.

Growing Economic Engagement and the IPR Challenge

The U.S. and Chinese economies have become increasingly interdependent in recent years. During the first year of China’s economic reforms in 1978, two-way trade (exports plus imports) was \$1 billion, and China was the United States’ 32nd-largest export market and 57th-largest source of imports.²² By 2009, China was the United States’ second-largest single-country trading partner based on two-way trade, and accounted for 14.5 percent of U.S. trade with the world. The United States’ bilateral deficit with China

¹⁵ United Nations Economic and Social Commission for Asia and the Pacific, “IP Infringement in the Supply Chain in China,” July 2006.

¹⁶ A.T. Kearney, “The Counterfeiting Paradox,” n.d., 2005; Tse, et al., “Shan Zhai: A Chinese Phenomenon,” 2009; PriceWaterhouseCoopers, *Redefining Intellectual Property Value*, 2005.

¹⁷ Ibid.

¹⁸ PriceWaterhouseCoopers, *Redefining Intellectual Property Value*, 2005.

¹⁹ The “smiling curve” illustrates the concept of value-added along manufacturing supply chains, most notably in the IT-related manufacturing industry.

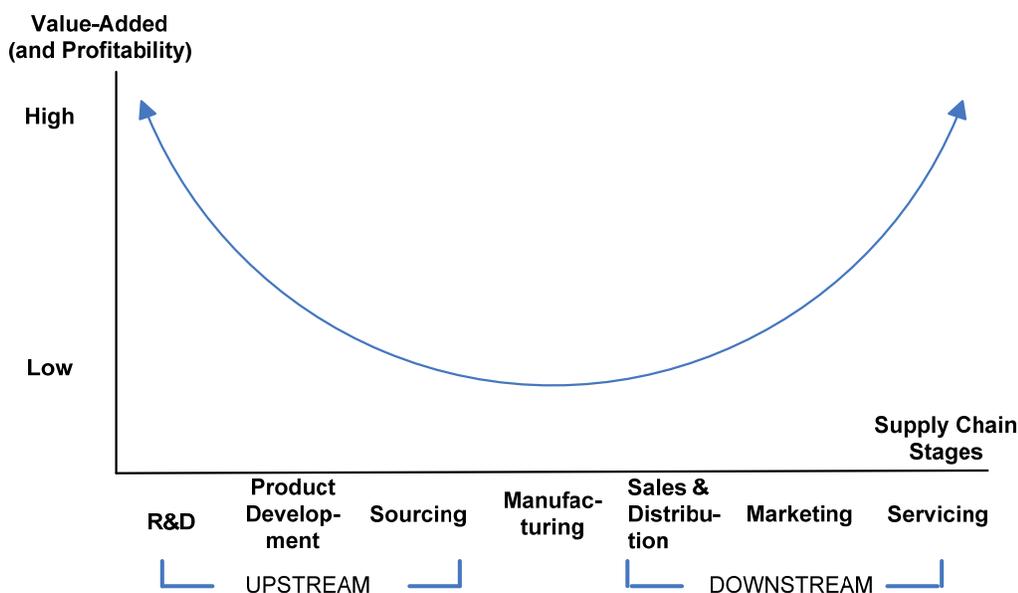
²⁰ Tse, *The China Strategy*, 2010.

²¹ Branstetter and Foley, “Facts and Fallacies about U.S. FDI in China,” August 2007.

²² CRS, “China-U.S. Trade Issues,” October 7, 2008.

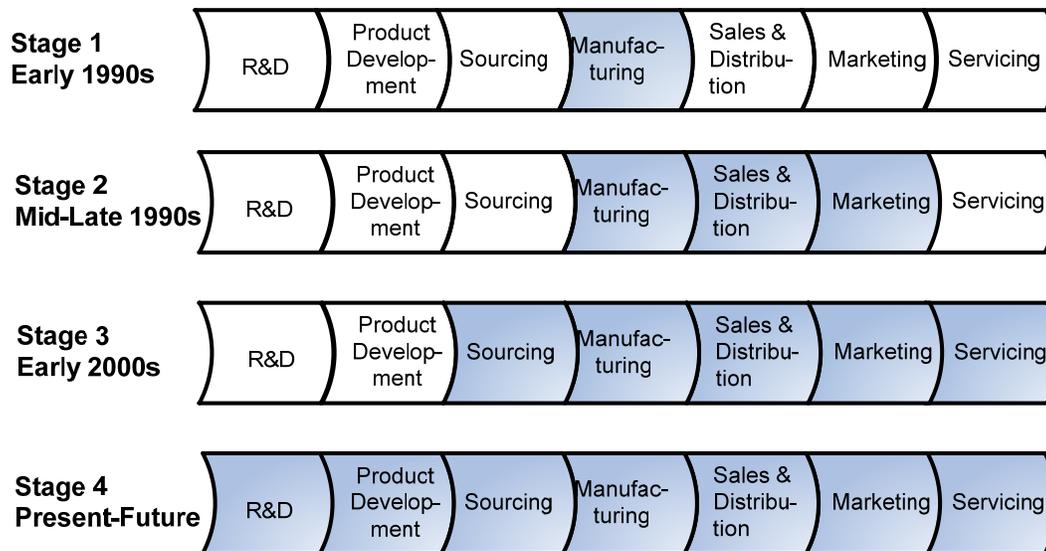
FIGURE 2.1 The “smiling curve” and China’s value chain migration through production stages

Smiling Curve: Supply Chain Stages and Profitability



Source: Research Institute of Economy, Trade, and Industry and USITC staff

Value Chain Migration (China’s participation shown in shaded area)



Source: Edward Tse, *The China Strategy*

of \$230.4 billion in 2009 was higher than the U.S. deficit with any other single-country trading partner.²³

²³ USITC, *Year in Trade: 2009, 2010*, 5–11.

Despite this increasing interdependence, IPR infringement in China remains a serious and costly problem for many U.S. firms. Weak IPR enforcement in China is estimated to have significant costs for the U.S. and the Chinese economies.²⁴ Ineffective IPR enforcement and the resulting infringement reportedly has led to reduced U.S. exports of IP-sensitive products and technologies and to lower profits for both U.S. firms operating in China and for U.S. firms that license IP to Chinese entities.²⁵ For example, according to USTR, high levels of counterfeiting and piracy in China, combined with ineffective enforcement, have led many U.S. firms to limit the marketing of their leading-edge products and technologies in China.²⁶ The weak IPR regime also is viewed as harming the Chinese economy by deterring IP-sensitive trade and investment as well as dampening domestic innovation. Both of these trends lower the productive potential of Chinese enterprises.²⁷

Notwithstanding the deficiencies of the Chinese IPR system, the Chinese market is more important than ever for U.S. companies, primarily because of its size and growth potential.²⁸ While global manufacturers originally considered China an export platform for goods destined for advanced industrial countries, they now also consider it as an essential market for U.S. goods, a development largely attributable to China's rapidly growing economy. Moreover, both USTR and private sector representatives report that China's IP institutions are generally getting stronger, albeit slowly and with much room for improvement.²⁹

U.S.-China IP-Related Flows

There are three primary channels by which IP-sensitive goods and services flow between the United States and China—international trade, royalty and license fee flows, and FDI.³⁰ The following discussion focuses on certain metrics that are available to measure these flows and, potentially, provide insights into the bilateral IP-sensitive trade and investment relationship.

Challenges to Defining IP-Sensitive Products

U.S.-China bilateral trade in IP-sensitive goods is difficult to measure. First, it is challenging to detail the scope of IP-sensitive goods and services. A broad range of products and services could be considered IP-sensitive; such goods range from technology-intensive products, such as computers and semiconductors, to the creative arts (e.g., books and films) and branded products (e.g., apparel and footwear). IP-sensitive services include such intangible assets as the design of manufacturing processes. Moreover, it may be difficult to assess the role of IP in the production of goods and

²⁴ USITC, hearing transcript, June 15, 2010, 8, 18 (testimonies of Lee Branstetter, Carnegie Mellon University and Fritz Foley, Harvard Business School).

²⁵ USITC, hearing transcript, June 15, 2010, 9–10 (testimony of Lee Branstetter, Carnegie Mellon University).

²⁶ USTR, *National Trade Estimate* 2009, 75.

²⁷ USITC, hearing transcript, June 15, 2010, 9–10 (testimony of Lee Branstetter, Carnegie Mellon University); Hassan, Yaqub, and Diepeveen, *Intellectual Property and Developing Countries*, 2010, 18.

²⁸ Industry officials, interviews and telephone interviews by USITC staff, June–July 2010.

²⁹ USTR, *National Trade Estimate* 2009, 100; USITC, hearing transcript, June 15, 2010, 9–10, 20 (testimonies of Lee Branstetter, Carnegie Mellon University, and Fritz Foley, Harvard Business School); industry officials, interviews and telephone interviews by USITC staff, July 2010.

³⁰ Maskus, *Intellectual Property Rights*, 2000, 73–83; USITC, hearing transcript, June 15, 2010, 18 (testimony of Fritz Foley, Harvard Business School).

services. Certain observers comment that nearly all internationally traded U.S. products and services are IP-dependent.³¹

Scholarly practices in this regard vary. Testimony at the June 2010 USITC hearing revealed that some academic researchers identify IP-sensitive sectors by their higher utilization rate of formal IP instruments such as patents and copyrights, compared to non-IP-sensitive products.³² Other studies have identified IP-sensitive sectors as technology-intensive industries characterized by high levels of R&D, worker productivity, and innovation.³³ Still other approaches focus on patent-, copyright-, and trade secret-intensive sectors; however, trademarked goods, which are subject to high levels of IPR infringement in China, are not ordinarily captured by these studies.

Table 2.1 provides examples of potential IP-sensitive sectors and products, based on information provided by U.S. industry representatives and researchers. Generally, IP-sensitive products can be categorized by type of IP protection (e.g., patents, copyrights, and trademarks).³⁴ However, identifying products and sectors by the principal type of IP instrument used can be problematic because there can be considerable overlap of IP instruments for particular products and sectors; many products rely on all types of IP.³⁵

Merchandise Goods

Merchandise goods that are IP-sensitive may be characterized by advanced technological content, rapidly evolving technology, and/or significant quality differentiation.³⁶ These products cover a broad range of sectors, including high-tech patented goods, such as pharmaceuticals and semiconductors; trademarked products, such as alcoholic beverages and footwear; copyrighted materials, such as books and sound recordings; and products that are trade secret-intensive, such as food products using proprietary recipes.³⁷

Advanced Technology Products

One possible proxy for defining IP-sensitive high-tech products is the classification system used by the U.S. Census Bureau (Census) for advanced technology products (ATPs). Census developed the ATP classification system to monitor trade in products

³¹ USITC, hearing transcript, June 15, 2010, 61–63 (testimony of Bruce Lehman, International Intellectual Property Institute).

³² USITC, hearing transcript, June 15, 2010, 63 (testimony of Lee Branstetter, Carnegie Mellon University); Siwek, “Engines of Growth,” 2005, 5. Sectors include digital industries (software, computer and electronics; motion picture and sound recordings) as well as other patent-dependent industries (such as aerospace, automotive, and pharmaceuticals) and certain industries that support the transportation of these goods.

³³ In a study by NDP Consulting, IP-sensitive sectors are identified by a number of criteria: having a larger proportion of highly skilled labor paid higher-than-average wages; producing highly value-added products; investing to a greater degree in R&D and capital formation; and account for a greater share of exports than non IP-sensitive sectors. Pham, “The Impact of Innovation,” April 2010, 3–6.

³⁴ For example, pharmaceutical and biotechnology products are highly patent-intensive; printed material and sound recordings are copyright-intensive; and food, beverages, apparel, and footwear are trademark-intensive.

³⁵ For example, computer software is both patent- and copyright-intensive. Moreover, certain trademark-intensive sectors, such as cigarettes, are also highly patent- and trade secret-intensive (cigarette filters and other materials used in the production of cigarettes are patent-intensive, while tobacco blending and flavoring methods are trade secret-intensive).

³⁶ Maskus, *Intellectual Property Rights*, 2000, 73.

³⁷ *Ibid.*, 78.

TABLE 2.1 Examples of potential IP-sensitive sectors and products

Aerospace product and parts manufacturing
Apparel manufacturing
Breweries, wineries, and distilleries
Computer and electronic product manufacturing
Computer systems design and related services
Electrical equipment, appliance, and component manufacturing
Footwear manufacturing and other leather and allied products
Game, toy, and children's vehicle manufacturing
Internet publishing and broadcasting and web search portals
Jewelry and silverware manufacturing
Machinery manufacturing
Medical equipment and supplies manufacturing
Motion picture and video industries
Motor vehicle equipment manufacturing
Newspaper, periodical, book, and directory publishing
Chemical manufacturing
Pesticide, fertilizer, and other agricultural chemical manufacturing
Pharmaceutical and medicine manufacturing
Research and development
Semiconductor and other electronic component manufacturing
Software publishing
Sound recording industries
Television broadcasting
Tobacco manufacturing
Watch, clock, and part manufacturing

Source: Compiled by USITC staff from industry and academic sources.

Note: Sectors and products correspond to NAICS classifications.

that employ new or leading-edge technologies. The system categorizes products into 10 technology sectors: biotechnology, life science technologies, optoelectronics, information and communications, electronics, flexible manufacturing, advanced materials, aerospace, weapons, and nuclear technology.³⁸ Because ATP categories include only certain products with new or leading-edge technologies (product definitions are subject to regular updates), the classification does not capture the broader scope of technology-intensive goods and sectors that are IP-sensitive but do not have leading-edge technologies. As a result, ATP products are primarily patent-and trade secret-intensive; they do not cover most IP-sensitive trademarked and copyrighted goods.

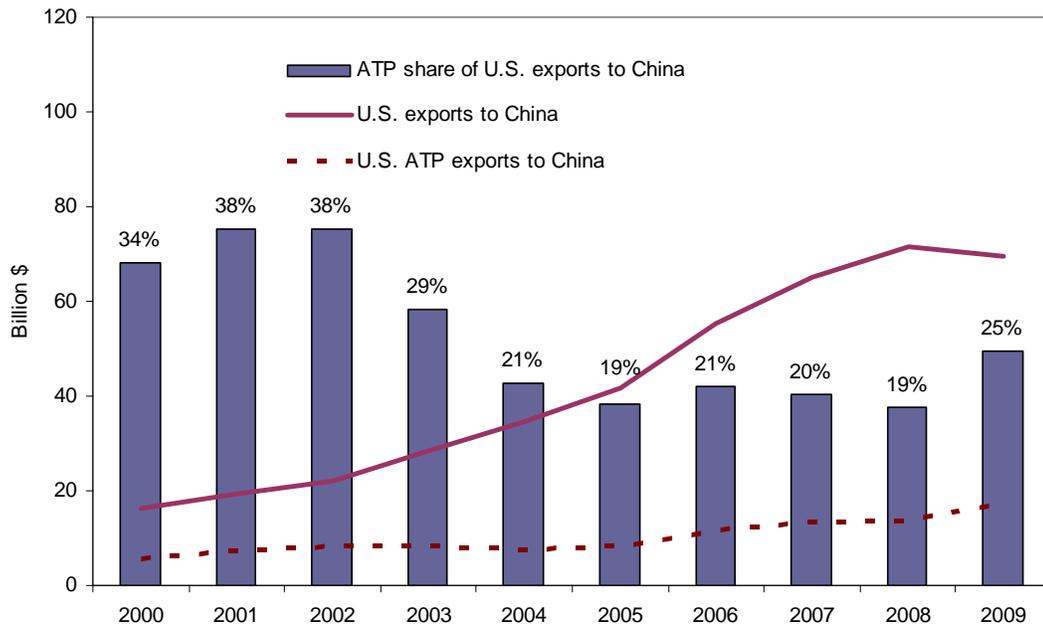
U.S. exports of ATP products to China more than doubled during 2000–09, to \$17 billion (figure 2.2). Three sectors accounted for over 80 percent of such exports in 2009: aerospace (31 percent), primarily aircraft and parts; electronics (31 percent), primarily semiconductors; and information and communications equipment (21 percent). Except for the aerospace sector, the bulk of U.S. ATP exports were intermediate goods or components that Chinese manufacturers assembled into finished products. U.S.-China bilateral trade in these sectors reflects a global manufacturing trend whereby different countries, such as the United States and China, specialize in various segments of global supply chains.³⁹

ATP products' share of total U.S. exports to China has been declining. The share was 25 percent in 2009, down from levels approaching 40 percent at the beginning of the decade. This drop may reflect a shift by China to import from other suppliers, including

³⁸ For a description of the ATP sectors, see the U.S. Census Bureau, <http://www.census.gov/foreign-trade/reference/glossary/a/atp.html>. July, 2010.

³⁹ Hammer, Koopman, and Martinez, "U.S. Exports of ATP to China," 2009.

FIGURE 2.2 U.S. ATP exports to China, 2000–2009



Source: World Trade Atlas.

other Asian countries. It may also be the result, in part, of China’s growing domestic manufacturing capacity for inputs and assembly components. The concerted effort by the Chinese government to develop value-added production domestically has led U.S. firms to increasingly set up manufacturing facilities in China to serve the Chinese market, rather than exporting to China from the United States.

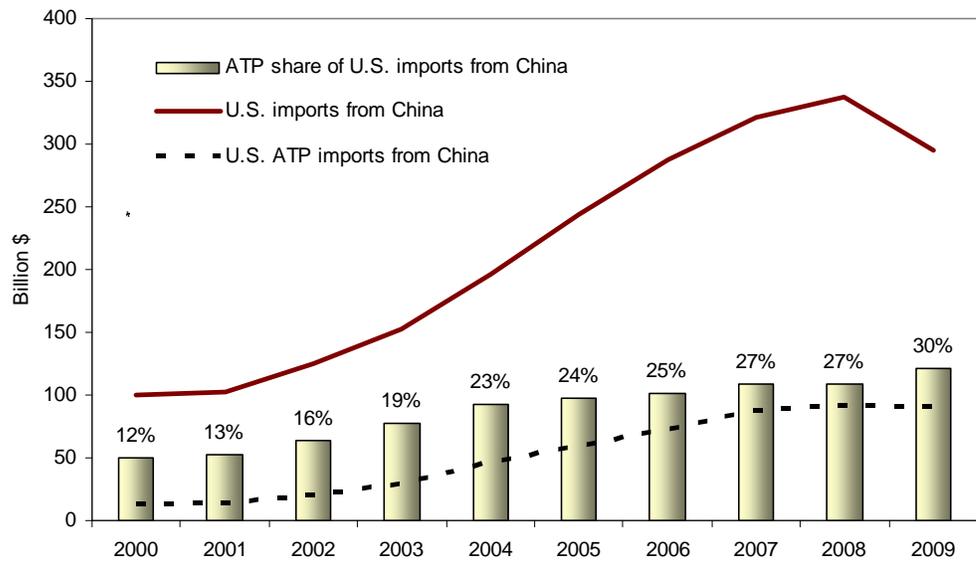
The value of U.S. ATP imports from China increased rapidly during the decade, rising to over \$90 billion in 2009, up from just over \$12 billion in 2000 (figure 2.3). ATP imports’ share of total imports from China also increased steadily during the period, rising to roughly one-third of total U.S. imports from China in 2009, compared with 12 percent in 2000. The rapid acceleration in the value and share of ATP imports over the period was concentrated in the information and communications sector, which accounted for nearly 90 percent of ATP imports.⁴⁰ These products include IP-sensitive goods, primarily consumer electronics products, such as computers and equipment, telephones, cameras, and televisions (figure 2.4). Nearly one-half of such imports—\$37 billion by value or 46 percent—were categorized in just two product codes, computers and cellular phones.

In sum, a substantial and increasing share of U.S. imports from China are high-tech, IP-sensitive products, illustrating the increasingly important role IP plays in the expanding U.S.-China bilateral relationship. Foreign-invested enterprises (FIEs)⁴¹ reportedly accounted for most of the surge in China’s ATP exports in recent years, as the Chinese government provided tax and other incentives (e.g., the establishment of high-tech industrial development zones focused on exports) to encourage foreign investment.

⁴⁰ For additional analysis of trends in U.S. ATP imports, see Hammer, Koopman, and Martinez, “Chinese Exports of ATP to the United States,” 2009.

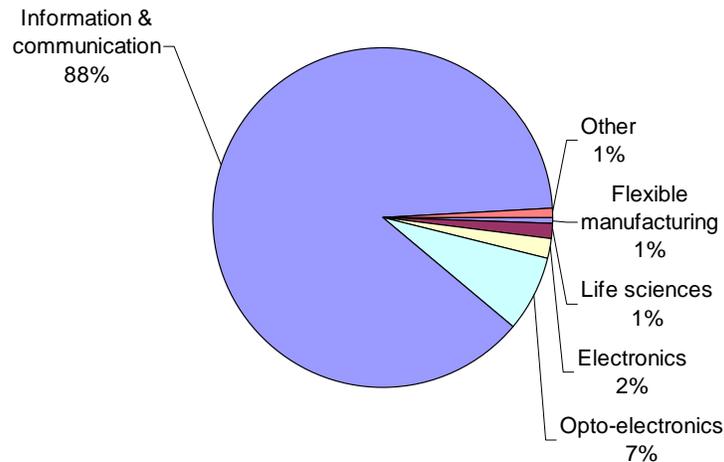
⁴¹ An affiliate of a foreign company operating in China.

FIGURE 2.3 U.S. ATP imports from China, 2000–2009



Source: World Trade Atlas.

FIGURE 2.4 U.S. ATP imports from China, 2009 (\$89.7 billion)



Source: World Trade Atlas.

Trademarked and Copyrighted Goods

While not necessarily high-tech, trademarked and copyrighted goods account for a large share of IP-sensitive products that are subject to substantial infringement in China. However, while proxies exist for high-tech IP-sensitive goods that are typically protected by patents and trade secrets, such as the ATP categories, it is more difficult to categorize

the broad spectrum of these trademark- and copyright-protected products.⁴² U.S. Customs and Border Protection (CBP) data on seizures of IPR-infringing goods from China provide some indication of the types of IP-sensitive goods that are counterfeited (trademark infringing) and pirated (copyright infringing), although most CBP seizures are for trademark infringement.⁴³

According to CBP, China was the source of 79 percent of the counterfeit and pirated goods seized at the U.S. border in 2009. Hong Kong accounted for an additional 10 percent.⁴⁴ Footwear and apparel accounted for most of these seized products. Other categories of products seized were consumer electronics, computers/hardware, jewelry, pharmaceuticals, and media products (table 2.2).

TABLE 2.2 U.S. border seizures of counterfeit and pirated goods from China, FY 2009

Commodity	Domestic value (million \$)	% of total
Footwear	98.0	48
Handbags/wallets/backpacks	19.6	10
Consumer electronics	18.5	9
Wearing apparel	17.9	9
Computers/hardware	8.8	4
Jewelry	7.3	4
Pharmaceuticals	6.7	3
Media	5.5	3
Watches/parts	4.9	2
Toys/electronics games	4.5	2
All other commodities	13.1	6
Total	204.7	100

Source: U.S. Customs and Border Protection.

CBP seizure data, however, offer only a partial picture of traded IP-sensitive goods and IPR infringement activities in China. In 2009, the total value of seized goods from China was only \$205 million.⁴⁵ A problem with extrapolating the scale and nature of counterfeiting and piracy from CBP seizure data is that a substantial share of infringement involves products that are not easily identifiable as counterfeit through border inspections, and therefore are seldom intercepted by CBP. Furthermore, CBP focuses its enforcement efforts on IP recorded in its database and only a small fraction of active trademarks and copyrights are recorded with CBP.⁴⁶ Thus, CBP is more likely to seize counterfeit footwear with recorded trademarks than products with IP that is not recorded.⁴⁷ Resource constraints also substantially limit the number of inspections and seizures carried out by CBP.

⁴² This lack of categorization precludes presenting trade data similar to those provided for ATP products.

⁴³ Government officials, telephone interview by USITC staff, July 22, 2010.

⁴⁴ Data are for fiscal year 2009. CBP, *Intellectual Property Rights Seizure Statistics*, October 2009, 12.

⁴⁵ For example, for media products, including sound recordings and movies, the value of Customs seizures was only \$5.5 million, which does not reflect the value of media pirated in the Chinese market or the pirated media that is illegally exported from China to the United States and other global markets. Seizure statistics for other markets are discussed in chapter 3.

⁴⁶ Of an approximately 1.6 million active registered trademarks in the United States, approximately 26,000 are recorded with the CBP. Government officials, telephone interview by USITC staff, July 22, 2010; government official, email message to USITC staff, September 20, 2010.

⁴⁷ Industry official, telephone interview by USITC staff, June 27, 2010.

Moreover, CBP officers have the authority to seize products that infringe patents or misappropriate trade secrets only in very limited circumstances.⁴⁸ Thus, border seizures, while an important tool, provide very little indication of the range of products affected by patent infringement or trade secret misappropriation that are imported into the United States.

Royalties and License Fees

U.S. companies receive payments in the form of royalties and license fees from the transfer of IP to companies in China. U.S. government statistics provide data for certain categories of intangible assets for which IP owners receive compensation, including industrial processes; books, records and tapes; broadcasting services; general-use computer software;⁴⁹ and franchise fees (table 2.3).

TABLE 2.3 U.S. receipts from China and rest of world, royalties and license fees by type of intangible asset, 2004–08 (million \$)

	Industrial processes	Books, records, and tapes	Broadcasting and recording of live events	Franchise fees	Trademarks	General-use computer software	Total
China							
2008	1,080	2	21	204	292	727	2,326
2007	831	3	20	156	231	605	1,846
2006	663	2	7	114	202	528	1,516
2005	159	5	1	21	28	71	285
2004	185	3	1	17	48	61	315
Rest of world							
2008	39,050	1,551	556	4,168	12,260	31,564	89,149
2007	35,960	1,497	538	3,739	11,534	28,621	81,889
2006	31,752	1,471	418	3,156	10,181	22,127	69,105
2005	6,321	684	241	672	1,422	6,184	15,524
2004	5,472	652	200	585	1,666	4,689	13,264

Source: BEA.

Note: Data since 2006 include receipts from affiliated and unaffiliated businesses. Prior to 2006, data reflect only receipts from unaffiliated businesses.

Stronger IPR protection is generally associated with larger royalty and license fee flows, because weak IPR protection means that payment of such fees is not enforced.⁵⁰ Most of the value of U.S. receipts of royalties and license fees from China is from affiliated businesses, which accounted for about two-thirds of payments in 2008.⁵¹ In-house transfers of IP are generally less likely to result in the loss of valuable IP than arms-

⁴⁸ USITC exclusion orders issued under 19 U.S.C. § 1337 can result in the seizure of patent-infringing and trade secret-misappropriating goods. U.S. Customs, “Focused Assessment Program,” December 2007. However, comparatively few such orders are issued. The USITC’s issuance of an exclusion order will often result in voluntary compliance by the infringer, in which case CBP, as a practical matter, never becomes involved.

⁴⁹ Custom-designed software is not included in the BEA data. Government official, interview by USITC staff, August 9, 2010.

⁵⁰ Maskus, *Intellectual Property Rights*, 2000, 140–41; USITC, hearing transcript, June 15, 2010, 23 (testimony of Fritz Foley, Harvard Business School). See chapter 6.

⁵¹ USDOC, BEA, “U.S. International Services, table 4,” (accessed July 2010).

length transactions between unaffiliated firms.⁵² However, it is reported that weak IPR protection in China not only dampens IP flows to unaffiliated firms but also deters the transfer of IP and royalty flows among affiliated firms.⁵³ Weak IPR protection may lead companies to withhold IP from foreign affiliates for fear that the employees of affiliates may leave the company and take valuable IP with them.⁵⁴

According to official data, U.S. receipts from royalties and license fees from China on all categories of intangible assets expanded from \$1.5 billion to \$2.3 billion during 2006–08 (table 2.3).⁵⁵ Although U.S. receipts from China and the rest of the world followed a similar trend, expanding substantially in most asset categories, receipts from China represented a very small share of total U.S. receipts.⁵⁶ Notably, receipts from China on copyrighted materials—books, records, and tapes (\$2 million in 2008)—were essentially static during the period, compared to rapid growth in receipts from the rest of the world. This may partially reflect IPR infringement and market access problems in China for these copyrighted materials.⁵⁷

Foreign Direct Investment

U.S. companies whose products contain IP-sensitive content also channel capital, technology, and related assets through FDI.⁵⁸ Weak IPR protection in China reportedly depresses the level of U.S. FDI in China.⁵⁹ Even though the stock of U.S. investment in China has been increasing in recent years, reaching \$49 billion in 2009 (figure 2.5), U.S. FDI in China accounted for a relatively small share (1.4 percent) of the total \$3.5 trillion stock of outbound U.S. investment.⁶⁰ According to the Chinese Ministry of Commerce (MOFCOM), the United States was China's fifth-largest FDI provider in 2009, accounting for 4 percent of total FDI.⁶¹ There are no official U.S. or Chinese data on exclusively IP-sensitive FDI, but U.S. FDI in the manufacturing sector, which includes

⁵² USITC, hearing transcript, June 15, 2010, 23 (testimony of Fritz Foley, Harvard Business School).

⁵³ Branstetter, Fisman, and Foley, "Do Stronger Intellectual Property Rights Increase International Technology Transfer?" 2006, 2; USITC, hearing transcript, June 15, 2010, 22–23 (testimony of Fritz Foley, Harvard Business School).

⁵⁴ USITC, hearing transcript, June 15, 2010, 22–23 (testimony of Fritz Foley, Harvard Business School); industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

⁵⁵ As noted in table 2.3, before 2006, the BEA did not collect data on receipts from affiliated businesses, so longer-term statistical trends of this data are not discussed. According to a number of scholars, BEA data likely underreport the level of receipts of royalties and license fees paid to U.S. parent companies from foreign affiliates. Given the very large value of U.S. firms' foreign affiliate sales, "the reported flows fall far short of a full and complete accounting of all the benefits conferred on affiliates by access to the intellectual assets of the parent." This may be the result of underreporting by firms to reduce tax liability, as well as the raising of reporting thresholds by BEA for key survey instruments (much of the data collected by BEA is based on surveys). Feenstra et al. "Report on the State of Available Data," August 2010, 22–23.

⁵⁶ According to USITC hearing testimony, "these figures may seem small compared to total U.S. [receipts]; however, these fees are likely to earn high margins for U.S. firms. They also represent a valuable source of earnings for the high technology sector in the United States." USITC, hearing transcript, June 15, 2010, 21–22 (testimony of Fritz Foley, Harvard Business School).

⁵⁷ Market access restrictions by China on copyrighted materials are discussed in chapter 3.

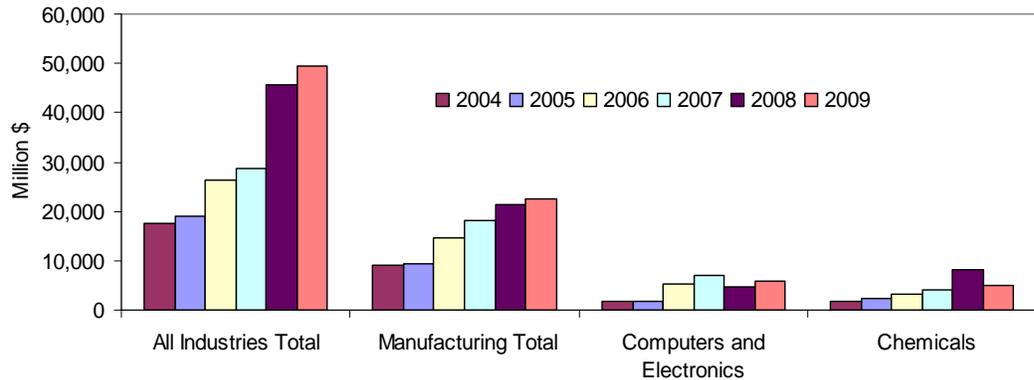
⁵⁸ Maskus, *Intellectual Property Rights*, 2000, 120.

⁵⁹ U.S. investors have complained that weak IPR enforcement in China is an investment barrier. USTR, *National Trade Estimate* 2010, 81. Generally, stronger IPR protection such as patent reforms could lead to large increases in FDI. Maskus, *Intellectual Property Rights*, 2000, 141–42. See chapter 6.

⁶⁰ China ranked as the 19th-largest recipient of U.S. outbound FDI based on FDI stock levels in 2009. USDOC, BEA, International Economic Accounts: "Operations of Multinationals Abroad; U.S. Direct Investment Abroad."

⁶¹ Excluding Hong Kong, Taiwan was the leading supplier of FDI based on value, followed by Japan and Singapore. MOFCOM, "China's Absorption of FDI," (August 2010).

FIGURE 2.5 China: U.S. direct investment stocks, selected sectors and total, historical–cost basis, 2004–09



Source: BEA.

IP-sensitive industries such as computers and electronics, accounted for about one-half of total U.S. FDI in China. This FDI was also relatively small (\$23 billion in 2009), accounting for just 4 percent of total U.S. manufacturing sector FDI (\$541 billion).⁶² U.S. computer and electronic products FDI in China was \$5.7 billion in 2009, which represented 9 percent of total U.S. FDI in the sector.

U.S. FDI enters China by two primary channels, either through the establishment of new operational facilities (greenfield FDI) or through mergers and acquisitions (M&A).⁶³ Greenfield FDI is estimated to have been the largest component of U.S. FDI in China during the last five years.⁶⁴ Among a group of IP-sensitive sectors for which data were available,⁶⁵ most greenfield FDI projects during 2006–10 were directed towards setting up manufacturing facilities (57 percent), while R&D (33 percent) accounted for most of the remainder.⁶⁶ Reported examples of recent FDI projects in IP-sensitive sectors include a semiconductor manufacturing facility launched by Intel (estimated value of \$2.5 billion) in 2007, and reported projects by Microsoft, Oracle, and AT&T during 2006–10.⁶⁷ Reported examples of R&D FDI projects are Pfizer’s estimated \$155 million biotechnology R&D center in 2010 and Eli Lilly’s estimated \$100 million investment in a pharmaceuticals R&D facility in 2007.⁶⁸

⁶² China ranked as the ninth-largest recipient of U.S. manufacturing FDI. USDOC, BEA, “International Economic Accounts: Operations of Multinationals Abroad; U.S. Direct Investment Abroad.”

⁶³ Most U.S. FDI is directed to the more economically developed coastal provinces of China, including Guangdong and Shandong, as well as the municipalities of Shanghai and Beijing. Financial Times Ltd, fDi Markets database. See chapter 5 for more information on indigenous innovation and FDI.

⁶⁴ There are no official U.S. data categorizing U.S. FDI into China by channel, but comparing private-sector greenfield projects with M&A FDI data from commercial databases suggests that greenfield FDI represents the majority of U.S. FDI in China. Financial Times Ltd, fDi Markets database; Bureau Van Dijk, Zephyr M&A database, July 2010.

⁶⁵ These IP-sensitive sectors include aerospace (primarily aircraft parts); automotive components; biotechnology; chemicals; computers, semiconductors, software, and information technology; electronics; industrial machinery; medical devices; pharmaceuticals; and plastics. Financial Times Ltd, fDi Markets database.

⁶⁶ R&D includes design, development, and testing facilities. Other greenfield FDI categorized by business activity included headquarters, internet infrastructure, and electricity infrastructure. Financial Times Ltd, fDi Markets database.

⁶⁷ Financial Times Ltd, fDi Markets database. July 2010. Note: the original version of this report also cited a semiconductor manufacturing investment by IBM. The Commission has since learned that the information was inaccurate. Industry official, email message to USITC staff, December 15, 2010.

⁶⁸ Financial Times Ltd, fDi Markets database.

U.S. M&A activity in China appears to be smaller than greenfield FDI in terms of the number and value of ventures. In most cases, U.S. M&A activity resulted in the acquisition of majority stakes by U.S. firms, including many acquisitions resulting in 100 percent U.S. ownership.⁶⁹ U.S. M&A activity in China spanned a variety of IP-sensitive sectors, including computers and semiconductor manufacturing, chemicals, pharmaceuticals, and plastics during 2006–10.⁷⁰

As noted above, a significant share of U.S. FDI in China has been directed toward R&D. Table 2.4 shows selected R&D expenditures by U.S. affiliates in China. Although total R&D expenditures by U.S. affiliates nearly doubled to \$1.5 billion from 2004 to 2008 (the latest year for which data are available), these expenditures were relatively small compared to total U.S. global R&D expenditures (\$37 billion in 2008).⁷¹ Reportedly, high levels of IPR infringement are a contributing factor to relatively low levels of U.S. affiliate R&D expenditures in China.⁷²

TABLE 2.4 China: Research and development expenditures by U.S. affiliates (million \$)

	2004	2005	2006	2007	2008
All industries total	575	668	759	1,141	1,517
Manufacturing total	539	574	590	922	1,180
Computers and electronics	466	(^a)	453	752	965

Source: BEA.

^aSuppressed to avoid disclosure of data of individual companies.

Manufacturing sectors accounted for the highest level of U.S. affiliate’s R&D expenditures in China—\$1.2 billion in 2008—consistent with the focus on manufacturing facilities of most U.S. investors.⁷³ China thus ranked only seventh in U.S. foreign affiliate R&D in manufacturing centers, placing below countries with relatively stronger IPR protection, such as the United Kingdom, Germany, and Japan.⁷⁴ Most R&D in the manufacturing sector was directed towards the IP-intensive computer and electronic products sectors.

Despite concerns about IPR infringement and indigenous innovation policies in China (discussed in chapters 3-5), U.S. industry representatives have stated that China is a critical growth market for U.S. exports and FDI. According to these sources, if U.S. firms were to refrain from operating in China, their global competitors would fill the void, leading to substantial revenue losses for U.S. companies.⁷⁵

⁶⁹ Bureau Van Dijk, Zephyr M&A database. July 2010.

⁷⁰ Ibid.

⁷¹ R&D expenditures outside the United States. USDOC, BEA, International Economic Accounts: “Operations of Multinationals Abroad; Financial and Operating Data.”

⁷² Branstetter, Fisman, and Foley, “Do Stronger Intellectual Property Rights Increase International Technology Transfer?” 2006, 2; Branstetter and Foley, “Facts and Fallacies about U.S. FDI in China,” October 2007, 16–18.

⁷³ Manufacturing sectors include food, chemicals, primary and fabricated metals, machinery, computers and electronic products, electrical equipment, and transportation equipment. USDOC, BEA, “International Economic Accounts: Operations of Multinationals Abroad: Financial and Operating Data.”

⁷⁴ USDOC, BEA, International Economic Accounts: “Operations of Multinationals Abroad; Financial and Operating Data.”

⁷⁵ USITC, hearing transcript, June 15, 2010, 251–53 (testimony of Christian Murck, American Chamber of Commerce in China; Shaun Donnelly, National Association of Manufacturers; Jeremie Waterman, U.S. Chamber of Commerce); industry officials, interviews by USITC staff, May 12, 2010, June 2, 2010, July 2, 7, 15, and 22, 2010.

CHAPTER 3

Copyright Piracy and Trademark Counterfeiting in China

The costs—and risks—of developing new products that embody copyrights and trademarks are often high: a new software operating system, a major motion picture, athletic shoes, and the latest consumer electronics can cost millions of dollars to create and develop. However, the costs of reproducing imitations of copyrighted and trademark-protected goods are generally very low. The challenges reported by U.S. firms in dealing with copyright piracy and trademark counterfeiting in China resemble each other in the wide array of industries affected, the geographic concentrations of infringing activities and groups involved, the methods used, and the problems characteristic of administrative and judicial enforcement. Copyright piracy is discussed first in this chapter, followed by trademark counterfeiting.

Copyright Piracy in China

Creative industries contribute significantly to the U.S. economy, and their products account for a significant share of U.S. exports. By one estimate, in 2007, U.S. core copyright industries added \$889 billion in value to the economy (equal to 6.4 percent of U.S. gross domestic product (GDP)) and generated \$126 billion in exports.¹ Copyrights protect products of these industries from unauthorized reproduction, thereby enabling U.S. companies to generate revenue from the sale of creative works.²

Over the past decade, technologies that facilitate the distribution, reproduction, and consumption of creative works, such as the Internet and MP3 players, have become widely available in China. In the absence of well-established domestic creative industries or strong institutional copyright enforcement (and in the presence of high demand for foreign content), copyrights held by U.S. companies have been infringed or pirated at high rates in China.³ U.S. industry representatives state that copyright enforcement by Chinese authorities is not sufficient to deter infringers.⁴

China's economy is growing rapidly, a factor that could both promote and deter copyright infringement. For the past decade, China has been regarded by governments and firms as a major global supplier of pirated goods (based on customs seizures data and other information sources).⁵ However, the increased purchasing power of China's consumers is

¹ Siwek, "Copyright Industries in the U.S. Economy," 2009, 3–7.

² USITC, hearing transcript, June 15, 2010, 196 (testimony of Robert Holleyman, BSA); USITC, hearing transcript, June 16, 2010, 346 (testimony of Michael Schlesinger, IIPA).

³ Montgomery and Potts, "Does Weaker Copyright Mean Stronger Creative Industries?" 2008, 253.

⁴ Industry officials, interviews by USITC staff, Washington, DC, July 1–16, 2010; USITC, hearing transcript, June 15, 2010, 8 (testimony of Lee Branstetter, Carnegie Mellon University); USITC, hearing transcript, June 16, 2010, 338 (testimony of Chris Israel, PCT Government Relations). As an example of minor penalties for copyright piracy, one music industry official reports that damages awarded by civil courts to copyright holders against infringing online music providers are typically around \$140 per infringed song. Industry official, interview by USITC staff, Hong Kong, September 21, 2010. By broad comparison, statutory damages in the U.S. range from \$750 to \$30,000 per infringed work. 17 USC Sec. 504(c).

⁵ OECD, "The Economic Impact of Counterfeiting and Piracy," 2008, 79.

making it an important global market for both legitimate and pirated copyrighted goods. For example, China is now the world's second-largest market for personal computers (PCs), while its market for licensed PC software is the seventh-largest in the world (worth an estimated \$2 billion in 2009).⁶ This suggests both that software consumption in China is high in absolute terms, and that a significant portion of this consumption is met through piracy. However, while the overall size of China's software market is increasing, the share of pirated software within that market may be lessening slightly: rising levels of per capita wealth are also associated with lower software piracy rates, as consumers are more able to afford licensed software and domestic innovators are more likely to demand strong IP protections.⁷ The Business Software Alliance (BSA) estimates that the PC software piracy rate in China decreased from 86 percent to 79 percent from 2005 to 2009,⁸ while China's per capita gross national income (GNI) increased from \$1,740 to \$3,620.⁹ According to BSA figures, a software piracy rate of 79 percent is average for lower-middle-income countries (such as China), but is high in absolute terms, as rates in countries above this income category are as low as 20 percent (United States).¹⁰ In addition, the size of China's software market and the speed with which it is growing heighten the impact of piracy there.

This chapter describes copyright piracy in China, including the industries affected, the mechanisms by which piracy occurs, and the groups involved in distributing infringing materials. It also discusses recent developments in copyright enforcement in China and describes the market access restrictions that contribute to demand for pirated materials.¹¹

Industries Affected by Piracy

The industries most affected by copyright infringement globally are movies, music, business software, entertainment software, and publishing. These core copyright industries¹² produce both physical and digital goods, and both forms are subject to infringement in China. Physical piracy involves the unauthorized transfer of copyrighted materials through the use of media such as CDs, DVDs, hard drives, or flash memory drives. Unauthorized copies of written materials may also be printed on paper. The global scale of physical infringement is suggested by the 79 million individual CDs, DVDs, and cassettes detained for suspected copyright violation by EU customs authorities in 2008, 68 percent of which originated in China.¹³

⁶ USITC, hearing transcript, June 15, 2010, 194 (testimony of Robert Holleyman, BSA).

⁷ Shadlen et al., "The Political Economy of Intellectual Property Protection," 2005, 53. For example, one study found that a \$1,000 increase in GNI per capita is correlated with a 1.01 percentage point fall in software piracy rates; see Yang et al., "Global Software Piracy," 2009, 278.

⁸ BSA, "Seventh Annual BSA/IDC Global Software Piracy Study," May 2010, 15.

⁹ The World Bank, World Development Indicators Database.

¹⁰ BSA, "Seventh Annual BSA/IDC Global Software Piracy Study," May 2010, 15.

¹¹ Definitions of copyright and infringement under Chinese law are provided in chapter 1.

¹² Non-core copyright industries are those indirectly affected by copyright infringement, including transportation providers; manufacturers of blank CDs and DVDs, CD and DVD players, MP3 players, computers, photocopiers, and camcorders; retailers; and Internet and telecom providers. In some instances, these industries may be affected by infringement in different ways than the core copyright industries. For example, piracy is positively correlated with sales of blank optical discs; see IFPI, "Music Piracy Report," June 2001, 3.

¹³ European Commission Taxation and Customs Union, "Report On EU Customs Enforcement of Intellectual Property Rights," 2009, 22. Additionally, in fiscal year 2009, U.S. Customs and Border Protection (CBP), which quantifies seizures by estimated domestic value, seized an estimated \$11 million worth of media (including tapes and optical discs), \$5.5 million of which originated in China. CBP, "Intellectual Property Rights Seizure Statistics: Fiscal Year 2009," October 2009.

Digital products of copyright industries include software, movie, music, and text files distributed over telecommunications networks to computers, mobile phones, and other devices.¹⁴ Digital piracy refers to copyright infringement that does not involve physical media.¹⁵ The supply chain for infringing digital content may begin, for example, with the “hacking” of an entertainment software file within hours of its official release; the file is then uploaded to a file-sharing network.¹⁶ The scale of global digital infringement is difficult to calculate. However, in just one example, media measurement company BigChampagne estimated that the movie *Watchmen* was offered by peer-to-peer (P2P) users 17 million times worldwide in the first six months of 2009.¹⁷ The popular PC game *Call of Duty: Modern Warfare 2* is reported to have been shared on P2P networks 4.1 million times in 2009 (compared to about 300,000 retail sales of the game).¹⁸

The copyright industries include a substantial number of small and medium-sized enterprises (SMEs). For example, small software developers are common in both the business software and video game industries. SMEs report facing additional challenges in seeking to enforce their copyrights: they often do not have the resources to conduct investigations into potential infringement, and pursuing legal action through the court system is more cost-prohibitive for them than for larger firms.¹⁹ In addition, many smaller companies in the copyright industries distribute their products digitally. For instance, thousands of individual software developers create downloadable applications for mobile phones²⁰ and publish online games. Through digital distribution, a copyright holder may enter a market, such as China, without having any physical presence in that market. Enforcement against digital piracy can be particularly challenging due to the existence of decentralized global networks for infringing files,²¹ and these challenges are likely compounded for companies that have no physical presence in the Chinese market.

Where and How Piracy Occurs

Physical Piracy

Infringing physical media are produced and consumed throughout China. Organized, large-scale production and distribution of infringing optical discs is especially common in the southern cities of Guangzhou and Shenzhen, which have been targeted by Chinese

¹⁴ Mobile phones are an increasingly important way of consuming digital content; in 2007, an estimated 50 million mobile phone subscribers in China used their phones to access the Internet. CNNIC, “Statistical Survey Report on the Internet Development in China,” January 2008, 13. Additionally, 2006 revenues for ringtones and other music used on mobile phones in China reached \$703.2 million. See Yan, “Music Phone Wins But Mobile Music Loses in China,” April 2007.

¹⁵ See OECD, “Piracy of Digital Content,” 2009, 12. “Digital” can also refer to the format in which media is stored, and in this respect physical products like CDs and DVDs are “digital”; however, for purposes of this report, “digital piracy” is used to refer specifically to piracy that happens via computers, the Internet, and mobile devices.

¹⁶ Industry official, telephone interview by USITC staff, July 15, 2010.

¹⁷ Greenberg, “The Year’s Most Pirated Videos,” August 5, 2009. Lawrence, “Bursting BigChampagne’s Bubble,” May 19, 2003. However, Lawrence points out that the popularity of files uploaded does not necessarily reflect the popularity of files downloaded.

¹⁸ Plunkett, “Report: The Most Pirated Games of 2009,” December 28, 2009. The console version sold 6 million copies and was downloaded 970,000 times, reflecting the greater difficulty in pirating console games due to the need to transfer the infringing file to a game cartridge or disc; see McWhertor, “Report: Modern Warfare 2 PC U.S. Retail Sales about 170,000 in November,” December 14, 2009.

¹⁹ USITC, *Small and Medium-Sized Enterprises*, July 2010, 3–15.

²⁰ NetCoalition and CCIA, “Response to the Intellectual Property Enforcement Coordinator,” March 2010, 33.

²¹ OECD, “Piracy of Digital Content,” 2009.

authorities as major sources of infringing materials.²² For example, a 2007 seizure of 1.6 million pirated discs in Guangzhou found 30 production machines in 11 warehouses, which could produce an estimated 300,000 pirated discs per day.²³ Entertainment software industry representatives indicate that video game copiers that facilitate the transfer of video games from the Internet to a game cartridge also are widely available in Guangzhou and Shenzhen and distributed from there to retail markets and shops throughout China.²⁴ Similarly, an industry report indicates that Guangzhou and Shenzhen, along with the northern Chinese city of Jinan, are major distribution hubs for video game consoles, the sale of which is illegal in China.²⁵ Distribution of illegal consoles leads to increased demand for infringing games, because licensed games for these consoles are not typically distributed in China.²⁶ Small-scale commercial production of pirated goods for local markets is also possible with inexpensive equipment, such as stand-alone DVD burners. The decreasing cost of this type of reproduction technology widens the production base of pirated goods and makes detection of suppliers more difficult.²⁷

Infringing copies of academic textbooks are commonly found in and around universities throughout China. In 2007, the Chinese government imposed a fine of \$12,000 on Tongji Medical College after finding thousands of copyright-violating textbooks in the college's textbook store.²⁸ Recent advances in digital scanning technology have facilitated high-quality photocopies of copyright-protected books, often indistinguishable from the originals.

Digital Piracy

Digitally infringing files (e.g., software, movie, and music files) are produced, distributed, and consumed through decentralized global networks. One industry representative estimates that a large share (perhaps 80 percent) of music piracy in China is digital, as demand for unauthorized physical copies is being displaced by the availability of pirated music online.²⁹ Similarly, the movie industry reports that the majority of its enforcement efforts in China are now focused on Web sites that distribute pirated content.³⁰

The availability of digitally infringing files is correlated with overall Internet use. In China, the number of Internet users has grown at an average annual rate of 39 percent since 2001,³¹ reaching an estimated 384 million users in December 2009.³² Broadband penetration rates are about 28.7 percent in China (compared to an average world rate of 26.6 percent and a U.S. rate of 76.3 percent),³³ with the highest penetration rates in Beijing and Shanghai (46.6 percent and 45.8 percent, respectively, in 2007).³⁴ Internet

²² USTR, *2007 Special 301 Report*, 2007, 47.

²³ Xinhua News Agency, "China Cracks Largest Ever CD, DVD Piracy Case," April 4, 2007.

²⁴ Industry official, e-mail messages to USITC staff, July 29–August 3, 2010. To assist enforcement efforts in these areas, there is now an optical disc forensics lab in Shenzhen, which helps identify the sources of infringing discs. Industry official, interview by USITC staff, July 1, 2010.

²⁵ Niko Partners, "2010 Annual Review and Five-Year Forecast Report," April 2010, 45.

²⁶ Industry official, interview by USITC staff, July 16, 2010.

²⁷ OECD, "The Economic Impact of Counterfeiting and Piracy," 2008, 273.

²⁸ AAP, "U.S., U.K. Publishers Applaud Chinese Crackdown on Textbook Piracy," January 17, 2007.

²⁹ Industry official, interview by USITC staff, Hong Kong, September 21, 2010.

³⁰ Industry official, telephone interview by USITC staff, October 1, 2010.

³¹ Internet World Stats, "China: Internet Usage Stats and Population Report."

³² CNNIC, "Internet Fundamental Data (by June 30, 2010)," retrieved July 10, 2010.

³³ Internet World Stats, "China: Internet Usage Stats and Population Report."

³⁴ CNNIC, "Statistical Survey Report on the Internet Development in China," January 2008, 14.

cafés are widespread in China, especially in rural areas, and it is reported that pirated versions of entertainment software are commonly pre-installed on café computers.³⁵ The Entertainment Software Association estimates that 240,000 Internet cafés in China use unlicensed or pirated copies of entertainment software.³⁶

Digital content is frequently distributed through P2P networks, “cyberlockers,” or media streaming.³⁷ P2P users typically install free software that allows computers to simultaneously download and upload content, and central Web sites provide search indices to help locate specific files on the computers of other users. P2P networks can include millions of computers distributed globally. Cyberlockers allow one user to store content on servers and then permit other users to access that content via hyperlinks. Streaming audio or video media is sent continuously in compressed form over the Internet to users who play or display the content in real time.³⁸ Examples of digital distribution methods popular in China include Xunlei and verycd (P2P); Rafile and 91files (cyberlockers); and Tudou and Youku (video streaming). In 2009, the top 10 search terms on Baidu, China’s leading search engine, included both Youku and Xunlei.³⁹ Although infringing activity is believed to predominate, these methods also have legal applications, such as distributing open source software or public domain video.⁴⁰ One movie industry representative reports that, in the past year, there has been an effort on the part of some of the larger Chinese video Web sites to move toward distributing legal content.⁴¹

Search engines such as Baidu and Sohu also play a role in facilitating digital piracy by providing “deep links,” or search results that link to third-party sites that contain infringing content; Pali Research estimated that 80 percent of all searches on Baidu in 2009 were for music files.⁴² However, the legal liability of search engines for infringing content is contested. In 2010, a Beijing court, ruling on a lawsuit filed against Baidu and Sohu by members of the International Federation of the Phonographic Industry, found that Sohu was liable for copyright infringement, while Baidu was not. Baidu, unlike Sohu, reportedly removed links to sites with infringing content after receiving notification from content owners.⁴³

Physical and digital distribution methods often overlap. Movies recorded in theaters can be transferred as digital files over the Internet and then burned onto optical discs. Web sites can be used to sell pirated physical goods such as software and video game

³⁵ Industry official, telephone interview by USITC staff, July 15, 2010.

³⁶ ESA, “IP Issues Map.”

³⁷ IIPA, written submission to the USITC, June 3, 2010, 5.

³⁸ Other digital distribution methods include File Transfer Protocols, specialized newsreader clients like Usenet, and real-time communication protocols like Internet Relay Chat.

³⁹ Fu, “Top 10 Keywords in China 2009,” December 28, 2009.

⁴⁰ It is difficult to measure the share of total digital infringement facilitated by each distribution method. The network traffic monitoring company Sandvine estimates that from 2008 to 2009 streaming traffic as a share of total global bandwidth usage increased from 12.6 percent to 26.6 percent, while P2P traffic declined from 31.6 percent to 20.4 percent. One possible reason is that P2P downloads have more risk of malware compared to media streaming. See Sandvine, “2009 Global Broadband Phenomena,” January 13, 2010.

⁴¹ Industry official, telephone interview by USITC staff, October 1, 2010.

⁴² Farley, “Questioning Baidu’s SEC Filings,” September 10, 2009.

⁴³ Chan, “PRC’s Baidu/Sohu Judgments Set Copyright Precedent,” July 29, 2010. This distinction is referenced in Article 23 of the Regulation on Protection of Right to Network Dissemination of Information, which limits the liability of search engines that link to sites with infringing content, and was the basis for the court decision.

cartridges; in 2009, Nintendo noted that infringing physical versions of its games were available through Chinese Web sites to consumers worldwide.⁴⁴

Contributors to Piracy

This section provides an overview of the ways in which four particular groups—criminal groups, business enterprises, universities, and consumers—contribute to the distribution of pirated materials in China. Each of the first three groups has a notable role in the distribution of pirated physical goods. Consumers, meanwhile, contribute to the distribution of infringing digital files through online networks. Specifically,

- Criminal groups engage in the production of high-quality infringing optical discs for export.
- Business enterprises often install more copies of software on their computers than legally permitted, in violation of their license agreement with the copyright holder.
- Universities and surrounding bookstores commonly copy and sell textbooks and other academic materials.
- Consumers increasingly distribute infringing files over P2P networks and other online services as Internet use rises in China.

This section is not intended to serve as an exhaustive list of all types of entities that reportedly contribute to piracy, but rather as a means of highlighting notable characteristics of copyright infringement in China.

Criminal Groups

Organized criminal groups in China reportedly are involved in the production of pirated products,⁴⁵ especially the commercial-scale copying of infringing optical discs. Criminal groups have the necessary resources to invest in large, centralized production facilities and the means to obtain reproducible versions of in-demand media.⁴⁶ As a result, copies produced by large-scale criminal groups may be particularly close imitations of the authentic product, incorporating features such as holograms that mimic those found on the original. When the packaging and other details on these copies so closely imitate the authentic version, it is likely to mislead even customers specifically seeking the authentic product.⁴⁷ Consequently, high-quality copies produced on a commercial scale often reach export markets.

For example, in 2008 a Chinese court convicted 11 members of a criminal organization that produced pirated versions of Microsoft Windows and Office software and assembled the discs in high-quality counterfeit packages, making the copies virtually indistinguishable from the authentic products. The investigation involved cooperation between the U.S. FBI and China's Ministry of Public Security under the code name "Operation Summer Solstice." The criminal group was able to target export markets

⁴⁴ Business Wire, "Nintendo Asks U.S. Trade Representative to Help Combat Global Video Game Piracy," February 25, 2009.

⁴⁵ Treverton et al., *Film Piracy, Organized Crime, and Terrorism*, 2009, 48.

⁴⁶ OECD, "The Economic Impact of Counterfeiting and Piracy," 2008, 271.

⁴⁷ Industry official, interview by USITC staff, July 15, 2010.

effectively, and reportedly had global sales exceeding \$2 billion. Those convicted received jail terms of about 6 years.⁴⁸

Business Enterprises

Business enterprises are a significant source of business software piracy in China due to a practice known as “underlicensing.” Underlicensing occurs when a business installs legitimate software on more computers than is legally permitted under the terms of its license from the copyright owner. Microsoft founder Bill Gates has suggested that China is unique in that even some of its largest global enterprises intentionally use underlicensed software.⁴⁹ A particular area of concern is the use of underlicensed software by China’s state-owned enterprises (SOEs), given that these enterprises comprise a significant portion of the market for business software. The business software industry reports that, while the government established a plan in 2006 to fully license the software used by SOEs, to date no mechanism has been established to ensure SOEs’ compliance with these commitments.⁵⁰ Because of the growth of the Chinese market for business software in recent years, industry groups presently identify underlicensing among enterprises as the “principal and most damaging form of infringement to the business software industry.”⁵¹ This is in contrast to the enforcement focus just five years ago, when business software companies were primarily focused on stopping the export of high-quality pirated optical discs from China.⁵²

Enforcement against enterprises often involves consultation between the rights holder and the business in order to persuade the business to purchase software licenses.⁵³ If these consultations are not effective, the copyright holder must decide whether to pursue a civil case, since enterprise end-user piracy generally is not viewed by the authorities as a crime in China.⁵⁴ Microsoft, for example, won a 2010 civil case against Dazhong Insurance Company (a company largely held by SOEs). In that case, a Shanghai court ordered Dazhong to pay \$318,000 in damages to Microsoft for its use of approximately 900 unlicensed copies of Windows and Office software.⁵⁵ Microsoft called the case, which represented the company’s first attempt to challenge underlicensed Chinese enterprises in the civil court system, its “biggest legal victory in China.”⁵⁶ Given that the business software industry considers underlicensing to be so pervasive, it is likely that such cases will continue to be a focus of its enforcement efforts in China.

Universities and Libraries

Universities, libraries, and the communities surrounding them are a key source of publishing industry piracy in China. Academic books, especially high-value textbooks, are often photocopied and sold to students.⁵⁷ Some of these copies are very close

⁴⁸ Barboza, “Chinese Court Convicts 11 in Microsoft Piracy Case,” December 31, 2008.

⁴⁹ Evans, “Global CIO: Bill Gates Blasts China over Corporate Software Piracy,” September 25, 2009 (accessed August 16, 2010).

⁵⁰ IIPA, written submission to the USITC, July 9, 2010, 10.

⁵¹ *Ibid.*, 7.

⁵² Industry official, interview by USITC staff, July 15, 2010.

⁵³ *Ibid.*

⁵⁴ IIPA, written submission to the USITC, July 9, 2010, 9. According to IIPA’s written submission, the Supreme People’s Court indicated in 2007 that distribution of protected software in itself qualifies as a crime. To date, however, enforcement authorities in China reportedly do not accept this position.

⁵⁵ Arent Fox LLP, “Two Interesting IP Victories in China.”

⁵⁶ Chao, “China Company Plans to Appeal Microsoft Decision,” April 23, 2010.

⁵⁷ IIPA, written submission to the USITC, July 9, 2010, 7.

reproductions of the original, with nearly identical covers and similar quality.⁵⁸ The shops producing these copies may be located on or near campuses (such as in the case of Tongji Medical College mentioned above); there have reportedly been instances in which production facilities are operated by the universities themselves.⁵⁹ In some cases, these copy shops are sophisticated business enterprises—reportedly, the most advanced “have stock lists of materials available, keep warehouses filled with merchandise, and use bar codes to organize inventory.”⁶⁰ The problem also extends to libraries, which may “stock copies of illegally reproduced textbooks and reference books for use by patrons.”⁶¹

Consumers

Internet-based distribution of pirated materials by consumers is a growing problem in China. Globally, digital piracy of music, movies, and video games is often driven by demand from Internet users who supply pirated materials in exchange for access to other infringing materials. For example, many P2P networks allow access only on the condition that consumers make their own files available for download by other network members.⁶² In other cases, suppliers of infringing digital content require payment for access or earn revenue from advertising.

There is little specific information on the demographics of Chinese Internet users who access pirated materials. However, recent survey data on the characteristics of China’s total base of Internet users, and the ways in which they access digital content, may be suggestive. In 2007, the China Internet Network Information Center estimated that 58 percent of Chinese Internet users were male, 32 percent were aged 18 to 24, and 75 percent lived in urban areas. Sixty-seven percent of Chinese Internet users accessed the Internet with home computers, while 34 percent used Internet cafés (some used both). Internet cafés were mostly used by young people and rural people (48 percent of rural users used Internet cafés). Once online, 87 percent of Chinese Internet users used “online music” applications, while 77 percent used “online video” applications. Seventy-one percent of total users had downloaded music in the last six months, while 22 percent had downloaded videos and an additional 44 percent had viewed videos on Web sites. Users in Beijing and Shanghai had the highest music downloading rates, and video downloading rates were highest among the highly educated.⁶³ The survey did not distinguish among these downloads based on copyright status. It is believed, however, that most such downloading is of copyrighted files.⁶⁴

Copyright Enforcement Overview

Copyright enforcement in China typically occurs through one of four different mechanisms: antipiracy campaigns, administrative enforcement, civil court cases, and

⁵⁸ Trade Lawyers Advisory Group, “The Crisis in Intellectual Property Protection,” May 2007, 56.

⁵⁹ Schroeder, statement to the House Committee on Ways and Means, Subcommittee on Trade, February 15, 2007, 2.

⁶⁰ Trade Lawyers Advisory Group, “The Crisis in Intellectual Property Protection,” May 2007, 56.

⁶¹ IIPA, written submission to the USITC, July 9, 2010, 19; see also Hull, “Publishing in China,” July 2009.

⁶² This creates unusual market dynamics; unlike other distributors of pirated materials, consumers on these networks may be motivated by social recognition instead of profit. OECD, “Piracy of Digital Content,” 2009, 25.

⁶³ CNNIC, “Statistical Survey Report on the Internet Development in China,” January 2008, 15, 17, 20, 31–32, 42, 55–56, and 79.

⁶⁴ IIPA, written submission to the USITC, July 9, 2010, 11, 13 (estimating that 99 percent of music digitally accessed was unlicensed).

criminal court cases. Table 3.1 summarizes key information about each of the four types, which are described in greater detail below.

TABLE 3.1 Summary of copyright enforcement mechanisms

Type of enforcement	Primary Chinese government agency responsible	Common requestor(s)	2009 statistics
Antipiracy campaign	Local Public Security Bureaus (at the direction of the central government)	None—enforcement is conducted at the discretion of the central government.	Approximately 57 million individual items were seized on antipiracy grounds during the campaign.
Administrative enforcement	NCAC	Domestic copyright holders.	Not available. In 2006, the most recent year for which data are available, there were over 10,000 administrative copyright cases, of which just 1.1 percent were initiated by foreign parties.
Civil courts	Civil court system	Foreign and domestic copyright holders. This is the most common type of enforcement pursued by foreign copyright holders.	15,302 new copyright cases were initiated. ^a
Criminal courts	Criminal court system	Cases may be the result of investigations by law enforcement officials or may result from administrative proceedings.	3,014 cases were closed across various forms of IP (not limited to copyright). ^b

Sources: SIPO, *China IPR Annual Book 2009*, 2010; SIPO, “China’s Intellectual Property Protection in 2009,” 2010; SIPO Web site (accessed August 6, 2010); Dimitrov, *Piracy and the State*, 2009.

^aThe total number of civil court IP cases involving a foreign party was 1,361. The proportion of these that were copyright cases is not available, although the Supreme People’s Court reports that copyright cases generally represent the largest caseload among all civil IP matters.

^bThe proportion of criminal IP cases relating specifically to copyright is not available, although most sources report that criminal copyright cases in China are relatively rare. The number in the table excludes criminal cases specifically listed as trademark counterfeiting cases. It includes all cases for which the type of IP infringement was not listed.

First, Chinese authorities may undertake large-scale raids in connection with the government’s antipiracy and anti-pornography campaign. While this campaign seeks to curb the sale of both pirated and pornographic materials, in 2009, 86 percent of the items were seized on piracy rather than pornographic grounds, according to the Chinese government.⁶⁵ These enforcement raids are mostly led by local Public Security Bureaus at the direction of the central government.⁶⁶ The campaign may be directed to coincide with major events that are likely to become venues for piracy; in early 2010, the government announced special extensions of the campaign aimed at reducing piracy in connection with the World Expo in Shanghai.⁶⁷ Enforcement actions during campaigns “usually result at most in administrative fines; criminal punishments are exceedingly rare, even

⁶⁵ SIPO Web site, http://www.sipo.gov.cn/sipo_English/ (accessed August 6, 2010).

⁶⁶ Dimitrov, *Piracy and the State*, 2009, 231; Chinese government, “China to Launch new Campaign against Piracy,” July 13, 2006.

⁶⁷ MOFCOM, “Beijing Launches Special Campaign against Piracy,” March 30, 2010.

when the relevant criminal liability thresholds have been met.”⁶⁸ As a result, these centrally directed campaigns may have limited deterrent effect.

Second, there is the system of administrative enforcement. While many agencies in China have some responsibility for copyright enforcement, primary responsibility for administrative enforcement lies with the National Copyright Administration of China (NCAC). The NCAC has local offices throughout China that handle administrative enforcement within their jurisdictions, including conducting raids and assessing fines. However, administrative enforcement from the NCAC can reportedly be difficult for copyright holders to obtain. The NCAC has stated that it is more focused on education than on enforcement⁶⁹ and has encouraged copyright holders to use the civil court system instead, on the grounds that they are understaffed.⁷⁰ In addition, research suggests that the NCAC may be “especially unwilling to provide raids when foreign companies seek its assistance.”⁷¹ Finally, the cost of administrative enforcement has been rising and is now on par with that of pursuing a civil court case in many instances.⁷²

A third venue for enforcement is the civil court system. Administrative enforcement typically offers quicker resolution than a civil court case, but due to the limitations of the administrative system described above and in chapter 1, civil court cases have become a more attractive alternative.⁷³ In particular, some foreign copyright holders report that they place less reliance on the administrative system and have instead turned to the civil courts to enforce their copyrights.⁷⁴ Copyright cases represent the largest category of IPR-related civil court cases; in 2009, the number of civil copyright cases accepted by Chinese courts rose nearly 40 percent from the prior year and was more than double the figure from 2005.⁷⁵

Fourth, there is the system of criminal enforcement. Criminal cases may result from administrative proceedings or may be investigated independently. Criminal copyright cases are rare in China, but can be effective.⁷⁶ High-profile cases involving criminal copyright prosecutions include the “Tomato Garden” case (see below) and the cases resulting from the “Operation Summer Solstice” investigation (see above), both involving piracy of Microsoft software.

Recent Trends in Copyright Enforcement

This section provides information on three recent enforcement trends driven by Chinese policymakers and courts. While U.S. industry representatives generally report that stronger, more consistent copyright enforcement is needed in China, these three trends suggest that the Chinese government is, at least in some instances, willing to adopt new

⁶⁸ Dimitrov, *Piracy and the State*, 2009, 232.

⁶⁹ *Ibid.*, 234.

⁷⁰ U.S. Department of State, U.S. Embassy, Beijing, “IPR Toolkit” (accessed August 11, 2010).

⁷¹ Dimitrov, *Piracy and the State*, 2009, 235.

⁷² *Ibid.*

⁷³ See chapter 1.

⁷⁴ Industry official, telephone interview by USITC staff, August 30, 2010. By contrast, in the movie industry copyright holders often use administrative measures to obtain temporary closure of retail shops selling pirated DVDs. Administrative procedures may allow authorities to close these shops on the basis of operating an unauthorized business. Industry official, telephone interview by USITC staff, October 1, 2010.

⁷⁵ SIPO, *China IPR Annual Book 2009*, 2010; SIPO, “China’s Intellectual Property Protection in 2009,” 2010; see also figure 1.1.

⁷⁶ Industry official, interview by USITC staff, Hong Kong, September 21, 2010.

methods to address piracy. It remains to be seen whether these recent trends are indicative of a sustained effort by Chinese officials to reduce piracy.

The Chinese government requires computers shipped to Chinese customers to come pre-loaded with a licensed operating system. This requirement took effect in 2006, and one industry representative estimates the percentage of PCs shipped with legal software increased from 20 percent to more than 40 percent by 2007.⁷⁷ However, industry representatives report two weaknesses in this measure: first, it is possible to load a computer with an inexpensive or free operating system, then replace it with a pirated copy of a higher-value operating system once the computer leaves the factory. One industry representative suggests that this may happen as often as 50 percent of the time.⁷⁸ Second, smaller, non-branded computer builders known as “white box” manufacturers are exempt from the requirement.⁷⁹ Computers from white box manufacturers capture 20 to 25 percent of the market in China.⁸⁰ Still, most sources acknowledge a modest decline in the software piracy rate in China in recent years, and some credit the operating system requirement for part of the improvement.⁸¹

There is a growing body of Chinese case law addressing Internet-based infringement. In the past few years, Chinese courts have ruled on several high-profile cases involving Internet-based piracy. In 2009, the Huqiu District People’s Court in Suzhou ruled that operators of the “Tomato Garden” Web site violated copyrights belonging to Microsoft by providing online access to pirated Windows software (the software’s authentication functions had been disabled by Tomato Garden). As a result, the illegal income of the company that provided access to Tomato Garden (Chengdu Gongruan Network Technology Co.) was seized, the company was fined \$1.23 million, and two individuals were sentenced to jail for three and a half years and fined \$147,000.⁸² This case was also significant because it involved criminal prosecution of the site’s operators rather than more common civil litigation or administrative enforcement. Also in 2009, the Graduate Management Admission Council (GMAC) won a civil court ruling in Beijing against Beijing Passion Consultancy, the operators of a Web site that provided access to copyright-protected test questions to students taking the Graduate Management Admissions Test (GMAT). The case was settled through civil court mediation and resulted in compensation of \$76,000 for GMAC.⁸³

Chinese officials have reportedly strongly enforced copyrights in cases that affect national interests, such as during the 2008 Olympic Games. By some accounts, China strongly enforced copyrights relating to online broadcasts of the Beijing Olympics. A group of organizations, including China Central Television (CCTV), NBC, and the International Olympic Committee, used digital “fingerprinting” technology from U.S.-based Vobile Inc. to automatically scan Web sites in search of unofficial videos.⁸⁴ On the enforcement side, a rapid response mechanism established jointly by the NCAC, Ministry of Public Security, and Ministry of Industry and Information Technology reportedly shut down or blocked 84 sites and ordered another 33 sites to stop infringing on broadcast

⁷⁷ Kirkpatrick, “How Microsoft Conquered China,” July 17, 2007.

⁷⁸ Industry official, interview by USITC staff, July 15, 2010.

⁷⁹ IIPA, written submission to the USITC, July 9, 2010, 10.

⁸⁰ Ibid.

⁸¹ BSA, “Seventh Annual BSA/IDC Global Software Piracy Study,” May 2010, 15; industry official, interview by USITC staff, July 1, 2010.

⁸² Foley and Lardner LLP, “2009–2010 Top Ten Chinese IP Cases,” 2010.

⁸³ Damast, “Crackdown on China GMAT Cheating,” December 3, 2009.

⁸⁴ Burrows, “Why China Is Finally Tackling Video Piracy,” June 9, 2008.

copyrights.⁸⁵ Notably, NBC had made coverage of the Olympic Games globally available through legal outlets, including broadcast and cable television, video on demand, mobile phones, and live event coverage at NBCOlympics.com.⁸⁶ The widespread availability of legal broadcasts of the games likely reduced demand for unauthorized videos. Still, the Chinese government's success in protecting IP relating to the Olympic Games has led some observers to remark that "China, if it wishes to . . . has the capacity to wipe out piracy or counterfeiting of basically any product that it decides to."⁸⁷ Others have noted, however, that the success of this specific effort over a limited time period does not guarantee that replicating this success on a broader scale would be feasible or accepted as a top priority by Chinese authorities.⁸⁸

The Impact of Market Access Restrictions

Market access restrictions and copyright infringement are closely linked because the absence of a legitimate market creates additional demand for pirated versions of copyrighted works. For instance, the sometimes lengthy content review process for legitimate video games and music means that pirated versions often make it into the Chinese market first, displacing sales of authentic copies.⁸⁹ Likewise, in the movie industry, China's limit of 20 foreign films for theatrical distribution each year means that, until a film is officially released on DVD, there is no authorized version available. Chinese consumers' immediate demand for these films can therefore be filled only by pirated copies (often obtained through the camcording of the film in other countries' theaters).

A significant market access barrier in copyright-intensive industries is China's system of content review. All films, publications, music, and home entertainment products must be reviewed for prohibited content before they may be released in China. Copyrighted content may be blocked from entry due to political considerations; for example, access to the iTunes online music store site was blocked in China for two weeks in August 2008 due to the presence of an album containing pro-Tibet songs.⁹⁰ Media may also be blocked for excessive violence or other objectionable content.⁹¹

Another market access barrier in copyright industries is China's restriction on foreign distribution of certain media. As noted above, in the movie industry, only 20 foreign films are generally approved for theatrical distribution in China each year under a revenue-sharing model, per the terms of China's accession to the WTO. In addition, in some copyright-intensive industries, foreign companies presently must have Chinese partners to distribute their content.⁹² For example, foreign music companies must collaborate with a Chinese partner in order to acquire a publishing number, which is necessary for distributing music. The Chinese government also stipulates that only SOEs

⁸⁵ SIPO, "China's Intellectual Property Protection in 2008," April 27, 2009.

⁸⁶ Whitney, "NBC Faces Olympic Pirates," August 11, 2008.

⁸⁷ USITC, hearing transcript, June 16, 2010, 391 (testimony of Michael Schlesinger, IIPA).

⁸⁸ For further discussion, see Yu, "Three Questions That Will Make You Rethink the U.S.-China Intellectual Property Debate," 2008.

⁸⁹ Industry official, telephone interview by USITC staff, July 15, 2010; industry official, interview by USITC staff, Hong Kong, September 21, 2010.

⁹⁰ Fletcher, "China Blocks iTunes over All-star Tibet Album Free Download," August 22, 2008. Reportedly, China lifted the general block on iTunes while continuing to block access to the album. Van Buskirk, "China Reinstates: iTunes Access-minus Songs for Tibet," August 26, 2008.

⁹¹ Industry official, telephone interview by USITC staff, July 15, 2010.

⁹² Montgomery and Potts, "Does Weaker Copyright Mean Stronger Creative Industries?" 254; industry official, telephone interview with USITC staff, July 15, 2010.

can distribute music over the Internet.⁹³ Several of these measures were successfully challenged by the United States in a recent WTO case (see box 3.1).

BOX 3.1 China—Resolution of WTO Challenge to Certain Market Access Measures in China (DS363)

In 2007, the United States filed a complaint under the WTO dispute settlement provisions alleging that various Chinese measures—ones that reserve trading rights for certain publications and audiovisual entertainment products to Chinese state-designated and wholly or partially state-owned enterprises, as well as others that impose market access restrictions or discriminatory limitations on foreign service providers seeking to engage in the distribution of publications and certain audiovisual home-entertainment (AVHE) products—are inconsistent with China's WTO obligations.

In a report circulated on August 12, 2009, the dispute settlement panel concluded that certain measures were inconsistent with China's WTO obligations because they restricted the right of foreign enterprises and individuals in China to import reading materials, films, AVHE products, and sound recordings. The panel further found that various Chinese measures imposing requirements relating to registered capital and operating terms for the distribution of reading materials were also inconsistent with WTO obligations.

China and the United States appealed aspects of the panel report to the WTO Appellate Body. In a report circulated on December 21, 2009, the Appellate Body upheld most of the panel's conclusions. The Appellate Body report was adopted by the DSB at its meeting on January 19, 2010. China has agreed to implement the recommendations and rulings of the DSB by March 19, 2011. In light of these events, some of the distribution restrictions mentioned above may change in the near future. It should be noted that this decision pertains to China's import and distribution restrictions, not to its content restrictions or to its limit on the number of foreign films for theatrical distribution.

Source: USITC, *The Year in Trade 2009, 2010*.

In the entertainment software industry, an additional market access barrier is China's previously mentioned ban on game consoles, which has been in place since 2000.⁹⁴ Despite the ban, consoles are popular in China, but they enter only through illegal channels. Marketing of legitimate games is limited, so there is a thriving market for pirated games that are played on these consoles.⁹⁵ Pirated games can be played through the use of one of two devices: "game copiers" or "mod chips." Game copiers facilitate the transfer of game files from the Internet to a game cartridge, while mod chips are installed inside a console to allow the console to play pirated discs. One entertainment software company indicated that the growing use of game copiers in China was particularly worrisome, since game copiers provide a direct mechanism for using all of the infringing files available on the Internet.⁹⁶

Foreign Industry Strategies for Operating in a High-Piracy Market

Some U.S. content companies have adopted strategies that may help build a market for their products, notwithstanding high rates of copyright infringement. Such strategies may mitigate some of the harm done by copyright infringement and allow content holders to better access at least a portion of the large Chinese market. In addition, some U.S. content companies maintain their presence in China, despite losses from piracy, in order to influence the long-term development of trends and tastes and/or to be in a position to benefit if copyright enforcement improves.⁹⁷ That some copyright holders find it

⁹³ USTR, "2009 National Trade Estimate Report on Foreign Trade Barriers," 2009, 114.

⁹⁴ Industry official, interview by USITC staff, July 16, 2010. The ban has the stated goal of protecting minors, although PC video games are legal.

⁹⁵ Industry official, interview by USITC staff, July 16, 2010.

⁹⁶ Ibid.

⁹⁷ Industry official, interview by USITC staff, June 21, 2010.

worthwhile to use such strategies despite high rates of infringement underscores the importance of the Chinese market to U.S. firms.

High rates of copyright infringement generally place downward pressure on prices for legitimate copyrighted goods, and many content companies lower prices on legitimate versions of goods in order to compete with pirated versions.⁹⁸ For example, in 2006 Warner Brothers started selling DVDs in provincial Chinese cities for about \$1.85,⁹⁹ and the company also offers 60-cent movie downloads in a venture with Beijing-based Voole.¹⁰⁰ In 2008, Microsoft reduced the price in China of its Office 2007 Student and Home Edition from about \$102 to \$29.¹⁰¹ Even with lower prices, legitimate works of authorship still cost more than pirated versions (a pirated copy of Office 2007 cost an estimated \$1.50 in 2008¹⁰²), but they can have substantial advantages over illegitimate copies. For example, legitimate movie DVDs are less likely to be low-quality camcorder versions, to have inaccurate subtitles or translated dialogue, or to be movies other than the movie listed on the package. Authentic software also may be less susceptible to malware than pirated software.

In some industries, firms and individuals may sell complements to copyrighted works—for example, musicians can earn revenue from live performances, which are complements to recorded music.¹⁰³ Widespread distribution of creative works, including through piracy, may increase these works’ popularity, thereby expanding the market for such complements. However, market access and censorship issues can limit the ability of U.S. musicians to leverage their popularity gains from piracy in China.¹⁰⁴ For example, China has canceled Bob Dylan concerts for being “countercultural,” blocked Oasis from touring due to the band’s appearance at a Tibetan freedom concert,¹⁰⁵ and canceled shows by Jay-Z because of “vulgar lyrics.”¹⁰⁶ Other examples of content-owning firms selling complements include entertainment software firms, which offer free downloads of their games but require payment for virtual accessories.¹⁰⁷

Another business model that can be effective in environments with high piracy rates is to offer subscription-based access to copyrighted works. Many massively multiplayer online games, for example, charge monthly subscription fees and/or require prepaid game cards instead of one-time payments for software. Such games are amenable to subscription pricing because players need to access the game developer’s server in order to play online games against other users. One example is *World of Warcraft*, developed by California-

⁹⁸ Bae and Choi, “A Model of Piracy,” September 2006. However, it may be difficult to quantify price effects attributable only to IP infringement in the context of exchange rate effects, income levels, and other factors.

⁹⁹ AP, “China’s Anti-Piracy War,” July 7, 2006.

¹⁰⁰ Cheng, “Warner Bros. to Fight China Movie Piracy with 60 Cent Downloads,” November 5, 2008.

¹⁰¹ Reuters, “Microsoft Cuts Prices in China to Fight Piracy,” September 22, 2008.

¹⁰² Ibid.

¹⁰³ Times Online Labs, “Do Music Artists Fare Better in a World with Illegal File-sharing?” November 12, 2009. One economic model predicts that copyright infringement may decrease the earnings of “superstar” musicians but increase the total market share of young and niche artists. Pollstar data indicates that the combined ticket revenues of the top 20 tours declined by 15 percent from 2006 to 2007, while total North American concert ticket revenues increased 8 percent to \$3.9 billion in that period. See Alcalá and González-Maestre, “Copying, Superstars, and Artistic Creation,” August 2009, 12.

¹⁰⁴ Montgomery and Potts, “Does Weaker Copyright Mean Stronger Creative Industries?” 2008, 255.

¹⁰⁵ Walker, “China Blocks Bob Dylan Gigs,” April 4, 2010.

¹⁰⁶ BBC News, “‘Vulgar’ Jay-Z Barred from China,” October 11, 2006.

¹⁰⁷ One small U.S. entertainment software company regards piracy of its games in China as “free marketing” and an opportunity to build demand for its monetized virtual items. Industry official, telephone interview by USITC staff, July 15, 2010.

based Blizzard Entertainment and operated in China by licensees (including The9 and NetEase). The game has gained an estimated 5 million subscribers in China since launching in 2005, out of an estimated worldwide subscriber base of 12 million.¹⁰⁸ Niko Partners estimates that the online gaming industry in China achieved \$3.7 billion in revenue in 2009 and predicts it will reach \$4.5 billion in revenue in 2010.¹⁰⁹

Trademark Counterfeiting in China

Counterfeiting in China has reached unprecedented high levels. In 2009, China was the source of 79 percent of the counterfeit goods seized at the U.S. border, with an additional 10 percent coming from Hong Kong.¹¹⁰ The United States is not alone in tracing most counterfeit goods to China. In 2008, the World Customs Organization, reporting on data collected from 121 countries, found that 65 percent of detected counterfeit shipments came from mainland China.¹¹¹ Many U.S. companies doing business in China consider counterfeiting to be one of their most serious challenges and report that weak civil and criminal IP enforcement exacerbates the problem.¹¹²

The effects on trademark owners include lost sales and revenues, a tarnished brand name and reputation, and increased enforcement costs. The overriding concern for trademark owners is that their authentic, high-quality products will be priced out of the market in China and other countries by poor-quality, cheaper knockoffs.¹¹³ Trademark owners frequently find that counterfeit products featuring their trademarks appear on the market in China before they have established IP rights or put in place a strategy for addressing infringement.¹¹⁴

The counterfeiting problem can be particularly difficult for SMEs. While all firms are affected by counterfeits, counterfeit products discovered for sale in China, over the Internet, and in international markets, place special burdens on SMEs because they have a smaller volume of sales over which to spread significant enforcement costs and often do not possess the experience and resources necessary to address counterfeiting in China.¹¹⁵

By way of example, a survey conducted by the Motorcycle Industry Council of 53 firms of varying sizes, including SMEs, found that many members do nothing to address IPR infringement in China because they lack knowledge about how to resolve the issue

¹⁰⁸ Haili, Shanshan, and Fang, "Warcraft Row," March 9, 2010; Blizzard Entertainment, "World of Warcraft Subscriber Press Release 12 million worldwide," October 7, 2010.

¹⁰⁹ Niko Partners, "Niko Partners Estimates China's Online Game Market to Reach \$9.2 Billion in 2014," March 31, 2010.

¹¹⁰ Data are for fiscal year 2009. CBP, *Intellectual Property Rights Seizure Statistics*, October 2009, 12.

¹¹¹ World Customs Organization, "Customs and IPR Report 2008," 9.

¹¹² AmCham-China, written submission to the USITC, June 3, 2010, 3; KPMG, *Managing the Risk of Counterfeiting in the Information Technology Industry*, July 2005, 4; industry officials, interviews by USITC staff, Shanghai, September 15, 2010; and industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

¹¹³ Horan, Johnson, and Sykes, "Foreign Infringement of Intellectual Property Rights," 2005, 35–36; UNODC, *The Globalization of Crime*, 2010, 173.

¹¹⁴ USITC, hearing transcript, June 15–16, 2010, 189 (testimony of Shaun Donnelly, National Association of Manufacturers); Stewart and Stewart, written submission to the USITC, July 8, 2010; D'Addario, written submission to the USITC, May 24, 2010, 3; industry officials, interviews by USITC staff, Washington, DC, May 20, June 16, June 21, and August 2, 2010.

¹¹⁵ *Ibid.*

successfully, are skeptical about the effectiveness of pursuing an adequate resolution, or are concerned about potentially significant costs.¹¹⁶

Industries and Products Subject to Counterfeiting

The range of industries and products affected by counterfeiting in China is vast, as virtually any good or service with a trademark can be counterfeited.¹¹⁷ Goods with well-known brand names—especially luxury goods and pharmaceuticals, for which profit margins are greater—are prime candidates for counterfeiting. However, the high volume of trade for many commodity-type goods means that even goods with lower unit values and lower margins are profitable to counterfeit.¹¹⁸ Table 3.2 provides examples of the wide array of U.S. industries and products that are reportedly targeted by counterfeiters, as well as the health and safety issues that are raised by counterfeiting in China.

TABLE 3.2 Examples of industries and products affected by counterfeiting in China

Industry	Description of infringement or issue
Aviation and aerospace parts	Counterfeit components illicitly certified as meeting military or aircraft standards reportedly have been installed in avionics.
Apparel	Counterfeit apparel may be made with lower quality construction or with unapproved/harmful dyes or chemicals.
All-terrain vehicles (ATVs) and motorcycles	Counterfeit vehicles do not meet federal safety standards or the ANSI/SVIA standard for ATVs. Parts, apparel accessories, and support material (handbooks and videos) are also counterfeited.
Automobile parts	Counterfeiters have focused on aftermarket parts, producing counterfeit goods with substandard parts/construction that are not built to design/safety standards and do not feature the quality or life expectancy of standard parts. Some counterfeit parts may be for only cosmetic uses, while others are structural or safety components, like brake pads. Original equipment manufacturers (OEMs), parts wholesalers, and repair shops may be unable to detect counterfeit goods. Counterfeit replacement and maintenance parts such as brake shoe/pads, wheel covers, oil and air filters, shock absorbers, fan belts, starters, and spark plugs are common. Counterfeits of windshields and wheel covers have also been discovered.
Book publishers and test publishers	Counterfeit books, both fiction and nonfiction, and academic tests are claimed to be the product of well-known authors or respected publishers.
Branded leather goods, including purses, luggage, backpacks, cigarette cases, eyeglass holders	Counterfeits of well-known brands have substandard parts/construction.
Branded spectacles and sunglasses	Counterfeits of well-known brands have substandard parts/construction.
Cigarettes	Cigarettes made with adulterated tobacco are sold with counterfeit labels.
Computer printer ink cartridges	OEM printer cartridges and the printer cartridge cores used by remanufacturers are counterfeited.

¹¹⁶ Motorcycle Industry Council, written submission to the USITC, July 9, 2010, 5.

¹¹⁷ Definitions of key terms, including trademarks and counterfeiting, are contained in Chapter 1. Counterfeit goods should be distinguished from “gray market” goods. Gray market goods are genuine; they carry a trademark applied with the approval of the trademark holder, but the approval is intended to apply to sale only to particular geographic markets. Goods bearing counterfeit marks, on the other hand, are not genuine; the marks have been applied without the authority of the trademark holder. CBP, “Trademark and Trade Name Protection,” April 2002, 7. Concerns about gray market goods were not raised in Commission fieldwork.

¹¹⁸ Stewart and Stewart, written submission to the USITC, July 8, 2010.

TABLE 3.2 Examples of industries and products affected by counterfeiting in China—*Continued*

Industry	Description of infringement or issue
Computers	Counterfeits of well-known brands have substandard parts/construction, with less-than-expected quality, longevity, or safety.
Consumer electronics, including but not limited to televisions, cameras, CD and DVD recorders/players, MP3 players	Counterfeits of well-known brands have substandard parts/construction, with less-than-expected quality, longevity, or safety.
Diamonds	Advertising slogans and brands are copied.
Direct current (DC) power supplies	Counterfeit power supplies pose safety issues for the household appliance industry threatening fire, shock, or electrocution.
Dry batteries	Low-quality counterfeit batteries have exploded, harming equipment and operators.
Food and beverages	Misleading or counterfeit labels have unapproved or harmful ingredients.
Footwear	Counterfeits of well-known brands have substandard parts/construction.
Ground fault circuit interrupter (GFCI) electrical wall outlets	Counterfeit GFCI wall outlets are made without the advertised safety features, threatening fire, shock, or electrocution.
Golf clubs and other sporting goods	Counterfeits of well-known brands have substandard parts/construction that may fail in use.
Health and personal care products (hair dryers, curling irons)	Counterfeits of well-known brands have substandard parts/construction, with less-than-expected quality, longevity, or safety. Users face the risk of fire, shock, or electrocution.
Household care products, including soaps and detergents	Counterfeit goods that are less effective or harmful when compared to the authentic good.
Information technology (IT) network routers and computers	Counterfeit networking equipment has been purchased by U.S. government agencies, defense contractors, branches of the armed forces, universities, financial institutions, and electric utility companies, among others. Counterfeit equipment may cause unexpected network failures and could leave secure systems open to attack.
Jewelry and watches	Counterfeits of well-known brands have substandard parts/construction.
Medical goods	Counterfeit in-vitro diagnostic equipment, contact lenses, medical test kits, surgical instruments, cardiac catheters, ventilators, thermometers, condoms, gloves, blood glucose tests, and combination products pose significant health risks.
Musical instruments and accessories	Counterfeits, including guitar strings and straps, are characterized by sophisticated packaging of low-quality knockoffs.
Perfumes and cosmetics	Counterfeit cosmetics have been made with adulterated or unapproved ingredients that are ineffective or even harmful.
Pet food	Counterfeit pet food with unapproved or adulterated content has led to pet deaths.
Pharmaceuticals	Counterfeit pharmaceuticals may contain ineffective or excessive amounts of active pharmaceutical ingredients. They may be contaminated with foreign materials. Some may have active ingredients that are no longer effective due to age, but may have been re-labeled as being current and potent.
Retail store and restaurant names	Stores and restaurants have been established in China with misleading names, such as KFG (for KFC), Buckstar (for Starbucks), and T-Eleven (for 7-Eleven).

TABLE 3.2 Examples of industries and products affected by counterfeiting in China—*Continued*

Industry	Description of infringement or issue
Textiles	Counterfeit textiles are not made with the same inputs or with the same degree of quality as the original.

Sources: *Automotive Body Repair News*, “Aftermarket Groups Address the Issue of Counterfeit Chinese Auto Parts with Congress,” July 21, 2006; Europa, “Contraband and counterfeit cigarettes,” News Release, July 15, 2010; Barboza, “Fake Goods and Unsafe Food Threaten Chinese Exports,” May 18, 2007; CBP, “Los Angeles CBP Seizes More than \$18 Million in Counterfeit Sunglasses,” April 22, 2010; Chao, “Beer Drinkers Warned They May Get More than They Ordered at the Bar,” July 1, 2010; Edwards, “HP Gets Tough on Ink Counterfeiters,” May 28, 2009; French, “Chinese Market Awash in Fake Potter Books,” August 1, 2007; Gow, et al., “Dangerous Fakes: Counterfeit, Defective Computer Components from China,” *Bloomberg Newsweek*, October 2, 2008; ICE, “Los Angeles Shop Owners Plead Guilty,” June 21, 2010; industry official, interview by USITC staff, Washington D.C, June 9, 2010; International Imaging Technology Council, written submission to the USITC, July 7, 2010; MarkMonitor Case Study, “Under Armour Reduces Gray Market Sales with Mark Monitor,” n.d.; MEMA, written submission to the House of Representative Committee on Small Business, July 21, 2010; Motorcycle Industry Council, written submission to the USITC, July 9, 2010; Nash, “Counterfeit Parts: A Poor Fit for Your Shop,” January 2004; Keller, “Industry and Government Prepare Counter-Attacks,” April 2010; Prince, “Traffickers in Counterfeit Cisco Networking Hardware Taken Down,” May 5, 2010; Reuters, “China Seizes 18,000 Fake Viagra Pills in Raid,” July 25, 2007; Ricapito, “The Fight Against Faux Fragrances,” January 2010.; Sangani, “The Global Trade in Counterfeit Consumer Electronics,” May 10, 2010; Wilber, “Family Members Charged With Selling Counterfeit Computer Chips,” October 9, 2009.

Poor quality counterfeits also undermine substantial investments made by brand owners in the quality and reputation of their products. In addition, counterfeits are reported to give rise to wrongful product warranty and liability claims that can be expensive to defend and can further tarnish the brand.¹¹⁹

Counterfeiting Hotspots

Much of the counterfeiting that occurs in China reportedly is concentrated in the southeastern region, particularly the provinces of Guangdong and Fujian (figure 3.1). Foreign direct investment (FDI) inflows to these provinces contributed to the problem. As foreign companies built factories in China, transferred advanced production technology, and trained employees, manufacturing know-how and processes were transferred to counterfeit establishments in these industrial regions.¹²⁰

As with copyright piracy, industry sources have identified Shenzhen, immediately north of Hong Kong, as a center of counterfeit manufacturing.¹²¹ Shenzhen was the first area in China designated as a special enterprise zone (SEZ).¹²² The principal advantages for businesses operating in SEZs are low tax rates, fewer and simplified administrative and customs procedures, and duty-free importation of components and supplies. These

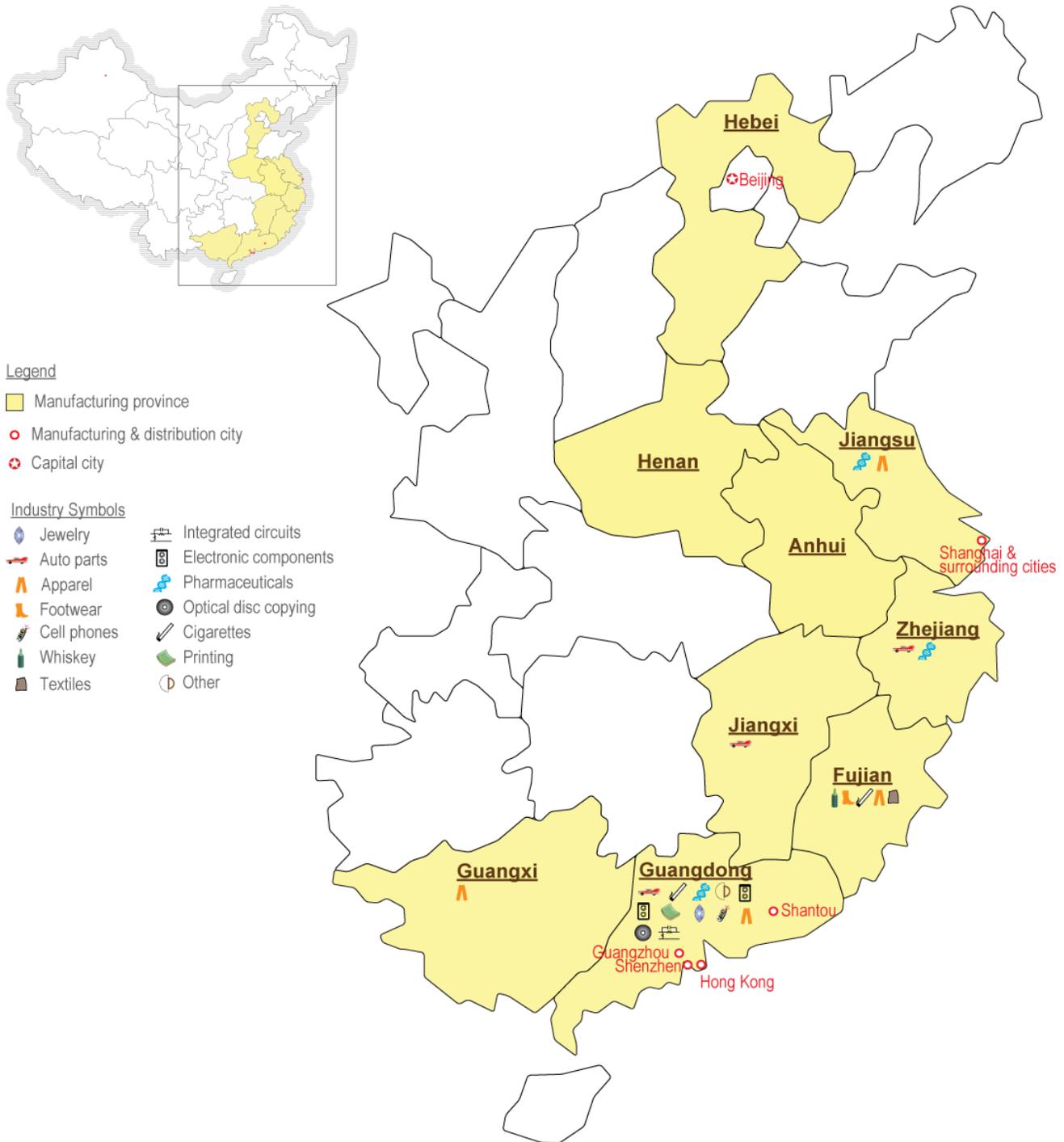
¹¹⁹ Industry officials, interviews by USITC staff, Washington, DC, July 9, August 2, 2010.

¹²⁰ Chow, “Organized Crime, Local Protectionism,” September 19, 2003, 474; Dimitrov, *Piracy and the State*, 2009, 62, 156–58; USITC, hearing transcript, June 15–16, 2010, 37 (testimony of Daniel Chow, Ohio State University).

¹²¹ Industry officials, interviews by USITC staff, Washington, DC, June 16 and August 2, 2010; Chow, “Organized Crime, Local Protectionism,” 2003, 474; UNODC, “The Globalization of Crime,” 178–179; Cheung, *Intellectual Property Rights in China*, 2009, 41; IACC, written submission to the USTR, February 18, 2010, 9.

¹²² Shenzhen was designated as an SEZ in 1980. China.org.cn Web site, “Shenzhen, a Special Economic Zone,” <http://www.china.org.cn/english/travel/99695.htm> (accessed August 25, 2010).

FIGURE 3.1 Counterfeit manufacturing concentrations in China



Source: Cheung, *Intellectual Property Rights in China*, 2009, 41, 46, 51–52; Chow, “Counterfeiting in China,” April 20, 2004, 5; Chow, “Organized Crime, Local Protectionism,” 477; Chow, statement to the Senate Subcommittee on Oversight of Government Management, the Federal Workforce, and the District of Columbia, April 20, 2004; IACC, USTR written submission, February 18, 2010, 9; Industry officials, telephone interview by USITC staff, May 20, 2010 and July 9, 2010; Nintendo, written submission to the USTR, February 18, 2010, 21; Philip Morris, written submission to the USTR, February 18, 2010, 13; UNODC, *The Globalization of Crime*, 2010, 180; USDA, FAS, *China: IPR Infringement Study*, April 26, 2010, 9–12; USTR, *2010 Special 301 Report*, 2010, 44–45; USITC, hearing transcript and exhibits, June 15, 2010, 34–35 (testimony of Daniel C. K. Chow, Ohio State University).

Note: The above map represents areas reported to contain large-scale counterfeit manufacturing. Additionally, it includes markers by province for particular reported counterfeit industries. Due to the illicit nature of counterfeiting, a comprehensive map of precise locations and counterfeit industries could not be developed. However, further details are provided throughout the chapter.

attributes not only promote large amounts of FDI and legitimate domestic investment but also substantial counterfeit manufacturing.¹²³ For example, industry sources note that electronic component counterfeiting is concentrated in the cities of Shenzhen and Shantou, alongside legitimate manufacturing.¹²⁴

Observers state that another reason counterfeit production of footwear and apparel is reportedly concentrated in China's southeast region is that legitimate manufacturing activities covering the entire supply chain, including raw materials, components, and finished goods, are clustered there.¹²⁵ Both legitimate and counterfeit footwear factories are concentrated in Fujian, and legitimate and counterfeit apparel production is concentrated in Guangxi. Counterfeit footwear manufactured in the southeastern provinces can reportedly be found in markets in Beijing, Shanghai, and other major cities "in abundance."¹²⁶

Production of counterfeit pharmaceuticals does not follow the same regional patterns as that of footwear, apparels, and electronics. Manufacturing facilities are prevalent in Zhejiang, Hebei, and Jiangsu, in addition to the southeastern provinces.¹²⁷ As noted by industry sources, like other counterfeit manufacturers, producers of counterfeit pharmaceuticals are likely located near an industry nexus such as Shanghai.¹²⁸

Identifying Counterfeiters

Counterfeiters in China range from sole-proprietor operations producing goods requiring little capital investment to factories operated by large private firms and/or SOEs. Organized crime syndicates also are reportedly involved in counterfeiting because it can be as profitable as trading in illegal drugs, prostitution, and gambling. Terrorist groups have also engaged in counterfeiting because of its profitability.¹²⁹

Residents of Hong Kong and Taiwan are said to be important sources of funding for counterfeit operations, although substantial funding is available within mainland China as well.¹³⁰ There are deep commercial links between the locations; some Hong Kong or Taiwan residents reportedly travel to the mainland, set up counterfeit production facilities, and then move back and forth regularly to manage operations. Mainland authorities may have difficulty prosecuting a factory owner who lives outside their jurisdiction, even though they can raid the factory. Hong Kong authorities also may be unable to prosecute because the infringement takes place outside their jurisdiction.¹³¹

¹²³ Industry official, interview by USITC staff, Washington, DC, August 2, 2010; USITC, hearing transcript, June 15–16, 2010, 36 (testimony of Daniel Chow, Ohio State University).

¹²⁴ IACC, written submission to the USTR, February 18, 2010, 11; industry officials, interviews by USITC staff, Washington, DC, June 16 and 24, July 2, and August 2, 2010.

¹²⁵ Industry official, telephone interview by USITC staff, July 6, 2010; Schmidle, "Inside the Knockoff-Tennis-Shoe Factory," August 19, 2010.

¹²⁶ Industry official, telephone interview by USITC staff, July 6, 2010.

¹²⁷ Industry official, e-mail message to USITC staff, July 16, 2010; industry official, telephone interview by USITC staff, July 27, 2010.

¹²⁸ Industry official, telephone interviews by USITC staff, July 9 and July 27, 2010.

¹²⁹ Chow, "Organized Crime, Local Protectionism," September 19, 2003, 474–75; Dimitrov, *Piracy and the State*, 2009, 32, 196–204; USITC, hearing transcript, June 15–16, 2010, 34 (testimony of Daniel Chow, Ohio State University); KPMG, "Managing the Risk of Counterfeiting," July 2005, 3; Center for Public Integrity, "Tobacco, Terrorism, and Illicit Trade," June 29, 2009.

¹³⁰ Industry official, interview by USITC staff, Washington, DC, August 2, 2010; USITC, hearing transcript, June 15–16, 2010, 34 (testimony of Daniel Chow, Ohio State University); UNODC, "The Globalization of Crime," 2010, 180.

¹³¹ Industry officials, telephone interviews by USITC staff, May 20 and July 13, 2010.

Industry representatives also report that counterfeiters set up “shadow companies” in Hong Kong that have no business operations but are instead intended to give a veneer of legitimacy to counterfeiting operations on the mainland that are identified as subsidiaries of the Hong Kong companies.¹³²

Counterfeiting Methods

There are a number of different ways trademarked products reportedly are infringed in China. A contract manufacturer may produce more than the original contract called for, or may continue to produce after the contract ends, and market the overproduction without the knowledge or consent of the IP owner. Counterfeiting can also occur with an internal breach at a factory, whereby a current or former employee will take know-how gained there to another factory in which counterfeit goods are produced. Counterfeit goods may be produced from salvaged or recycled products that are re-marked and sold without the authorization of the trademark owner. Counterfeit goods also may be produced by individuals or enterprises unrelated to the owner of the branded product based solely on a visual examination or the deconstruction and copying of the original.¹³³

In the case of production continued past contracted amounts or deadlines, the product is identical to that of the trademark owner, but is produced without the trademark owner’s permission. This type of counterfeiting may be labeled a “ghost” or “third shift” operation.¹³⁴ When produced in this way, the end product is generally indistinguishable from the original, although quality control during such third shifts is reportedly lacking. Similarly, counterfeiting may occur when current or former employees train others to produce the trademarked product. Employees of the brand owner may assist counterfeiters in setting up a production line, using the skills and trade secrets learned making legitimate goods.¹³⁵ In the footwear industry, for example, sources commented on the production of “super fakes” made in this way; the counterfeit shoes are so similar to the original that they can only be distinguished by cutting them open.¹³⁶

Some counterfeit goods may be packaged in original trademarked packages; others, in packages that are themselves counterfeits. For example, inexpensive substances may be used to refill used containers of branded products such as liquid detergents, shampoos, and motor oils, with the intent to pass them off as originals; or the counterfeiter may package these inexpensive substances in packages suggestive of the legitimate goods, such as imitation perfume sold in bottles with a trademark shape.¹³⁷ In the case of consumables such as pharmaceuticals, counterfeiters may package generic goods as the trademarked good or may include adulterated goods, or may obscure the source or falsify the expiration/freshness date in order to claim the good is fit for consumption.¹³⁸ Industry

¹³² Industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

¹³³ Schmidle, “Inside the Knockoff-Tennis-Shoe Factory,” August 19, 2010.

¹³⁴ Industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

¹³⁵ Industry official, telephone interview by USITC staff, Washington, DC, July 13, 2010; USITC, hearing transcript, June 15–16, 2010, 36 (testimony of Christian Murck, AmCham-China); industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

¹³⁶ Industry official, telephone interview by USITC staff, Washington, DC, July 13, 2010.

¹³⁷ Horan, Johnson, and Sykes, “Foreign Infringement of Intellectual Property Rights,” 2005, 31.

¹³⁸ World Health Organization (WHO), “General Information on Counterfeit Medicines.” Counterfeit pharmaceuticals may be missing the active pharmaceutical ingredient (API) or contain too much or too little API, or even the wrong API; may be branded with misleading brand names and logos; and/or may be manufactured in dirty, unsafe conditions. The infringing products can also be a genuine product with falsified packaging (e.g., relabeled to show an expiry date later than the original one).

sources note that well-known pharmaceutical products that have been counterfeited include Pfizer's Viagra and Lipitor and Sanofi-Aventis' Plavix.¹³⁹

An example of counterfeiting by recycling is seen in the counterfeiting of integrated circuits (ICs) from electronic waste (e-waste).¹⁴⁰ China collects e-waste from around the world to salvage components from it. Some components are legitimately recycled, but others enter the counterfeit IC market when ICs are salvaged, remarked as new, and "recycled" back into the distribution stream.¹⁴¹ Another source of IC counterfeits is called "second source," where lower-performance ICs are re-marked as higher-grade ICs or where nonfunctional ICs are re-marked as new.¹⁴² Old chips can be placed in new packaging; this method of counterfeiting is extremely difficult to detect. Industry sources report that in some cases production has become more disaggregated, with false labeling added at the very end of the process in order to avoid detection and seizure.¹⁴³

Counterfeit Distribution

Counterfeit products in China are often distributed through large open-air and partially enclosed markets that can include thousands of stalls or separate units operated by wholesale dealers. Counterfeit goods may be on open display or available only in back rooms or under the counter, with legitimate products displayed to the public.¹⁴⁴ Major wholesale markets that serve the coastal region and China's major urban centers include Hanzhen Jie in Wuhan City, Hubei province; Linyi market in Linyi City, Shandong province; Nansantiao market in Shijiazhuang in Hebei province; China Small Commodities City in Yiwu City, Zhejiang province; and Wuai market in Shenyang City, Liaoning province.¹⁴⁵

The town of Yiwu in coastal Zhejiang province reportedly serves as a major wholesale distribution center for counterfeit goods to markets throughout China.¹⁴⁶ Yiwu has an estimated 30,000 stalls for wholesale distributors to exhibit merchandise. Industry

¹³⁹ Pfizer, "Case Study: Billion Dollar Business," December 3, 2007; Bodanich, "Counterfeit Drugs' Path Eased by Free Trade Zones," December 17, 2007; Theriault, Statement to the Health and Human Services Drug Importation Task Force, April 5, 2004.

¹⁴⁰ Counterfeiters do not generally produce ICs in the first instance because the fabrication of wafers from which ICs are made is a very expensive, capital-intensive process, requiring production in clean rooms, testing, and marking of model number, date of production, and lot number. Industry official, interview by USITC staff, June 16, 2010.

¹⁴¹ Industry official, interview by USITC staff, June 16, 2010; Hughitt, "Counterfeit Electronic Parts," June 22–24, 2010, 5.

¹⁴² Counterfeit ICs sold into military supply chains are particularly profitable because military-specification ("mil-spec") components require more stringent testing and quality controls, which raises costs to the producer, and, therefore, are much more expensive than non-mil-spec components. For instance, a consumer-grade IC that sells for \$1 can be sold for \$50 if it bears a military grade marking. Because only the semiconductor companies are able to recognize their own proprietary coding systems, end users are largely unable to distinguish between counterfeit and genuine ICs. Industry official, interview by USITC staff, June 16, 2010. See generally USDOC, *Defense Industrial Base Assessment*, January 2010 (providing statistics and information on counterfeits in U.S. defense and industrial supply chains).

¹⁴³ Industry official, interview by USITC staff, August 2, 2010.

¹⁴⁴ Chow, "Organized Crime, Local Protectionism," September 19, 2003, 476–77; Dimitrov, *Piracy and the State*, 2009, 4, 35–40; USITC, hearing transcript, June 15–16, 2010 (testimony of Daniel Chow, Ohio State University).

¹⁴⁵ Chow, "Organized Crime, Local Protectionism," September 19, 2003, 477; USITC, hearing transcript, June 15–16, 2010, (testimony of Daniel Chow, Ohio State University).

¹⁴⁶ Chow, "Organized Crime, Local Protectionism," September 19, 2003, 478; USITC, hearing transcript, June 15–16, 2010 (testimony of Daniel Chow, Ohio State University); China Sourcing Information Center, "Discovering Yiwu City," May 23, 2010.

sources state that retailers come to the market and carry goods back to the retail market in cars, vans, trucks, and bicycles.¹⁴⁷ Thousands of trucks reportedly move in and out of the town throughout the day and night, carrying goods to counterfeit markets around the country and to border cities such as Wulumuqi in Xinjiang province, an export post for the Middle East, Africa, and Eastern Europe.¹⁴⁸ Besides Wulumuqi, other noted international distribution points include Lowu market in Shenzhen, Guangdong province, where goods are often exported via bordering Hong Kong; the Fujian province coastline, where goods are frequently transshipped through neighboring Taiwan; and the Guangxi province border, where goods transit to Southeast Asia.¹⁴⁹ Although some general exit points are known, Chinese counterfeit goods are increasingly taking circuitous routes to their final destinations, including the United States, making it more difficult to identify their point of origin.¹⁵⁰ For example, in 2007, a case was documented in which counterfeit pharmaceuticals originating in China traveled to Canada and to the United States (through a Canadian Internet pharmacy) via Hong Kong, the United Arab Emirates (UAE), London, and the Bahamas, with the travel through the UAE linked to a free-trade zone (FTZ) in Dubai.¹⁵¹

The use of the Internet as a channel for the marketing and distribution of counterfeit goods is also growing rapidly, with goods entering the U.S. market via e-commerce and auction sites and in bulk shipments.¹⁵² Not only does the Internet facilitate the shipment of smaller quantities of counterfeit goods directly to customers and middlemen around the world, it also allows dealers to lower the risk of detection by reducing the need for warehousing. The Internet thus facilitates “just in time” delivery of legitimate and counterfeit products.¹⁵³ The problem of counterfeit distribution via the Internet is likely to increase with the increasing online sophistication of producers and consumers. One industry source described instructional DVDs being sold by enterprising Chinese counterfeiters that explain how to set up an e-commerce Web site and how to participate as a seller on auction sites. These individuals then take the orders generated by the e-commerce or auction site and present them to the counterfeiter, who furnishes the goods to fill the order.¹⁵⁴

The Internet also is a source of counterfeit medicines. The World Health Organization estimated that half of the pharmaceutical goods purchased from online sites that conceal their physical addresses are fakes.¹⁵⁵ Many counterfeit medicines are sourced from China because of the ready accessibility of the bulk APIs used to produce counterfeit drugs.¹⁵⁶

¹⁴⁷ Industry official, telephone interview by USITC staff, July 9, 2010. Over the past five years, counterfeit trade at Yiwu has reportedly become less obvious, but continues in underground channels.

¹⁴⁸ Chow, “Organized Crime, Local Protectionism,” September 19, 2003, 488; USITC, hearing transcript, June 15–16, 2010 (testimony of Daniel Chow, Ohio State University).

¹⁴⁹ Cheung, *Intellectual Property Rights in China*, 2009, 41; industry official, interview by USITC staff, May 20, June 24, July 13, and August 2, 2010; UNODC, *The Globalization of Crime*, 2010, 179; USTR, *2010 Special 301 Report*, 2010, 44–45.

¹⁵⁰ Industry officials, telephone interviews by USITC staff, June 24, 2010 and July 8, 2010.

¹⁵¹ Bodanich, “Counterfeit Drugs’ Path Eased by Free Trade Zones,” December 17, 2007.

¹⁵² Stewart and Stewart, written submission to the USITC, July 8, 2010, 24; American Apparel & Footwear Association, written submission to the USITC, July 9, 2010, 2; industry official, telephone interview by USITC staff, July 9, 2010.

¹⁵³ Industry officials, telephone interviews by USITC staff, Washington, DC, May 20 and July 13, 2010.

¹⁵⁴ Industry official, interview by USITC staff, July 13, 2010.

¹⁵⁵ UNICJRI, “Counterfeiting: Press Kit,” n.d.; Stewart and Stewart, written submission to the USITC, July 8, 2010, 12.

¹⁵⁶ Pfizer, “Counterfeit Pharmaceuticals: A Serious Threat to Patient Safety,” 2007, 4; Stewart and Stewart, written submission to the USITC, July 8, 2010, 12.

Enforcement

For firms to enforce their trademarks effectively, trademarks generally must be registered with the trademark office in the country where protection is sought. Once registered, firms can seek enforcement through border seizures by customs officials, administrative agency proceedings (including raids of factories or distribution locations), and criminal or civil judicial actions.

Customs Proceedings in China and the United States

Trademark owners register their marks in the United States with the U.S. Patent and Trademark Office and in China with the Trademark Office of the State Administration of Industry and Commerce (SAIC). They may then record their trademarks with the national customs offices—CBP in the United States and General Administration of Customs (GAC) in China. CBP can inspect and seize counterfeit and pirated goods that are being imported into the United States. GAC is empowered to seize both infringing imports and exports, but its efforts focus on exports.

Both CBP and GAC strongly encourage brand owners to record their marks in their databases to facilitate the detection and seizure of counterfeits.¹⁵⁷ However, trademark owners often do not record their trademarks either with CBP or GAC. Currently, approximately 26,000 trademarks are recorded with CBP, compared to approximately 1.6 million active registered trademarks in the United States.¹⁵⁸ GAC reports that by the end of 2008, only 12,227 trademarks were recorded there, compared to 3.4 million registered trademarks in China.¹⁵⁹ Commission fieldwork did not provide clear information about why more U.S. brand owners do not record with U.S. or Chinese customs authorities; however, one reason mentioned was the relative expense, given the limited number of counterfeit goods actually seized.¹⁶⁰

Detection of counterfeit goods as they cross international borders is difficult, in large part because of the sheer volume of global trade. For example, in 2009, CBP processed over 11 million 40-foot containers, accounting for over half of U.S. trade by value. CBP also processed 361 million passengers and pedestrians, 109 million conveyances, and over 87 million aircraft passengers,¹⁶¹ all of which are known methods of transporting counterfeit goods. A growing problem for trademark owners is counterfeiters' increasing tendency to ship their goods in small shipments via separate express companies; such shipments are much more difficult for customs authorities to track and evaluate for trademark infringement than the large shipments that were formerly common.¹⁶²

¹⁵⁷ CBP, "Protect your IPR by Recording your Trademarks and Copyrights," April 28, 2008; Quynying, "Securing China's Borders," July/August 2010.

¹⁵⁸ Government official, email message to USITC staff, September 20, 2010; CBP, Intellectual Property Rights Search database, September 28, 2010.

¹⁵⁹ Quynying, "Securing China's Borders," July/August 2010; Lu, "Nation's Trademark Numbers Skyrocket," May 5, 2010. The number of active trademarks in China is not generally reported.

¹⁶⁰ Industry official, interview with USITC staff, Washington, DC, June 1, 2010.

¹⁶¹ CBP, *Performance and Accountability Report, FY 2009*, March 9, 2010.

¹⁶² Brener, "Remarks at U.S. Patent and Trademark Office Global Intellectual Property Academy," July 14, 2010.

Administrative Proceedings in China

Trademark owners attempting to protect their rights through administrative proceedings in China gather intelligence on counterfeiters and present the results to administrative authorities and police to support raids of counterfeit factories or distribution locations.¹⁶³ However, industry representatives report that administrative penalties in China to date are too lenient to be a significant deterrent; fines are low, and facilities closed by raids soon reopen elsewhere or under a different name.¹⁶⁴ Counterfeiters reportedly see administrative fines and the loss of merchandise as only a cost of doing business.¹⁶⁵

Industry representatives report that counterfeiters often are skilled at evading authorities. For example, in an effort to render the raids ineffective, many counterfeiters reportedly have spread production among several locations. They also delay affixing the brand or label until the very end of the production process, producing generics by day and counterfeits by night. Thus, raids that occur during the day may come up empty-handed.¹⁶⁶

Judicial Actions in China and the United States

While criminal enforcement is considered to be the most effective way to address counterfeits, it rarely occurs in China—generally only where there are dangers to public health or safety.¹⁶⁷ In civil litigation, foreign trademark owners reportedly have obtained some favorable judgments in recent years.¹⁶⁸ Industry sources remain concerned, however, that in locations that are dependent on counterfeit manufacturing for jobs and revenue for the local economy, counterfeiting will not be effectively addressed; large-scale counterfeiting is particularly unlikely to be stopped if it risks causing significant unemployment or civil unrest.¹⁶⁹

¹⁶³ Trademark holders do not generally report that administrative agencies are unwilling to conduct raids as sometimes reportedly occurs in the copyright context.

¹⁶⁴ USITC, hearing transcript, June 15–16, 2010, 39 (testimony of Daniel Chow, Ohio State University); IIPA, written submission to the USITC, July 9, 2010, 23; U.S. Council for International Business, written submission to the USITC, July 20, 2010, 3; industry official, interview by USITC staff, Washington, DC, July 1, 2010; industry officials, telephone interviews by USITC staff, July 9 and 13, and August 3, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; and industry officials, interviews by USITC staff, Hong Kong, China, September 21, 2010.

¹⁶⁵ Industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; USITC, hearing testimony, June 15–16, 2010, 40 (testimony of Daniel Chow, Ohio State University); USTR, Special 301 Report, 2010, 21.

¹⁶⁶ Industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; industry officials, interviews by USITC staff, Hong Kong, China, September 21, 2010; industry official, interview by USITC staff, Washington, DC, August 2, 2010.

¹⁶⁷ Industry official, telephone interview by USITC staff, July 27, 2010; industry officials, interviews by USITC staff, Hong Kong, China, September 21, 2010.

¹⁶⁸ See, for example, Starbucks Corporation and Shanghai Tongyi Xingbake Coffee Co. Ltd. vs. Shanghai Xingbake Café Co. Ltd. Vs. Nan Jin Road Branch of Shanghai Xingbake Café Co. Ltd., December 20, 2006, Shanghai High Court; Exxon Mobil vs. American Mobil International Petroleum Group, July 24, 2009, Shanghai Intermediate People's Court; Michelin Group vs. Tan Guoqiang and Ou Can, April 24, 2009, Changsha Intermediate People's Court.

¹⁶⁹ Industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; industry officials, interviews by USITC staff, Hong Kong, China, September 21, 2010; industry officials, interview by USITC staff, Washington, DC, August 2, 2010; Dimitrov, *Piracy and the State*, 2009, 4, 35; USITC, hearing transcript, June 15–16, 2010 (testimony of Daniel Chow, Ohio State University); USITC, hearing transcript, June 15–16, 2010 (testimony of Jeremie Waterman, U.S. Chamber of Commerce).

There have been a number of criminal convictions in the United States for trafficking in counterfeit goods from China. In 2010, the Federal Bureau of Investigation (FBI), in cooperation with China's Ministry of Public Security, announced more than \$143 million in seizures, as well as 30 convictions of traffickers, in "Operation Network Raider" which involved counterfeit Cisco network hardware. These counterfeit devices and labels originated in Shenzhen, China.¹⁷⁰ Other recent U.S. criminal convictions based on counterfeit imports from China have involved footwear and apparel, consumer goods, DVDs, jewelry, pharmaceutical drugs, and semiconductors and other high-tech parts.¹⁷¹

¹⁷⁰ USDOJ, "Department of Justice and Homeland Security Announce 30 Convictions," May 6, 2010.

¹⁷¹ USDOJ, "Distributor of Counterfeit Pharmaceutical Drugs Sentenced," January 15, 2009; USDOJ, "Distributor of Counterfeit Pharmaceutical Drugs Convicted," March 23, 2009; USDOJ, "Pharmacist Sentenced to Prison for Ordering and Receiving Counterfeit Pharmaceutical Drugs," September 25, 2006; USDOJ, "Southern California Man Pleads Guilty to Trafficking in Counterfeit Viagra," January 6, 2005; USDOJ, "Former Folsom Resident Sentenced for Selling Fake Designer Handbags," September 15, 2009; USDOJ, "Houston Importer Convicted of Trafficking in Counterfeit Merchandise," July 20, 2004; USDOJ, "Two Individuals Plead Guilty to Trafficking in More than Half a Million Tubes of Counterfeit Toothpaste," August 28, 2008; USDOJ, "Importer Convicted of Bribery and Trafficking in Counterfeit Exercise Equipment Made in China," July 15, 2010; USDOJ, "New York Corporation and Its President Sentenced for Importing Counterfeit Trademarked Clothing," June 11, 2008; USDOJ, "California MVP Micro, Inc. Owner Pleads Guilty in Connection with Sales of Counterfeit High Tech Parts to the U.S. Military," January 13, 2010; USDOJ, "Defendant Pleads Guilty in DVD Piracy Conspiracy in First Joint Investigation by U.S. and China," October 25, 2007; USDOJ, "Warren Pair Admit Trafficking in Counterfeit DVDs," March 24, 2004; USDOJ, "Beltsville Woman Pleads Guilty to Selling Counterfeit DVDs," June 11, 2009.

CHAPTER 4

Patent Infringement and Trade Secret Misappropriation in China

Firms that create new technologies generally protect their technological innovations in two forms: patents and trade secrets.¹ Patent and trade secret protection are of critical importance to firms with significant research and development (R&D) expenditures: many view such protection as crucial for their continued survival.² Patents, for example, allow companies to commercialize the inventions that are the end product of their R&D expenses either directly, as is the case for pharmaceutical companies that market patented drugs, or indirectly through IP licensing, as is the case for many high-tech telecommunications companies.³

Patents and trade secrets can complement one another in the context of a firm's overall IP strategy. If a firm is in a position to maintain the confidentiality of its innovations, trade secret protection helps keep that innovation from being taken by others—for example, by theft or corporate espionage. However, some types of innovation cannot be kept confidential: any product sold can be examined by competitors and, potentially, copied. In order to prevent such copying, patent protection provides inventors with the exclusive right to make, use, and sell their inventions for a fixed period of time. In exchange for this limited monopoly, a patentee must disclose in the patent application how to practice the invention. In so doing, the patentee gives up trade secret protection in exchange for patent protection and patent applications are generally published 18 months after filing. An innovator, therefore, may be faced with a choice: to try to keep an innovation secret for an unlimited period in the hope that no one successfully copies it, or to seek patent protection, which provides more definite rights but for a limited time.⁴

The fact that a patent in one country requires public disclosure to the world complicates a firm's decision whether to rely on patent or trade secret protection for its innovations. For example, a firm concerned about ineffective patent enforcement in China may prefer to rely on trade secret protection over patent protection. However, that preference for trade secret protection may require that the firm not seek patent protection anywhere in the world, so as to preserve the secrecy of its invention. Conversely, a firm that is generally comfortable with trade secret protection globally, but that enters the Chinese market with a Chinese joint venture partner, may be concerned about entrusting its secrets to that partner, and may therefore prefer the security of patent protection. Obtaining patent protection in China, however, would generally preclude reliance on trade secret protection elsewhere.

¹ Some industries, particularly the computer software industry, benefit from technology-related copyright protection as well.

² Tessera, Inc., written submission to the USITC, July 9, 2010; industry officials, interviews with USITC staff, Washington, DC, June 22 and July 30, 2010; PhRMA, written submission to the USTR, 2010, 3.

³ Industry officials, interviews with USITC staff, June 22, July 29 and 30, 2010.

⁴ By way of example, even if a product is sold in the marketplace, its method of production may not be easily determined; a firm might therefore choose to rely on trade secrets to protect aspects of its production method. Thus, Coca Cola has relied on trade secrets rather than patent protection to keep from disclosing the recipe for its products.

Because of the often interrelated nature of patent and trade secret protection, this chapter discusses both. It begins with a description of the patent landscape in China, including recent noteworthy changes in the patent law and an overview of the patenting patterns of domestic and foreign inventors in China. It follows with descriptive information about the industries affected by patent infringement and patent enforcement challenges in China.⁵ The chapter then turns to trade secret misappropriation, describing the industries affected, enforcement challenges, and prominent trade secret misappropriation cases.

Patent Infringement in China

China's patent law recently has been amended in ways considered both favorable and unfavorable, according to U.S. industry. One unfavorable change has been an expansion of the conditions under which the Chinese government can require a firm to license its technology to others. More favorably, the law has been amended to include an absolute novelty standard, which may enable a foreign firm to invalidate a Chinese patent obtained for an invention that is in the public domain or used outside of China. The Chinese government's focus on indigenous innovation has resulted in a boom in patenting by Chinese inventors. Although filings of all types of patents are on the rise, Chinese inventors particularly focus on utility model patents, a type of "petty patent" discussed in chapter 1. These patents are quick, inexpensive, and easy to obtain, as they are not substantively examined by patent examiners. Chinese inventors appear to be wielding petty patents against foreign firms with some success, although there are only a small number of published cases.

Recent Changes to China's Patent Law

China issued its initial Patent Law in 1984 and has amended it three times, with the most recent amendment becoming effective in October 2009. Industry representatives and observers report several important changes resulting from the recent amendment. First is the expansion of the conditions under which compulsory licensing may occur. A compulsory license exists when a government allows someone else to produce the patented product or process without the consent of the patent owner.⁶ U.S. firms anticipate that any compulsory license issued by the government in China would not be on terms that would reasonably compensate the patent owner and would involve only a token payment.⁷

The third amendment raises concerns because it broadens the opportunities for such licensing to include cases in which the owner has not "sufficiently exploited" the invention and cases in which the owner exploits the patent in a way that triggers antitrust concerns.⁸ The third amendment is thus intertwined with the AML; however, as will be

⁵ Definitions of patents and patent infringement are provided in chapter 1.

⁶ WTO, "Compulsory Licensing of Pharmaceuticals and TRIPS," September 2006.

⁷ Industry officials, interviews by USITC staff, Washington, DC, May 12, July 15 and 17, 2010. While compulsory licensing is often thought to be aimed at patented drugs, it is not limited to them. For example, the amended law specifically permits the government to grant a compulsory license on a patent involving semiconductor technology if the license for exploitation is limited to use in the "public interest." U.S. firms also have expressed substantial concern about the threat of compulsory licenses in connection with industries China considers strategic, as well as in standards-setting (see chapter 5).

⁸ Jones Day, "What Does the Third Amendment to China's Patent Law Mean to You?" January 2009.

discussed in chapter 5, patent misuse under the AML remains undefined. Although critical terms have not been defined and no compulsory licenses have issued, some U.S. firms believe that the threat of a compulsory license may have a substantial chilling effect on their ability to set a value on their IP in China comparable to the value set elsewhere in the world.⁹ These firms fear that if the Chinese government believes that certain pricing terms are onerous, it will step in and require compulsory licensing at minimal prices.¹⁰

A more positive change in the amended patent law is the adoption of an “absolute novelty” standard. Previously, the law used a standard that did not take into account public use or knowledge outside of China in determining whether an invention was novel. The amended law now defines “prior art” as “publicly known art anywhere in the world before the filing date.”¹¹ This change may address the practice of “patent hijacking,” which reportedly occurred, for example, when a Chinese industry representative at an overseas trade show saw an invention that was unknown in China and subsequently patented that invention in China. The new standard reportedly applies to all three types of patents, although it is not clear yet whether it will apply retroactively.¹²

A Patent Boom in China

The Chinese government’s focus on the promotion of indigenous innovation has spurred a patent boom in China.¹³ The State Intellectual Property Office (SIPO) received 976,686 applications in 2009, with invention patent applications growing by 18 percent, utility model patents by 38 percent, and design patents by 14 percent compared to 2008.¹⁴ Most SIPO applications were filed by domestic inventors: in 2009, Chinese applicants filed 73 percent of invention patent applications, 99 percent of utility model patent applications, and 97 percent of design patent applications.¹⁵

U.S. and other foreign companies focused their patent filings in China on invention patents, filing few design patents and almost completely ignoring utility model patents.¹⁶ By contrast, Chinese inventors file more utility model and design patents than invention patents, although filings were more balanced across all three types of patent than they were for foreign inventors (figures 4.1 and 4.2).

⁹ AmCham-China, “2010 White Paper,” 2010, 112; Waterman, Written testimony to the USITC, June 15, 2010, 23.

¹⁰ Industry officials, interviews by USITC staff, Washington, DC, May 12, and July 15 and 17, 2010.

¹¹ Bai et al., “The Radical Third Amendment,” 2009, 21.

¹² Ibid.; McGregor, *China’s Drive for “Indigenous Innovation,”* July 2010, 24; industry officials, interviews by USITC staff, Hong Kong, September 21, 2010.

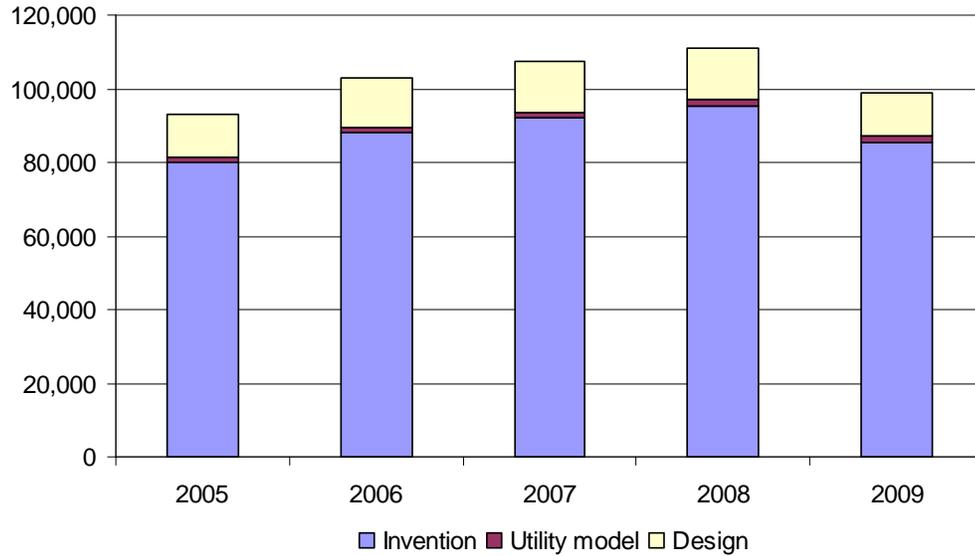
¹³ McGregor, *China’s Drive for “Indigenous Innovation,”* July 2010, 26. See chapter 5 for a discussion of China’s policy focus on indigenous innovation.

¹⁴ By contrast, the number of annual patent filings in the United States has remained virtually unchanged in the last three years. USPTO, “U.S. Patent Statistics Chart,” April 20, 2010.

¹⁵ SIPO, *2009 Annual Report*, 2010, 35.

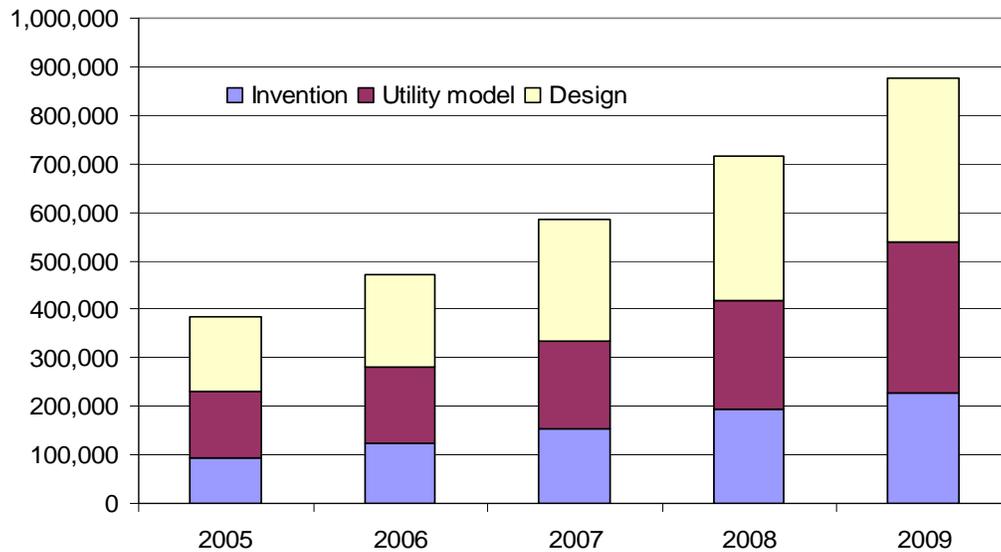
¹⁶ As discussed in chapter 1, U.S. firms may overlook utility model filings because they are not familiar with them. Weisun, “Intellectual Property Laws in China,” 2010, 2; industry official, interview by USITC staff, Washington, DC, July 14, 2010. Undue reliance on invention patents may in part result from foreign firms’ use of the Patent Cooperation Treaty to file invention applications throughout the world (including in China), not knowing that they may be well served to file a China-specific utility model patent application as well.

FIGURE 4.1 Foreign inventors focus on invention patents in China, 2005–09



Source: SIPO.

FIGURE 4.2 Chinese inventors seek all three types of patents in China, 2005–09



Source: SIPO.

Chinese companies reportedly apply for utility model and design patents in great numbers because they are easier and quicker to obtain than invention patents.¹⁷ Some utility model patents obtained by Chinese firms are alleged to be opportunistic and predatory. Chinese firms have been accused of obtaining quickly issued and nonsubstantively examined utility model patents based on the inventions of others (including foreigners) and then accusing the true inventors of infringement. U.S. industry representatives further report that it can be difficult to monitor and protect against such predatory patenting in China.¹⁸

Some industry representatives have asserted that SIPO makes it more difficult for foreigners to obtain patents or to invalidate Chinese patents than it does Chinese firms.¹⁹ However, other U.S. industry representatives do not believe they have encountered antiforeign bias.²⁰ Even if patent procurement is largely unbiased overall, some industry representatives have reported that in sectors considered by the Chinese government to be of strategic importance, such as pharmaceuticals, renewable energy, and biotechnology, patents are more difficult to obtain and/or more limited in scope than those granted in developed countries. Some industry representatives contend that the purpose of this differential treatment is to benefit domestic firms in critical sectors at the expense of foreign patent holders.²¹

Although the dramatic increases in patent filings by Chinese companies may reflect movement up the value chain and the desire to protect domestic innovation, filings may also be motivated by a desire to qualify for a reduced tax rate or to obtain subsidies or other government recognition.²² As will be discussed in chapter 5, China affords certain tax-related benefits to patent holders, and one requirement for tax relief is the ownership of a specified number of Chinese patents. Moreover, a number of provincial governments offer payments to Chinese companies that are intended to support the preparation and filing of patents in China and overseas.²³

Industries Affected by Patent Infringement

U.S. sectors in which high numbers of firms rely on patents to protect their inventions in China include some familiar examples, such as pharmaceuticals, telecommunications, electronics, chemicals, and biotechnology, but also include some less expected ones, such as motorcycles, footwear, food and beverages, and construction fixtures.²⁴

¹⁷ Industry officials, interviews by USITC staff, Washington, DC, May 12 and July 15, 2010; industry officials, telephone interviews by USITC staff, July 22, 2010.

¹⁸ Industry officials, interviews by USITC staff, Washington, DC, June 2 and July 7, 2010; industry officials, telephone interviews by USITC staff, July 9 and 22, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; Bach, "Strategies for IP Protection in China," 2009, 8.

¹⁹ Industry officials, telephone interviews by USITC staff, July 9 and 27, 2010.

²⁰ Industry officials, telephone interviews by USITC staff, July 29, 2010.

²¹ Industry officials, interviews with USITC staff, June 22, July 9, 27 and 29, 2010.

²² McGregor, *China's Drive for "Indigenous Innovation,"* July 2010, 26.

²³ Zhou and Stembridge, "Patented in China," 2008, 17.

²⁴ Industry officials, telephone interviews with USITC staff, July 9, 14, 22, 27, and 29, 2010; industry officials, interviews with USITC staff, Washington, DC, June 22, July 13, 14, and 30, 2010; Motorcycle Industry Council, written submission to the USITC, June 3, 2010. The above industries were identified based on industry reports rather than published data. Published case information is only sporadically available in China.

Commission fieldwork indicates that there are relatively few patent-related administrative or civil actions in China involving U.S. patent holders, as compared to larger numbers of actions involving copyrights and trademarks. There may be several reasons for this. As indicated in chapter 1, administrative relief for patent infringement is more limited than for copyright or trademark infringement. Also, unlike actions alleging copyright and trademark infringements—which are often ascertainable merely by looking at the product—patent infringement may be particularly technical and fact-intensive. The lack of effective discovery in litigation in China exacerbates the difficulty of bringing suit for patent infringement, which can be factually complex. Furthermore, damages awarded are generally low, causing many industry representatives to believe that bringing suit is not worthwhile.²⁵

In light of such shortcomings, industry representatives identified certain ways that they try to protect their technologies in China. Some rely to a greater degree on trade secrets. Others, who benefit from being in industries where the capital costs of production are substantial, and where product lifetimes are short, strive to stay one step ahead of infringing competitors.²⁶ Some U.S. industry representatives also explained that they do what they can to avoid developing or producing their most critical innovations in China, whenever possible placing these “crown jewels” in locations with more effective enforcement mechanism.²⁷

In the absence of a substantial number of reported patent cases involving U.S. patent holders in China, suits brought in other countries involving Chinese firms or products may shed light on some industries affected by patent infringement in China. For example, section 337 of the Tariff Act of 1930, 19 U.S.C. § 1337, provides a venue for patent and other IPR infringement claims where the accused products are imported into the United States.²⁸ Of the 103 cases instituted during 2007–09, 47 percent involved respondents located in China and/or Hong Kong or accused imports from these locations.²⁹ Section 337 investigations arise across a large number of industry sectors, but in recent years the majority involving China have focused on electronics and electrical products.³⁰

In the pharmaceutical sector, Commission fieldwork revealed industry-specific concerns with issues related to, but independent of, patent infringement: patent linkage and indirect reliance. These issues are discussed below (box 4.1).

²⁵ Industry officials, telephone interviews by USITC staff, July 9, 27, and 29, 2010; industry official, interview by USITC staff, Washington, DC, June 22, 2010.

²⁶ Industry official, interviews by USITC staff, Washington, DC, July 2 and 7, 2010.

²⁷ Industry officials, interviews by USITC staff, Washington, DC, May 12, July 7, 15, and 26, 2010; industry officials, interviews by USITC staff, Beijing, China, September 8, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

²⁸ Section 337 is administered by the Commission. Although the Commission’s adjudicatory jurisdiction extends to many forms of IPR violations, most complaints filed under Section 337 involve allegations of patent infringement. USITC, “Section 337: Answers to FAQ,” 2009, 1.

²⁹ USITC, 337 Investigational History Database.

³⁰ These products included semiconductors; personal entertainment media (e.g., TV, radio, and CD/DVD players), digital cameras, mobile phones, and PCs and peripheral equipment. It should be noted, however, that the sample size of Commission investigations is itself small, and because of certain benefits and drawbacks of using the Commission as a forum for patent infringement disputes, the Commission’s caseload may not be representative of the universe of patent infringement disputes involving Chinese defendants or products. Moreover, the cases brought in the United States involving infringement by imports from China may not be representative of the types of infringement actually occurring in China.

BOX 4.1 Pharmaceutical Sector IPR Issues

Pharmaceutical industry representatives assert that, unlike the United States, China has no effective patent linkage system (or related notification system) that would delay marketing approval of generic drugs until after expiration of related patents. The lack of such a system, coupled with a lack of robust patent enforcement, means that infringing generic pharmaceuticals can still be approved for sale in China by the State Food and Drug Administration (SFDA) and/or can stay on the Chinese market despite an existing patent. Industry representatives assert that the sale of such infringing generic products reduces their sales and profits.

“Indirect reliance” is a term of art used by the pharmaceutical industry to refer to the practice of Chinese generic pharmaceutical companies that rely upon or reference data submitted by an original innovative company in seeking manufacturing or marketing approval for their generics from the SFDA. For instance, industry representatives assert that Chinese generic pharmaceutical manufacturers are referencing data submitted by U.S. pharmaceutical companies to obtain approval for their products from the U.S. Food and Drug Administration (FDA). Although such data are not publicly disclosed by the original innovative company, competitors often take the publicly-available FDA summaries and use the data therein to support their own copied products in their SFDA submissions. The SFDA reportedly accepts the summarized data, effectively relying on a U.S. or European regulator’s review of the background test data supporting a new product. Pharmaceutical industry representatives consider this indirect reliance on their valuable test data to be unlawful free-riding on the innovative company’s research, development, and clinical testing expenses.

Source: Industry officials, interviews by USITC staff, Washington, DC, June 22 and July 19, 2010.

Patent Enforcement Challenges in China

Industry representatives did not identify types of infringers or locations that were generally associated with patent infringement in China, unlike the recurring patterns and “hot spots” associated with copyright and trademark infringement. The representatives did, however, identify issues that are considered when determining where and against whom to bring a claim for patent infringement. These issues track the difficulties noted more generally for civil enforcement (chapter 1) and include the possibility of favoritism towards Chinese defendants, particularly state-owned enterprises (SOEs); the risk of noncompliance with judicial orders; the lack of discovery in court proceedings; and the difficulties of authenticating or admitting certain types of evidence.

Patent infringement cases will often be more complex than cases involving other types of IPR. As a result, judicial inexperience, the lack of discovery, and evidentiary difficulties present especially acute problems in complex patent suits compared to other IPR lawsuits. The lack of discovery, for example, means that patents covering production methods—although issued in China—are virtually impossible to enforce because defendants need not disclose how their allegedly infringing products are made.³¹ The complexity of patent suits also exacerbates the impact on foreign firms of Chinese requirements that all evidence obtained abroad be notarized in the home country and then forwarded to the Chinese embassy in the home country for legalization.³² Industry representatives have asserted that these technical requirements, which apply only to evidence gathered outside of China, impose significant cost and delay on foreign patent litigants and make the presentation of certain evidence extremely difficult.³³ Because

³¹ Von Lewinski, *Copyright Throughout the World*, 2009, sec. 8.46(b); industry official, telephone interview with USITC staff, July 29, 2010.

³² Cutshaw, Burke, and Wagner, *Corporate Counsel’s Guide to Doing Business in China*, 2009, sec. 24.9 (2009).

³³ Industry officials, telephone interviews with USITC staff, July 22, 27, and 29, 2010.

patent cases often involve high-tech industries, such as telecommunications and pharmaceuticals, concerns about Chinese national favoritism (see chapter 5) in sectors the Chinese government deems important may also be present in patent cases.³⁴

As for the best venue for a patent infringement case, several industry representatives noted that suing a defendant in the jurisdiction in which it is located can be problematic because of the likelihood that local protectionism will play a role. Some industry representatives reported that their cases were subject to antiforeign newspaper and television coverage. Publicity often works against foreign IPR litigants; industry representatives expressed a preference for quietly trying their cases outside the glare of media coverage.³⁵ On the other hand, judicial orders from distant courts are reported to be difficult to enforce.³⁶

Industry representatives assert that another important problem in patent litigation is the previously mentioned ability of Chinese companies to file for utility model patents covering IP that is in the public domain elsewhere or for which the original inventor has not yet filed for protection in China. Chinese companies armed with such utility model patents then bring suit against foreign companies that manufacture or export goods to China, or use the utility model patents to defend themselves from allegations of infringement.³⁷

High-Profile Patent Cases

There are a limited number of reported patent cases litigated to judgment involving foreign firms in China. The Chinese government does not publish all of its judicial opinions, which makes finding information about such cases difficult. One highly publicized case is *Chint v. Schneider*. The Chint Group (a Chinese firm based in Wenzhou, Zhejiang Province) sued Schneider Electric Low Voltage Co., Ltd. (a Tianjin-based company that is 75 percent owned by the French company Schneider Electric) in the Wenzhou Intermediate People's Court. The Chint Group, China's largest maker of low-voltage electrical products, claimed that Schneider infringed certain of its utility model patents. Schneider asserted that Chint's utility model patents were invalid because Schneider had prior invention patents in other jurisdictions covering the same technology. However, the patent law existing in China at the time did not recognize prior use or sale outside of China as "prior art" that could invalidate a utility model patent. Chint Group prevailed in 2007 and was awarded a judgment of approximately \$45 million, the largest ever awarded in an intellectual property case in China. After two years of appeal, Schneider agreed to settle the case in 2009 for half the original award.³⁸

³⁴ Industry official, telephone interview with USITC staff, July 9, 2010; industry officials, interviews with USITC staff, Washington, DC, May 12 and June 2, 2010.

³⁵ Industry officials, interviews by USITC staff, Washington, DC, July 15, 2010; industry officials, interviews by USITC staff, Beijing, China, September 8, 2010; see also Xiao, "Interview on Patent Infringement and Litigation," n.d.; Bai, "Yes, China Does Protect Intellectual Property," February 11, 2010.

³⁶ Industry officials, telephone interviews by USITC staff, July 29 and August 3, 2010.

³⁷ Leviton, "Leviton China Subsidiary Prevails," March 22, 2010. See also the following discussion of *Chint v. Schneider*.

³⁸ Reuters, "Schneider Settles 3-year Chint Patent Suit," April 15, 2009.

Some observers have pointed to this case as evidence that the Chinese courts unfairly enforce IP laws to advance Chinese interests.³⁹ Others, however, have said that the case was an anomaly that does not provide any insight into Chinese IPR enforcement, and note that the average damages award in IP litigation remains very low.⁴⁰ As noted earlier, China subsequently acknowledged the shortcomings of its approach to prior art and amended the patent law to adopt an absolute novelty standard effective October 2009.

Two other recent cases were resolved against the Chinese companies involved. In one, German bus manufacturer Neoplan Bus sued Zhongwei Bus and Coach, its parent Zonda Industrial Group, and its sales agent Beijing Zhongtong Xinghua Vehicle Sales in the Beijing No. 1 Intermediate People's Court for infringing Neoplan's design patent that covered a style of coach bus. In 2009, the German company was awarded damages of RMB 21.16 million (approximately \$3.23 million) after Zonda could not prove that it designed its infringing bus. Another recent case involved an invention patent covering electric controls used in teakettles. The case was filed in Beijing in December 2008 by Strix Ltd., a British firm, against two Chinese companies that manufactured electric-control components and two Chinese kettle manufacturers who used the infringing components in their kettles. In January 2010, the Beijing No. 1 Intermediate People's Court awarded Strix RMB 9.1 million (approximately \$1.36 million).

While some observers claim that the difference between the damages awarded to a foreign company (Neoplan or Strix) and those awarded to a Chinese company (Chint) is evidence of discrimination, others assert that the Neoplan and Strix cases demonstrate that foreign firms can be successful in patent infringement litigation. However, the small sample size and different technologies make such comparisons difficult.

Trade Secret Misappropriation in China

A trade secret is technical or business information that is unknown to the public and brings economic benefits to the owner, and for which the owner has adopted measures to maintain its confidentiality. Trade secret owners protect their IP through reasonable internal measures to maintain their secrecy; unlike copyrights, patents, and trademarks, they cannot be registered with administrative agencies. In the event that trade secrets are misappropriated, China has a legal framework in place to support a judicial or administrative claim.⁴¹

U.S. industry representatives report that they use a range of measures to protect their trade secrets in China, including increasing the physical security of their buildings and carefully controlling access, adjusting and compartmentalizing work processes so that employees have no access to information they are not cleared for, and maintaining computer servers outside of China so that local employees are unable to access

³⁹ Industry officials, telephone interviews by USITC staff, July 9 and 29, 2010; industry officials, interviews by USITC staff, Washington, DC, May 15 and June 2, 2010; McGregor, *China's Drive for "Indigenous Innovation,"* July 2010, 26.

⁴⁰ Industry officials, telephone interviews by USITC staff, July 22, 29, and August 3, 2010. See chapter 1.

⁴¹ U.S. Embassy, Beijing, "Intellectual Property Rights in China, Trade Secrets," n.d. (accessed August 5, 2010). Trade secret definitions and mechanisms for asserting claims are discussed in chapter 1.

unauthorized information from those servers.⁴² Nonetheless, several representatives of high-tech industries noted that they expect to lose at least some of their trade secrets over time, even after taking extensive precautions, and that their most important strategy is to innovate quickly enough to have the next generation of technology ready for market by the time that their competitors are ready to introduce products based on the misappropriated IP.⁴³

The following section identifies the wide range of industries that may be particularly affected by trade secret misappropriation in China and lists groups that potentially may be involved in misappropriation—including employees, joint venture partners, computer hackers, and regulatory agencies—and discusses particular enforcement issues that have arisen in reported cases in China and the United States.

Industries Affected by Trade Secret Misappropriation

Almost all industries reportedly rely on trade secrets to protect their valuable business information in China.⁴⁴ There are, however, few published cases in China in which U.S. or foreign firms have asserted trade secret misappropriation. Nevertheless, a sampling of trade secrets-related court cases between Chinese companies spotlights a range of industries where such disputes have arisen, including metals manufacturing, food recipes, pottery techniques, and electronic engineering technology.⁴⁵

Potential Infringers of Trade Secrets

Trade secret misappropriation can be carried out by various individuals and groups. Industry representatives report a number of scenarios, including misappropriation by employees, joint venture partners, and computer hackers, and the leakage of test data by regulatory agencies in China.

Employees: Employees who steal company secrets and take them to a new employer, or use such information to start a new company are a frequent source of trade secret misappropriation.⁴⁶ According to one observer, Chinese employees of multinationals may be more frequently tempted to divulge trade secrets than employees outside of China because in China many people offer to buy such information.⁴⁷

⁴² USITC, hearing transcript, June 15, 2010, 304–5 (testimony of Christian Murck, American Chamber of Commerce in China); industry officials, interviews by USITC staff, Beijing, China, September 8, 2010; and industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

⁴³ Industry officials, telephone interviews by USITC staff, July 2 and July 7, 2010; industry officials, interviews by USITC staff, Beijing, China, September 8, 2010; and industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

⁴⁴ Industry official, telephone interview by USITC staff, July 22, 2010; industry officials, interviews by USITC staff, Beijing, China, September 8, 2010. The OECD notes that food and beverage companies may particularly rely on trade secrets for their proprietary recipes. OECD, *The Economic Impact of Counterfeiting and Piracy*, 2008, 328.

⁴⁵ Pagnatarro, “The Google Challenge,” 2007, 625–32.

⁴⁶ Industry officials, interviews by USITC staff, Washington, DC, July 15, 2010; industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010; and Pagnatarro, “The Google Challenge,” 2007, 625–32.

⁴⁷ Industry official, telephone interview by USITC staff, July 22, 2010.

Chinese courts have enforced employee contracts that preclude the disclosure of trade secrets. Such cases typically are brought against the former employee, not the new employer, because of the practical difficulties of establishing the involvement of the new employer (particularly given the preference for written evidence). Under these circumstances, damage awards tend to be relatively small and non-deterrent.⁴⁸

The Commission recently issued an exclusion order that prevented the importation into the United States of certain cast steel railway wheels manufactured in China on the basis of trade secret misappropriation by employees.⁴⁹ The Commission found that the TianRui Group (Henan Province, China) and related companies hired away nine employees from the Chinese licensee of the U.S. firm, Amstead Industry, and that the employees disclosed trade secrets, including certain technical documents, to their new employer.⁵⁰

Joint venture partners: Although U.S. industry representatives have stated that some companies experience trade secret misappropriation by their joint venture partners, the extent of such infringement is unclear.⁵¹ One source noted that problems arise when companies setting up a new production facility in China are required to partner with a Chinese design firm to build the facility. The design of a production facility often includes valuable trade secrets, some design firms reportedly have no qualms about disclosing those secrets to the foreign firm's competitors. In this way, trade secrets can be lost before production even begins.⁵²

Allegations of misappropriation also have arisen in cases where foreign companies began operations through joint ventures in China and soon found themselves competing with their former joint venture partners.⁵³ In one reported example, German-based Siemens joined with China National Railway (CNR) to build China's first high-speed rail line between Beijing and Tianjin for an estimated contract value of almost \$1 billion; this project was successfully concluded in 2008. Shortly thereafter, Siemens announced that it had won a contract to build a high-speed rail line between Beijing and Shanghai, but China's Ministry of Railways ultimately awarded the \$5.7 billion contract to CNR, with Siemens effectively demoted to a subcontractor role.⁵⁴ While details of the technology transfer process are not public, it appears that CNR did benefit from its joint venture relationship with Siemens and has now become an important competitor in the industry.⁵⁵

⁴⁸ Pagnatarro, "The Google Challenge," 2007, 631; industry official, telephone interview by USITC staff, July 26, 2010.

⁴⁹ Commission opinion, In re Certain Cast Steel Railway Wheels, Processes for Manufacturing or Relating to Same and Certain Products Containing Same, inv. no. 337-TA-655, March 2, 2010.

⁵⁰ Initial determination, In re Certain Cast Steel Railway Wheels, Processes for Manufacturing or Relating to Same and Certain Products Containing Same, inv. no. 337-TA-655, October 16, 2009. The Commission determined not to review the findings of its administrative law judge. Notice, 74 *Fed. Reg.* 68282-83, December 23, 2009.

⁵¹ Industry officials, interviews by USITC staff, Washington, DC, May 12 and July 15, 2010; industry officials, interview by USITC staff, Shanghai, China, September 15, 2010.

⁵² Industry officials, interview by USITC staff, Shanghai, China, September 15, 2010.

⁵³ Ranjard and Misonne, "Study 12: Exploring China's IP Environment," 15; McGregor, *China's Drive for "Indigenous Innovation,"* July 2010, 7.

⁵⁴ Siemens is reportedly supplying CNR with approximately \$1 billion in components for the project. McGregor, *China's Drive for "Indigenous Innovation,"* July 2010, 32-33.

⁵⁵ McGregor, *China's Drive for "Indigenous Innovation,"* July 2010, 32-33; USITC, hearing transcript, June 15-16, 2010, 256-57 (testimony of Christian Murck, Amcham-China).

More positively, some U.S. industry representatives report that their joint venture partners provide important benefits when it comes to trade secrets. Benefits may be both tactical (the partner may explain which protection measures are most effective in China) and strategic (a Chinese partner may be more likely to prevail in an IPR dispute in court).⁵⁶

Computer hackers: Industrial espionage through computer hacking originating in China is an area of growing concern to firms in the United States and throughout the world.⁵⁷ Although there is very little concrete information on the scope of trade secret misappropriation through Chinese computer hacking, it is clear that China is an important venue for hacking and the development of malicious software.⁵⁸

The issue rose to prominence in the United States following Google's revelation of a serious breach of its corporate network in December 2009. Hackers allegedly stole IP, including Google's source code for its sign-on software, and targeted the Gmail accounts of human rights activists.⁵⁹ It was subsequently reported that 33 other firms were also targeted, including financial institutions and defense contractors.⁶⁰ The attacks were attributed to computers at two educational institutions in China: Shanghai Jiaotong University and the Lanxiang Vocational School. The latter reportedly was established with military support and continues to train computer scientists for the Chinese military.⁶¹ There is debate as to whether the schools have been used as camouflage for government operations or may themselves have been the victim of a "false flag" intelligence operation in which the true attacker misattributed the intrusion to the schools.⁶²

Regulatory agencies: Another avenue for trade secret misappropriation is the leakage of protected data from regulatory authorities.⁶³ In certain industries for which safety is a concern—for example, pharmaceuticals, medical devices, and plant varieties—regulatory agencies in China and elsewhere require companies to submit confidential data to prove the safety of their products. Given the significant investment of time and resources undertaken by originating companies in creating such data, its leakage can give competitors a substantial unfair advantage in seeking regulatory approval or market

⁵⁶ Industry official, interview by USITC staff, July 26, 2010; industry officials, interview by USITC staff, Beijing, China, September 8, 2010.

⁵⁷ Industry officials, interviews by USITC staff, Washington, DC, July 20 and August 3, 2010; industry official, telephone interview by USITC staff, August 4, 2010.

⁵⁸ Industry officials, interviews by USITC staff, Washington, DC, July 20 and August 3, 2010; industry official, telephone interview by USITC staff, August 4, 2010. According to McAfee, a U.S. security technology firm, 1.1 million computers were commandeered by hackers for malicious purposes in China in the last quarter of 2009, more than in any other country and in addition to approximately 10 million computers that had been previously infected. Nakashima, "China Leads the World," February 15, 2010.

⁵⁹ Zetter, "Google Hack Attack Was Ultra Sophisticated," January 14, 2010; Lum, "U.S.-China Relations: Policy Issues," March 12, 2010.

⁶⁰ Zetter, "Google Hackers Targeted Source Code," January 13, 2010. Only one of the firms (Adobe) has been publicly named. Other companies believed to have been attacked are Dow Chemical and Northrop Grumman. CBS News, "Google Not Only Target of China Hackers," January 24, 2010.

⁶¹ Markoff and Barboza, "2 China Schools Said to Be Tied to Online Attacks," February 18, 2010.

⁶² Industry official, telephone interview by USITC staff, July 20, 2010.

⁶³ Under TRIPS (Article 39.3), test data submitted to governments in order to obtain marketing approval for new pharmaceutical or agricultural chemicals must also be protected against unfair commercial use.

opportunities. USTR and industry representatives note a continued concern about the insufficient protection of such data in China.⁶⁴

Concern about leakage of data by regulatory agencies has also surfaced for software encryption companies operating in China. The government has recently begun requiring software companies to submit certain source codes to the government in order to obtain China Compulsory Certification (CCC) approval before they can market software encryption products in China.⁶⁵ U.S. industry representatives have voiced concerns that their IP could be subject to leakage from China's Office of Security Commercial Code Administration or from the government-owned computer software laboratories that perform product tests for the government.⁶⁶

Trade Secret Enforcement Challenges in China

Trade secret owners may use administrative and judicial actions to address trade secret misappropriation. Administrative actions are handled by the Administration for Industry and Commerce (AIC). The AIC has the power to investigate the allegations, order the return of material containing trade secrets and, in certain circumstances, order the destruction of goods using the trade secrets.⁶⁷ It does not have the power to award damages; if damages are sought, a judicial action is necessary.⁶⁸

Both civil and criminal penalties are provided for trade secret misappropriation. The most prominent criminal cases for trade secret misappropriation have been brought by the Chinese government against foreigners. For example, in 2009, the Chinese government imprisoned a Chinese-born American automotive engineer for 17 months while he was awaiting trial on allegations that he misused trade secrets. The engineer asserted that Chinese investigators threatened him with multimillion-dollar fines unless he turned over the rights to his U.S. patent to his former Chinese business partner. He was released from detention in May 2010.⁶⁹ Staff research did not identify any criminal trade secret cases in China that were undertaken at the request of U.S. firms.

With regard to civil litigation, the published trade secrets cases reviewed primarily involved domestic companies. In a number of the cases, courts found that the trade secrets law had been violated; however, most awarded low damage amounts.⁷⁰ As explained in chapter 1, court awards of low, non-deterrent civil damages have been noted as a concern by industry representatives across IPR sectors.⁷¹

⁶⁴ USTR, *Special 301 Report*, 2010, 22; industry officials, interviews by USITC staff, Washington, DC, June 22, 23, and 25, 2010; and industry officials, interviews by USITC staff, Shanghai, China, September 15, 2010.

⁶⁵ The standards aspects of this issue are discussed in chapter 5.

⁶⁶ McGregor, *China's Drive for "Indigenous Innovation"*, July 2010, 30; USITC, hearing transcript, June 15, 2010, 306 (testimony of Mark Bohannon, Software & Information Industry Association).

⁶⁷ Bai, "Overview of Trade Secret Protection in China," April 11, 2007, 3.

⁶⁸ The Commission's fieldwork did not reveal any information regarding the frequency or effectiveness of administrative procedures in trade secret cases.

⁶⁹ AP, "China Holds Engineer on Trade Secrets Charge," December 17, 2009. A Chinese-born geologist has been detained since November 2007 on charges that he provided state secrets to foreigners. Lum, "U.S.-China Relations," March 12, 2010, 6.

⁷⁰ Pagnatarro, "The Google Challenge," 2007, 631-32.

⁷¹ Industry officials, telephone interviews by USITC staff, July 9, 27 and 29, 2010. See also chapter 1.

Industry representatives further note that it is more difficult to protect and enforce trade secrets in China because, as mentioned earlier, there is no U.S.-style discovery. Written evidence is the form of evidence that carries the most weight in Chinese courts; witness testimony often is not considered sufficient. Thus, written evidence that a defendant agreed to treat particular information as a trade secret, that he or she received the confidential information, and that the information was disclosed may all be required to successfully state a claim.⁷² Industry representatives have suggested that the evidentiary hurdles for establishing a trade secret case may partially explain the small volume of such cases.⁷³

Trade Secret Enforcement Efforts in the United States

Several U.S. companies have attempted to enforce their trade secret rights through the U.S. court system rather than in China. In one particularly well-known case from 2003, Cisco Systems of California sued Huawei Technologies of Shenzhen, China (both providers of telecommunications equipment and services) in U.S. courts, alleging that Huawei had misappropriated trade secrets related to the software used in Cisco's network routers. The case was eventually settled out of court after Huawei agreed to remove the offending products from the market and replace the disputed software in Huawei products.⁷⁴

There have also been a number of criminal trade-secret theft actions involving employees of U.S. companies found to have misappropriated trade secrets for the benefit of Chinese companies. For example, a former chemist for an Illinois paint manufacturer recently pled guilty to stealing formulas and other proprietary information worth up to \$20 million in connection with his acceptance of a new position with Nippon Paint of Shanghai.⁷⁵ Earlier this year, a former research chemist for E.I. du Pont de Nemours pled guilty to attempting to transfer to the Peking College University of Engineering certain trade secrets relating to organic light-emitting diodes.⁷⁶ In late 2008, two former employees of Metaldyne Corporation were convicted of transferring certain Metaldyne trade secrets to a Metaldyne competitor, Huafu Industry Company, of Chongqing.⁷⁷

⁷² Bai, "Overview of Trade Secrets Protection in China," April 11, 2007, 11.

⁷³ Industry official, telephone interview by USITC staff, July 22, 2010; industry officials interviews by USITC staff, Shanghai, China, September 15, 2010.

⁷⁴ Simons, "The Huawei Way," January 16, 2006.

⁷⁵ USDOJ, "Former Paint Manufacturing Chemist Pleads Guilty to Stealing Trade Secrets Valued up to \$20 Million," September 1, 2010.

⁷⁶ USDOJ, "Former DuPont Chemist Pleads Guilty," June 8, 2010.

⁷⁷ USDOJ, "Former Metaldyne Employees Plead Guilty to Conspiracy to Steal Confidential Business Information to Benefit Chinese Competitor," September 15, 2008.

CHAPTER 5

China's Indigenous Innovation Policies

In recent years, China has introduced a number of policies aimed at increasing the level of scientific and technological innovation originating within the country, as well as expanding the domestic added value in goods produced in China's factories. These indigenous innovation policies have generated significant interest and concern among governments and businesses in the United States and other countries. From China's perspective, its indigenous innovation policies are part of a legitimate and necessary effort to raise the level of domestic innovation to respond to pressing economic development challenges. However, China's focus on promoting market opportunities for innovations developed exclusively in China, by Chinese firms, has raised concerns that these policies are ultimately aimed at denying foreign firms access to business opportunities presented by the large and fast-growing Chinese economy. Arenas through which China is implementing policies related to indigenous innovation include government procurement, technical standards, competition policy under the anti-monopoly law (AML), taxation policy, and IPR protection and enforcement.¹ Moreover, foreign businesses have reportedly been pressured to transfer know-how and technology to Chinese firms in order to gain access to the Chinese market. Businesses are concerned that this IP ultimately will be used by Chinese companies competing against them in China and in third-country markets.

Foreign companies active in China have repeatedly stated that they support China's efforts to increase its innovation capabilities; however, they fear that China's introduction of policies favoring domestic companies and products that rely on Chinese-owned IP will erode opportunities for foreign investors in China.² In fact, several U.S. industry representatives have publicly stated that they see indigenous innovation policies as a greater threat to their business in China than other issues more often mentioned in the press, including IPR infringement and China's currency exchange rate.³ The U.S. government has also stated that indigenous innovation and discriminatory industrial policies are important issues on the bilateral policy agenda.⁴ On the other hand, China's leaders do not agree that the climate for foreign investment in China is deteriorating. In a July 2010 speech before foreign investors, for example, Premier Wen Jiabao noted that foreign direct investment (FDI) into China through June 2010 had surged compared to a year earlier, citing this trend as evidence that foreign investors did not seem overly concerned about policy changes.⁵

¹ McGregor, *China's Drive for "Indigenous Innovation,"* July 2010, 6–7; USITC, hearing transcript, Washington, DC, June 15, 2010, 181–83 (testimony of Christian Murck, AmCham-China); Stewart and Stewart, written submission to the USITC, July 8, 2010; industry official, telephone interview by USITC staff, July 9, 2010; industry officials, interviews by USITC staff, May 12, June 2, July 2, 7, and 15, 2010.

² USITC, hearing transcript, Washington, DC, June 15, 2010, 191–92 (testimony of Calman Cohen, Emergency Committee For American Trade); USITC, hearing transcript, Washington, DC, June 15, 2010, 131–32 (testimony of Shaun Donnelly, National Association of Manufacturers); North American and European Industry Groups, "Industry Comments on the Draft Notice Launching the National Indigenous Innovation Product Accreditation Work for 2010," May 10, 2010.

³ USITC, hearing transcript, Washington, DC, June 15, 2010, 170–71 (testimony of Jeremie Waterman, U.S. Chamber of Commerce); USITC, hearing transcript, Washington, DC, June 15, 2010, 196–97 (testimony of Robert Holleyman, Business Software Alliance); USTR, *Special 301 Report*, 2010, 21.

⁴ See, for example Kirk, statement to the Senate Committee on Finance, June 23, 2010; Politi, "US to Press China on Business," May 20, 2010.

⁵ *Xinhua News*, "Xinhua 'China Focus,'" July 19, 2010.

China's policies, however, are evolving extremely quickly. Many policies remain in draft form, many of the implementing regulations for major laws are still not in place, and enforcement of most indigenous innovation policies has not yet begun. Much of the concern thus reflects fear of future Chinese policies and of the way new laws may be implemented, and not simply objections to policy actions that the Chinese government has already taken. It remains unclear how the effects of the new policies will play out.

This chapter describes China's policies promoting indigenous innovation, lists the industries that are primarily affected, and discusses some of the concerns that the policies have raised in the business community, including how such policies may work together to help build up Chinese "national champion" companies active in high-tech industries. The chapter then describes indigenous innovation policies in several specific domains, including China's government procurement process, setting of technical standards, and AML enforcement.

Chinese Efforts to Foster Indigenous Innovation

Although China's indigenous innovation policies are most closely associated with the January 2006 Medium- to Long-Term Plan for the Development of Science and Technology (MLP), discussed in more detail below, many observers note that promoting innovation and technological development has long been an important theme for the Chinese government. For example, the 863 Program (or State High-Tech Development Plan), established in 1986, is a government-funded research and development (R&D) program aimed at diversifying China's R&D efforts away from a purely military focus toward more civilian and dual-use technologies, such as satellites, computers, robotics, biotechnology, energy, and space exploration, while also moving China away from the obligation to pay royalties for foreign technologies used in products made in China.⁶

In 1995, China's National Conference on Science and Technology elevated the goal of scientific and technological development to a national policy priority. A major report to the central leadership in 1997, "The Coming of the Knowledge-Based Economy and the Construction of the National Innovation System," led to the incorporation of the concept of a "national innovation system" in China's evolving science and technology policies. Chinese innovation policy increasingly began to address areas beyond R&D funding, including industrial research, IPR, and venture capital.⁷ The MLP itself was the culmination of an extended policymaking process that formally began in 2003 (shortly after China's World Trade Organization (WTO) accession) and involved more than 2,000 scientists, engineers, and corporate executives from across China.⁸

Essential Elements and Themes of the MLP

Most observers attribute the official institution of China's indigenous innovation policies to the MLP. The goal of indigenous innovation, as articulated in the MLP, is to enable China to become an "innovation-oriented society" and a global leader in science and technology. Specifically, indigenous innovation policies encompass several of the Chinese government's long-term policy goals, including promoting domestic companies'

⁶ NFTC, *China's Promotion of the Renewable Electric Power Equipment Industry*, March 2010, 19–20.

⁷ Suttmeier, Cao, and Simon, "China's Innovation Challenge," Summer 2006, 81–82.

⁸ Serger and Breidne, "China's Fifteen-Year Plan for Science and Technology," July 2007, 149–50.

contributions to the Chinese economy rather than relying on foreign know-how and technology, building domestic R&D capabilities to upgrade Chinese firms' innovative capacity, and generally increasing the share of added value that domestic Chinese companies contribute to China's economy.⁹

The MLP included several specific innovation targets for China to reach by 2020, including:

- Increasing R&D investment to 2.5 percent of gross domestic product (GDP) (a level comparable to that of the United States), up from 1.3 percent in 2005;
- Raising the contribution made by technological advances to economic growth to more than 60 percent;
- Limiting dependence on imported technology to no more than 30 percent (from an estimated 60 percent in 2006);
- Becoming one of the top five countries in terms of invention patents granted to its citizens; and
- Ensuring that Chinese-authored scientific papers are among the most cited in the world.¹⁰

Chinese government ministries and agencies at all levels are actively implementing the central ideas of the MLP through a wide variety of policies under their separate jurisdictions.¹¹

As noted, an important theme of the MLP is the effort to reduce dependence on foreign technology and foreign companies. China views its dependence on foreign technology as problematic in a number of ways. First, realizing that foreign IP owners collect substantial royalties on the sale of Chinese manufactured goods, Chinese government leaders have concluded that market dominance depends on owning IP and being a primary developer of international technical standards.¹² Second, Chinese policymakers would like to improve domestic technology to address serious societal needs such as energy, resource constraints, environmental protection, and public health. Third, China has national security concerns related to dependence on foreign technology. As an example, China has expressed objections to U.S. export control laws, particularly as

⁹ Zhang et al., *Promoting Enterprise-Led Innovation in China*, 2009, 2–3; Cao, Suttmeier, and Simon, “China’s 15-year Science and Technology Plan,” December 2006.

¹⁰ Cao, Suttmeier, and Simon, “China’s 15-year Science and Technology Plan,” December 2006, 38; McGregor, *China’s Drive for “Indigenous Innovation,”* July 2010, 14–15.

¹¹ The National Development and Reform Commission (NDRC) is responsible for the largest number of these supporting policies (29), followed by the Ministry of Finance (MOF) with 21 policies, the Ministry of Science and Technology (MOST) with 17 policies, and the Ministry of Education (MOE) with 9 policies. Serger and Breidne, “China’s Fifteen-Year Plan for Science and Technology,” July 2007, 151–56.

¹² Suttmeier, Cao, and Simon, “China’s Innovation Challenge,” Summer 2006, 79. According to one study of China’s exports, for example, “the domestic value-added component of the value of exported electronic and information technology products, while growing, remains quite low. Even in the most recent years for which data are available, more than 70 percent of the value of these exports is comprised of imported inputs.” Branstetter and Foley, “Facts and Fallacies about U.S. FDI in China,” October 2007, 20 and figure 5.

applied to dual-use technologies, which China sees as limiting its companies' access to essential foreign technology.¹³

Another important focus of the MLP is policies that specifically favor products and technologies that use IP and brands developed by Chinese companies.¹⁴ The goal of promoting Chinese IP was reinforced in China's 2008 National Intellectual Property Strategy (NIPS). The NIPS urges the government to "guide and support [Chinese] market entities to create and utilize intellectual property" through a variety of policies linked to indigenous innovation.¹⁵ The NIPS sets various targets, including significantly increasing the level and quantity of China's indigenous IP, developing a group of internationally famous brands, increasing Chinese value in core copyright industries, and effectively protecting trade secrets.¹⁶ Similarly, recent guidance from the Supreme People's Court on the implementation of indigenous innovation policies instructs the courts to (1) support and promote indigenous innovation by helping to promote the creation of indigenous famous brands and the development of a brand economy, and (2) increase the level of protection of indigenous IPR on key technologies.¹⁷ Because the guidance is new, it is not yet clear how it will be implemented.¹⁸

Industries Affected by Indigenous Innovation Policies

The MLP references a broad set of focus areas for indigenous innovation efforts that are linked to national needs, including agriculture, energy, environment, manufacturing, and national defense. Separately, the MLP lists several frontier technologies of interest, including biotechnology, lasers, new materials, and ocean technology. In addition, the MLP identifies 17 specific, large-scale science and engineering "megaprojects" that are to receive special attention and funding, such as control and treatment of AIDS and other major diseases; core electronic components, including semiconductors; large aircraft; and water pollution control and treatment. However, under the MLP, no industry has been explicitly excluded from the goal of raising domestic innovation levels.¹⁹

Generally, indigenous innovation policies focus on emerging, high-tech industries for which innovation broadly, and R&D and patents more specifically, are seen as playing an important role. Several Chinese provinces have developed catalogues listing accredited indigenous innovation products, with a broad focus on these high-tech industries. According to non-Chinese observers, indigenous innovation policies appear to be

¹³ U.S. export control laws regarding dual-use technologies apply to many products that are important to U.S. national security but may also have uses that are not related to national security. Cao, Suttmeier, and Simon, "China's 15-year Science and Technology Plan," December 2006, 39; industry official, interview by USITC staff, July 30, 2010.

¹⁴ Serger and Breidne, "China's Fifteen-Year Plan for Science and Technology," July 2007, 137, 145; USCBC, "Issue Brief: New Developments in China's Domestic Innovation and Procurement Policies," January 2010.

¹⁵ Government of China, "Outline of the National Intellectual Property Strategy," June 2008, Article III.2(11).

¹⁶ *Ibid.*, Article II.2(7).

¹⁷ See "Opinions on the Provision of Judicial Support and Service," Supreme People's Court, http://www.chinacourt.org/flwk/show.php?file_id=144434 (link to text in Chinese), June 29, 2010.

¹⁸ USITC, hearing transcript, Washington, DC, June 15, 2010, 343 (testimony of Chris Israel, PCT Government Relations).

¹⁹ The complete list of key areas, frontier technologies, and megaprojects is available in Cao, Suttmeier, and Simon, "China's 15-year Science and Technology Plan," December 2006, 43, box 2. McGregor, *China's Drive for "Indigenous Innovation,"* July 2010, app. 1, provides details on 13 of the megaprojects; the author notes that the details are not available on the remaining projects, which are believed to be classified military projects.

particularly prominent for automobiles (including electric vehicles), renewable energy, nanotechnology, civil aviation, and health care (particularly medical devices).²⁰

The central government is currently considering an accreditation policy for indigenous innovation products (explained in further detail below). Accredited products will be included in a catalogue, allowing them to receive preferences for government procurement.²¹ Once the policy is finalized, the Chinese government is expected to offer indigenous innovation accreditation to products from six industries: computer and application equipment, telecommunications products, modern office equipment, software, new energy and equipment, and high-efficiency energy-saving products.

Concerns Regarding Indigenous Innovation

China appears to be promoting indigenous innovation and sales of high-tech products by domestic firms at the expense of foreign firms. Overarching concerns are that China's approach to spurring domestic innovation varies significantly from global norms, discriminates against foreign companies operating in China, and changes the rules for foreign involvement in the economy midstream, threatening the expected value of current foreign investment in the Chinese economy.²² This is compounded by a concern that foreign companies will need to share sensitive and proprietary technology with Chinese firms or government agencies in order to reap the full benefits of their investments in China. As noted by one U.S. industry representative:

China's indigenous innovation policy's chief aim is to give a leg up to domestic producers by adopting rules and regulations favoring products that use Chinese-developed ideas and technologies. Such policies more often than not do this at the expense of foreign players who have worked for decades in partnership with China to promote growth and prosperity and deliver innovative products to people of that country.²³

Chinese requirements for R&D that takes place exclusively in China—for example, to qualify for certain government procurement purchases—are also broadly incompatible with the highly successful innovation policies of many global companies. U.S.-based multinational firms have noted that China's apparent desire to rely on homegrown innovation runs counter to the integrated, globalized R&D systems on which many multinational companies rely—systems in which activities in the United States, Europe, and China complement each other. Patent applications, for example, frequently list

²⁰ USITC, hearing transcript, June 15, 2010, 269–70 (testimony of Christian Murck, American Chamber of Commerce in China); foreign government official, telephone interview by USITC staff, July 9, 2010; industry officials, interviews by USITC staff, July 15, 2010.

²¹ USCBC, “Issues Brief: China’s Domestic Innovation and Procurement Policies,” May 2010.

²² McGregor, *China’s Drive for “Indigenous Innovation,”* July 2010, 23; foreign government official, telephone interview by USITC staff, July 9, 2010; USITC, hearing transcript, Washington, DC, June 15, 2010, 55–56 (testimony of Calman Cohen, Emergency Committee For American Trade).

²³ USITC, hearing transcript, Washington, DC, June 15, 2010, 217 (testimony of John Neuffer, Information Technology Industry Council).

engineers based in China together with engineers based elsewhere. This collaborative system makes it quite difficult to tie the IP for a given product to a single country.²⁴

The “Web of Indigenous Innovation Policies”

A number of observers have referred to a “web” of interrelated policies in various policy areas that work together to favor domestic Chinese companies—particularly “national champion” companies (generally large SOEs with highly recognizable Chinese brands)—over foreign companies in the Chinese market. This policy web can make it quite difficult for U.S. firms to compete in certain high-tech product areas in China, and it has the potential to be expanded to additional product areas.²⁵ Depending on how they are implemented, the final policies may work together, sometimes in subtle ways, both to increase the level of indigenous innovation by Chinese companies and to boost the competitive position of those same firms.²⁶ From this point of view, to understand the implications for the United States, it is imperative to see China’s indigenous innovation policies as a collective whole, rather than as a series of discrete policies. As one industry representative testified:

We’ve understood the problem with China in very discrete ways. There was an IP enforcement problem. There was a joint venture problem. There was a participation in standards problem. . . . What has changed certainly in the last two years is that there is now a recognition that the issue of industrial indigenous innovation . . . is now a structural issue in our U.S.-China relationship.... And the way these policies are . . . intricately woven together . . . directly affect[s] the ability of . . . U.S. companies to compete in China with the potential for job loss here and [adverse effects on] our global competitiveness.²⁷

As some observers see it, China’s principal goal is to actively build a relatively small number of SOEs into “national champions” that will be large enough, and technologically advanced enough, to compete globally with today’s high-tech market leaders, most of which are based in the United States, the European Union, and Japan. China’s indigenous innovation policies in several areas—the government’s procurement and technical standards, its willingness to provide funding to Chinese SOEs, and, potentially, its enforcement of the AML—are combining to create powerful Chinese companies that can become market leaders in high-tech industries. At the same time, these policies discriminate in a coordinated way against foreign competitors. As suggested by several industry representatives, the process of building a Chinese national champion firm works approximately as depicted in figure 5.1. The individual policy areas are described in greater detail below.

²⁴ Intellectual Property Owners Association, written submission to the USITC, July 9, 2010; USITC, hearing transcript, Washington, DC, June 15, 2010, 53, 90–91 (testimony of Calman Cohen, Emergency Committee for American Trade); USITC, hearing transcript, Washington, DC, June 15, 2010, 75 (testimony of Lee Branstetter, Carnegie Mellon University).

²⁵ USITC, hearing transcript, Washington, DC, June 15, 2010, 168–69 (testimony of Jeremie Waterman, U.S. Chamber of Commerce); hearing transcript, Washington, DC, June 15, 2010, 213–14 (testimony of Mark Bohannon, Software & Information Industry Association); industry officials, interview by USITC staff, Washington, DC, July 15, 2010; industry officials, interviews by USITC staff, Beijing, September 8, 2010.

²⁶ See particularly McGregor, *China’s Drive for “Indigenous Innovation,”* July 2010.

²⁷ USITC, hearing transcript, Washington, DC, June 15, 2010, 274–75 (testimony of Mark Bohannon, Software & Information Industry Association).

FIGURE 5.1 One view of creating Chinese “national champion” companies through indigenous innovation policies



Source: Industry and academic representatives.

The Reported Link Between Indigenous Innovation Policies and IPR Infringement in China

Observers also see a close link between China's indigenous innovation policies and IPR infringement activity in China. In this view, China uses the web of indigenous innovation policies described above to create a legal environment "that enables it to intervene in the market for IP, help its own companies to reinnovate competing IP as a substitute to American and other foreign technologies, and potentially misappropriate IP from U.S. and other foreign companies as components of its industrial policies and internal market regulations."²⁸ The overarching themes in China's indigenous innovation policies are reportedly to "(1) undermine and displace foreign IP while promoting its own IP; (2) leverage China's large domestic market to develop national champions, principally state-owned and state-invested enterprises; and (3) build on China's domestic successes by displacing competitors in foreign markets with the foreign IP it has reinnovated."²⁹

In contrast to the view that China's indigenous innovation policies are closely coordinated and implemented in an intentional, overlapping web of policies, other observers argue that each of China's government ministries charged with implementing the MLP acts in an uncoordinated way to fulfill its mandate in separate policy jurisdictions. In this view, this fairly incoherent system leads to a web of sometimes overlapping or contradictory policies at the central and provincial levels that foreign companies and governments encounter, rather than any coordinated effort by Chinese government agencies to access and appropriate foreign technology and IP.³⁰

Government Procurement Policies and Indigenous Innovation

The clearest manifestation of China's indigenous innovation policies with regard to foreign companies is in the government procurement market. The MLP calls on government agencies to encourage and support innovative Chinese companies by purchasing their goods and services. A number of observers have agreed that the Chinese government is actively following this policy, using government procurement contracts to create a market for the products of Chinese companies and to set a benchmark level of acceptance within China for Chinese brands over foreign brands.³¹

China is not currently a signatory of the WTO Government Procurement Agreement (GPA) and so is not bound by the agreement's provisions that ensure nondiscrimination

²⁸ USITC, hearing transcript, Washington, DC, June 15, 2010, 171–72 (testimony of Jeremie Waterman, U.S. Chamber of Commerce). In this context, reinnovation is similar to reverse engineering.

²⁹ USITC, hearing transcript, Washington, DC, June 15, 2010, 171–72 (testimony of Jeremie Waterman, U.S. Chamber of Commerce).

³⁰ Industry officials, interview by USITC staff, July 26, 2010; Simon, "Globalization, Indigenous Innovation, and China's Emerging Technological Trajectory," July 27, 2010.

³¹ Foreign government official, telephone interview by USITC staff, July 9, 2010; industry officials, interviews by USITC staff, May 12, July 7, and 15, 2010; USITC, hearing transcript, Washington, DC, June 15, 2010, 95–96, 181, and 224 (testimonies of Lee Branstetter, Carnegie Mellon University, and Christian Murck, American Chamber of Commerce in China).

against foreign firms in awarding government procurement contracts.³² China is currently in negotiations with WTO members to join the GPA; China stated at the time of its WTO accession that it would join the GPA as soon as possible, submitting its first offer in 2007 and a revised offer in 2010.³³ However, even though negotiations continue, U.S. and foreign industry groups have argued that current policies move China further away from that goal.³⁴

National Accreditation for Indigenous Innovation Products

China's government procurement market for goods and services was valued at an estimated \$88 billion per year in 2008, equal to 2 percent of China's GDP and making up almost 10 percent of Chinese government expenditures. This figure, moreover, does not include significant levels of public investment in infrastructure projects; the American Chamber of Commerce in China estimates that public works projects account for at least 50 percent of total Chinese government procurement funding,³⁵ so the total annual value of government procurement contracts may be closer to \$200 billion.³⁶ The primary central government measures concerning government procurement in China are summarized in table 5.1.

U.S. business groups view the environment for foreign firms in China's government procurement market as deteriorating. Several U.S. companies have reported "increasing difficulty in making sales to government-related entities in China," including government agencies, public institutions such as schools and hospitals, and SOEs, although it is unclear whether there is a direct link between this new environment and China's indigenous innovation policies.³⁷ Despite China's WTO commitment that SOE procurement decisions should rely exclusively on commercial considerations, the Chinese government appears to encourage SOEs to purchase goods made by Chinese companies.³⁸ Even when SOEs are not required to abide by China's government procurement regulations, it is reported that most SOEs implicitly honor regulations that establish preferences for Chinese-owned companies, driving down demand for U.S. products and services.³⁹ In the renewable energy industry, for example, state-owned wind farms (which dominate renewable power generation in China) are reportedly applying the

³² Membership in the GPA would require China to treat GPA parties' products no less favorably than it treats domestic parties' products. Furthermore, GPA parties may not treat domestic suppliers differently on the basis of degree of foreign ownership. Matechak and Gerson, "Can China's Government Procurement Market Be Cracked?" May–June 2010.

³³ USCBC, "PRC Government Procurement Policy," July 2009; English.Eastday.com, "Experts Hail China's Procurement Offer," July 17, 2010; AFP, "China Boosts Offer for WTO Pact on Government Contracts: US," July 15, 2010.

³⁴ North American and European Industry Groups, "Industry Comments on the Draft Notice," May 10, 2010.

³⁵ Ahrens, "Innovation and the Visible Hand," July 2010; AmCham-China, *2010 White Paper*, 2010, 86, 92; U.S. government officials, interviews by USITC staff, July 12, 2010.

³⁶ Chinese government procurement of goods is covered by the Government Procurement Law, while public works projects, such as infrastructure development projects, are covered by the Bidding and Tendering Law. AmCham-China, *2010 White Paper*, 2010, 86–92.

³⁷ USCBC, "Issue Brief: New Developments in China's Domestic Innovation and Procurement Policies," January 2010.

³⁸ AmCham-China, *2010 White Paper*, 2010, 220; North American and European Industry Groups, "Industry Comments on the Draft Notice," May 10, 2010.

³⁹ USITC, hearing transcript, Washington, DC, June 15, 2010, 53 (testimony of Calman Cohen, Emergency Committee for American Trade).

TABLE 5.1 Selected Chinese central government measures regarding government procurement

Measure	Date released	Comments
Bidding and Tendering Law	January 2000	Outlines policies related to public works projects such as infrastructure development projects.
Government Procurement Law	2002	Primary law governing Chinese government procurement. Passed in 2002, but draft implementing regulations for the Government Procurement Law were only released in January 2010 and have not been finalized. Includes preferences for Chinese-made goods, when available.
Administrative Measures for Accreditation of National Indigenous Innovative Products for Trial Implementation	December 2006	State that accredited indigenous innovation products will receive preference in government procurement, and that applicants for such status should (1) own the IP or have the rights licensed for the products under consideration, and (2) have a trademark that is owned by a Chinese company and registered in China.
Evaluation Measures on Indigenous Innovative Products for Procurement	2007	Specify the advantages that certified indigenous innovation products enjoy in the government procurement process. Products classified as “indigenous innovation” are given a margin of 5–10 percent on their evaluative point system when price is the sole determining factor in a procurement decision. When factors beyond price are included in the decision process, indigenous innovation products may receive an additional 4–8 percent boost in their overall evaluations. The evaluation measures also specifically direct Chinese government agencies to use the procurement system to encourage the commercialization of products with indigenous innovation accreditation.
Circular 618, on Launching the 2009 National Indigenous Innovation Product Accreditation Work	November 2009	Lays out, in draft form, the criteria for accrediting specific products for listing in the central government’s indigenous innovation product catalogue. The catalogue is expected to define the products available for procurement by Chinese central government agencies. According to the proposed regulation, to be included in the catalogue, a product must have been produced by an enterprise with full ownership of IP in China through its own R&D, or a Chinese enterprise that has legally obtained the Chinese IPR. In addition, the product trademark must be owned by a Chinese company registered in China, and any trademark associated with the product must be registered in China first and may not be restricted by foreign brands. The circular is particularly troubling because of its use of the nationality of IP as a market access condition.
Draft Notice Launching the National Indigenous Innovation Product Accreditation Work for 2010	April 2010	Revises the November 2009 draft rules above, and softens key requirements. Appears to authorize procurement of indigenous innovation products that use IP licensed from foreign firms, rather than requiring that products use IP originally developed in China. Applicants for indigenous innovation product status must have exclusive rights to the product’s trademark or have the right to use the trademark in China, but the trademark no longer has to be first registered in China. Specifies that accredited products should focus on six high-technology sectors: computer equipment, telecommunication equipment, modern office equipment, software, new energy equipment, and energy-efficient products.

Sources: Brightbill and Fogarty, “New Indigenous Innovation Policies Foreclose Foreign Access,” February 2010; USCBC, “Issue Brief: New Developments in China’s Domestic Innovation and Procurement Policies,” January 2010; USCBC, “Qualification Criteria for China’s Circular 618,” 2010.

“buy domestic” rule to their equipment purchases, particularly when government funds are used for the purchases.⁴⁰

As illustrated in table 5.1, China’s government procurement measures remain in draft form. The most recent draft rules, released in April 2010, appear to include a shift from the November 2009 draft, which required that products accredited as indigenous

⁴⁰ NFTC, *China’s Promotion of the Renewable Electric Power Equipment Industry*, March 2010, ii.

innovation include original Chinese ownership of IP, with R&D conducted in China. Under the April 2010 draft, applicants for indigenous innovation product status must have exclusive Chinese rights to a product's IP and trademark. Also, the IP developed by a foreign firm must be legally licensed from that firm, but is not required to be first registered in China.⁴¹ Given the draft status of the policies, the extent to which firms that are partially or wholly foreign owned will be able to access China's government procurement market remains to be seen. More recently, both Chinese Premier Wen Jiabao and Vice President Xi Jinping, in separate, well-publicized speeches, assured foreign investors that government-funded procurement and construction projects will be open and transparent to both Chinese and foreign-invested enterprises (FIEs), and that foreign firms invested in China would be considered eligible for indigenous innovation accreditation.⁴² Several foreign firms operating in China have reported that the April 2010 draft addressed a number of their concerns regarding China's indigenous innovation policies, and, compared to the November 2009 draft, significantly improved their assessment of China's government procurement market.⁴³

However, even with the April 2010 modifications to the draft policies, some industry representatives remain concerned. Under the new draft, it appears that products must reflect indigenous innovation by complying with unspecified "national industrial and technology policies" and must be locally researched and developed, including licensing of IP usage rights in China, with the R&D led by a Chinese entity. This could exclude foreign-owned firms, joint ventures in which the foreign partner has a majority interest, and even Chinese firms with R&D centers outside of China,⁴⁴ although some foreign firms may qualify. Since the accreditation process is not yet underway, it is difficult to know for sure how Chinese officials will interpret the accreditation process for products manufactured by foreign firms. Another requirement that has been seen as problematic is that products be free from "IPR disputes." "IPR disputes" is a term that has not been defined in the draft regulations, and it raises the possibility that an unsubstantiated allegation raised by a third party, perhaps a competitor, could be used as a reason to exclude a foreign-made product from government procurement.⁴⁵

Further, the development of an indigenous innovation product catalogue may run counter to pledges by the Chinese government to avoid protectionism, and counter to China's own interest in developing a technology-based, 21st-century economy.⁴⁶ U.S. and foreign industry groups have argued that the release of a catalogue that gives preferences in government procurement to specific products is likely to remove incentives for Chinese firms to engage in indigenous innovation of new products, and is also apt to promote

⁴¹ Draft Notice Launching the National Indigenous Innovation Product Accreditation Work for 2010, issued jointly by MOST, NDRC, and MOF, April 2010; USCBC, "Issues Brief: China's Domestic Innovation and Procurement Policies," May 2010; USCBC, "Issues Brief: New Developments in China's Domestic Innovation and Procurement Policies," January 2010.

⁴² *Xinhua News*, "China's Investment Environment Improving Amid 'Growing Pains,'" September 9, 2010; *Xinhua News*, "Full Text of Chinese Premier Wen Jiabao's Speech at Summer Davos 2010," September 13, 2010.

⁴³ Industry officials, interviews by USITC staff, Beijing, September 8, and Shanghai, September 15, 2010.

⁴⁴ North American and European Industry Groups, "Industry Comments on the Draft Notice," May 10, 2010.

⁴⁵ Intellectual Property Owners Association, written submission to the Commission, July 9, 2010; North American and European Industry Groups, "Industry Comments on the Draft Notice," May 10, 2010; USCBC, "The US-China Business Council Comments," May 10, 2010.

⁴⁶ USITC, hearing transcript, Washington, DC, June 15, 2010, 54 (testimony of Calman Cohen, Emergency Committee for American Trade, and of Christian Murck, American Chamber of Commerce in China).

Chinese agencies' purchase of outdated products, because newly introduced products and innovative products manufactured by foreign firms are less likely to be included in the catalogue.⁴⁷ U.S. government officials have also raised concerns regarding the implementation of the indigenous innovation product accreditation system.⁴⁸ On May 10, 2010, the Chinese authorities delayed implementation of the system to review these comments. As of September 2010, it appears that the Chinese government has decided to wait to release the catalogue as it considers comments from interested parties.⁴⁹

Provincial and Local Accreditation for Indigenous Innovation Products

Even though there is no central government catalogue of indigenous innovation products as of September 2010, a number of provincial indigenous innovation catalogues are in effect. Some observers view these as "trial balloons" for the central government's expected catalogue. Ten provincial and municipal governments have released 25 publicly available catalogues identifying indigenous innovation products since 2006. Eight additional provincial and municipal governments have formulated indigenous innovation catalogues that are not currently available publicly. The provincial catalogues list the preferred products for government agency and SOE procurement, although the precise regulations are not clear.⁵⁰

There are almost no products made by foreign companies in these catalogues, a pattern that seemingly excludes foreign companies from provincial government procurement markets unless there is no Chinese-made alternative to a foreign product (box 5.1). For example, only two of the 523 products in Shanghai's catalogue were made by FIEs, both of which have majority Chinese ownership; Jiangxi's 475-product catalogue includes only one from an FIE; and Beijing's government procurement catalogues include only one foreign product out of 56 listed.⁵¹

Technical Standards and Indigenous Innovation

As is the case with government procurement, Chinese-developed technical standards can be an important tool for the promotion of indigenous innovation. Two broad issues have drawn the attention of U.S. industries in this regard. First, U.S. industry sources assert that the Chinese approach aims to develop standards favoring domestic industries at the expense of internationally accepted foreign standards and technologies.⁵² The fear is that Chinese development of country-specific standards will impede market access and force companies to adopt Chinese technology and standards in order to conduct business in the Chinese market.⁵³ A second issue is the role of IP in standards. According to U.S.

⁴⁷ North American and European Industry Groups, "Industry Comments on the Draft Notice," May 10, 2010; USCBC, "The US-China Business Council Comments," May 10, 2010.

⁴⁸ See Locke, Statement to the Senate Committee on Finance, June 23, 2010.

⁴⁹ North American and European Industry Groups, "Industry Comments on the Draft Notice," May 10, 2010; USITO, "Comments to the Ministry of Science and Technology (MOST), the National Development and Reform Commission (NDRC), and the Ministry of Finance (MOF) on the *Notice on Launching the Accreditation of National Indigenous Innovation Products in 2010*," May 10, 2010; U.S. government official, interview by USITC staff, July 12, 2010.

⁵⁰ USCBC, "Issues Brief: China's Domestic Innovation and Procurement Policies," May 2010.

⁵¹ *Ibid.*

⁵² USTR, *2010 Report on Technical Barriers to Trade*, March 2010, 50.

⁵³ USITC, hearing transcript, June 15, 2010, 232 (testimony of Shaun Donnelly, National Association of Manufacturers).

BOX 5.1 Replacing a Foreign Product With a Chinese Product

According to U.S. industry representatives, “buy local” policies for Chinese hospitals have existed in some municipalities for several years, requiring hospitals to certify that there were no local suppliers of a desired product in order to buy foreign goods. Nonetheless, many Chinese hospitals have continued to buy highly regarded U.S. medical products, even though the procurement process has become more difficult.

In December 2009, however, the Tenth People’s Hospital in Shanghai replaced an imported surgical navigation system with a locally developed one, the Excelim-04 system developed by Shanghai Fudan Digital Medical Technology Co. (a joint venture of Fudan University and Shanghai Business Investment Group). This may be one of the first products to reflect procurement specifically based on the local indigenous innovation product catalogue. (The imported product that was displaced by this procurement was not identified.)

Sources: Industry representatives, interviews by USITC staff, July 9 and 12, 2010; Chen Mining, “Shanghai to Sign the First Purchase of Independent Innovation Products,” December 1, 2009; Shanghai Services Federation, “Excelim-04 Surgical Navigation Systems,” February 2, 2007.

industry sources, Chinese development of national technical standards is often motivated by the desire to reduce the amount of royalties paid to foreign companies for IP contained in standards. Additionally, U.S. industries are concerned about draft regulations covering the role of IP in standards in China, particularly the proposed requirements for disclosing patents and the terms for licensing patents in Chinese national standards.

Compounding these problems is that, while China has made improvements in its standards-setting processes, procedures often tend to be nontransparent and exclude meaningful opportunities for foreign companies to provide input and comment.⁵⁴ In 2009, the Standardization Administration of China (SAC) issued new public procedures for standards-setting technical committees confirming that legally registered foreign representatives could participate as voting members, though participation would be at the discretion of the technical committee chairs.⁵⁵ These new, clarified rules were issued following a 2008 meeting of the U.S.-China Joint Commission on Commerce and Trade (JCCT). However, according to the Telecommunications Industry Association (TIA), China still has “uneven and unclear eligibility requirements” for participation of foreign companies, and has a tendency to mandate standards that are developed outside of international standards-setting processes.⁵⁶

The Chinese Approach to Standards

Chinese government policies view technical standards as playing an important role in economic development. In contrast to the U.S. approach to standards, which is more decentralized and is led by the private sector with government support, China has a top-down approach: central government administration and various government ministries have mandates to decide which standards will be developed and the processes for their development.⁵⁷ Chinese standards are either mandatory or voluntary. Mandatory standards are technical regulations that have the force of law; all other standards are voluntary, and include both national standards that are uniform across China and

⁵⁴ Owen, “Standards in China: Behind the Headlines,” January–February 2010, 41; USTR, *2010 Report on Technical Barriers to Trade*, 50; TIA, written submission to the USITC, July 7, 2010, 2.

⁵⁵ Owen, “Standards in China: Behind the Headlines,” January–February 2010, 43.

⁵⁶ TIA, written submission to the USITC, July 7, 2010, 2.

⁵⁷ Owen, “Standards in China,” 2010 1; USITC, hearing transcript, June 15, 2010, 235–36 (testimony of Mark Bohannon, Software & Information Industry Association).

standards that are specific to particular industries and enterprises.⁵⁸ Chinese standards also include the China Compulsory Certificate (CCC) program, a mandatory safety certification program covering 22 product categories and affecting over 20 percent of U.S. exports to China.⁵⁹

Chinese development plans have long recognized the importance of China's becoming a standard setter as part of an innovation-based policy to develop domestic industries. Following its WTO accession in 2001, Chinese government ministries, led by the SAC,⁶⁰ developed two strategic objectives for development of technical standards with specific timetables:

- By 2010, Chinese standards would catch up to international levels, and the share of Chinese standards based on independent innovation would have risen.
- By 2020, the share of Chinese technical standards that are based on its independent innovation would have increased further, and the share of international standards that are based on Chinese innovation would have also risen such that China would be a world leader in key fields.⁶¹

China's standards strategy recognized that turning national standards into international ones would improve the adaptability and competitiveness of Chinese standards and technology. The strategy also recognized the importance of standards as drivers of technology, innovation, and trade.⁶² As noted earlier, the MLP advocated raising the contribution of technological advances to China's economic growth and limiting its dependence on imported technology.⁶³ Additionally, the MLP highlighted support for development of Chinese-owned IP and the importance of incorporating this IP in national and international standards.⁶⁴

China-Specific Standards and the ICT Sector

U.S. concerns with Chinese development of national standards in the context of indigenous innovation have particularly focused on the information and communication technology (ICT) sector, where China has been active in development and promotion of its national technical standards.⁶⁵ At the Commission's hearing, the Information Technology Industry Council (ITIC) noted China's propensity for mandating use of its own country-specific standards in instances where global ICT standards exist, and raised

⁵⁸ According to the American National Standards Institute (ANSI), 15 percent of Chinese national standards in 2006 were mandatory and the remainder were voluntary. ANSI, "PRC Standards System: Standards Used in China," 2010.

⁵⁹ Owen, "Standards in China," 2010, 2.

⁶⁰ The SAC is a standards policy ministry under the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ), which administers the standards system in China.

⁶¹ Ping, YiYi, and Hill, *Standardization Strategy of China*, January 2010, 5. These goals emerged from two research projects initiated by the MOST during China's 10th five-year plan (2001–05) and accepted by MOST in December 2005—"Study on the Strategy of China's Technical Standards Development" and "Study on the Construction of a National System of Technical Standards." According to Ping, YiYi, and Hill, the MOST research project was an important historical event in China.

⁶² This standards strategy was also viewed as contributing to a "harmonious" society.

⁶³ Cao, Suttmeier, and Simon, "China's 15-year Science and Technology Plan," December 2006, 39.

⁶⁴ An, "Intellectual Property Rights in Information and Communications," 2009, 185.

⁶⁵ Winn, "ICT Standards and Indigenous Innovation in China," October 7, 2009, 1.

concerns about technology neutrality.⁶⁶ Some industry representatives have argued that Chinese standards-setting bodies frequently take an existing standard and change the technology only slightly, just enough to add costs and make it more difficult for foreign manufacturers trying to sell their products in China. To the extent that Chinese-developed standards include indigenous IP, they also reduce the royalties that Chinese firms must pay to foreign firms whose technology often forms a critical component of the global standard, while increasing royalties foreign firms must pay to Chinese IP holders.⁶⁷

Promotion of Chinese Domestic Standards

Two important examples of Chinese development and promotion of national standards in the ICT sector are the Wired Authentication and Privacy Infrastructure (WAPI) standard and Time Division Synchronous Code Division Multiple Access (TD-SCDMA), a third-generation (3G) mobile telecommunications standard.⁶⁸ Table 5.2 presents a timeline and comparison of the development of these standards. Both were developed as national standards with Chinese government assistance despite the existence of international standards. Both standards reduce the royalties that would otherwise accrue to U.S. firms and shift some royalties to Chinese firms, although one study has calculated that, in the case of TD-SCDMA, only 7 percent of the patented technology is held by China, with the remainder held by Nokia, Ericsson, Siemens, and other international companies.⁶⁹

The WAPI standard, according to Chinese sources, was originally developed because of Chinese concerns about security in the Wi-Fi encryption protocol. However, WAPI's use of an undisclosed encryption algorithm has hampered its acceptance by the International Organization for Standardization (ISO) as an international standard. The United States raised the issue of WAPI in both the WTO Technical Barriers to Trade (TBT) Committee and the JCCT in 2004, with the result that China decided not to make WAPI mandatory, but rather a priority standard for government procurement. In April 2009, the Ministry of Industry and Information Technology (MIIT) approved WAPI's use in mobile phones, and shortly thereafter it approved phones enabled with both protocols (WAPI/Wi-Fi stack). Inclusion of WAPI technology adds costs for manufacturers, who must work with local companies to make the hardware as well as pay royalties for the Chinese technology.⁷⁰ However, industry sources indicate that business opportunities related to Wi-Fi compliant hotspots are expected to expand in China as telecommunications

⁶⁶ USITC, hearing transcript, June 15, 2010, 208–10 (testimony of John Neuffer, Information Technology Industry Council). According to the International Telecommunications Union (ITU), a United Nations agency for information and communication technology issues, the concept of technology neutrality refers to regulating different technologies that offer essentially the same service in a similar manner. The purpose is to avoid providing an advantage to one technology over another in the market. See ITU, “The Concept of Technology Neutrality,” n.d.

⁶⁷ Industry officials, interviews by USITC staff, July 7, 15, and 30, 2010.

⁶⁸ Both WAPI and TD-SCDMA were discussed by industry officials at the USITC hearing. USITC, hearing transcript, June 15, 2010, 232 (testimony of Christian Murck, American Chamber of Commerce in China), and John Neuffer, ITIC, written testimony to the USITC, June 15, 2010, 4–5. Similarly, both standards were discussed in the context of indigenous innovation by McGregor, China's Drive for “Indigenous Innovation,” July 2010, 28–30.

⁶⁹ Yan, *The 3G Standard Setting Policy*, 2007, 2.

⁷⁰ International Business Times, “China Braces for Wi-Fi Boom,” July 13, 2010.

TABLE 5.2 Chinese approach to WAPI and TD-SCDMA standards

	WAPI	TD-SCDMA
Type of standard	Wireless local area network (WLAN) security standard	3G mobile standard
Competing global standard	IEEE 802.11i Wi-Fi wireless standard	<ul style="list-style-type: none"> • WCDMA (Europe) • CDMA 2000 (U.S.)
Motivation for Chinese standard	<ul style="list-style-type: none"> • Encryption security issues • Royalty costs 	<ul style="list-style-type: none"> • Royalty costs • Improved competitiveness for Chinese companies in largest mobile market
Promoters	<ul style="list-style-type: none"> • IWNCOMM (Chinese software company) • WAPI Alliance 	<ul style="list-style-type: none"> • Datang Telecomm (subsidiary of China Academy of Telecommunications Technology [CATT]) • Siemens • TD-SCDMA Industry Alliance
Status as international standard	<ul style="list-style-type: none"> • Rejected by ISO, 2006 • Resubmitted to ISO, 2009 	<ul style="list-style-type: none"> • Accepted by ITU as international standard, 2000
U.S. industry concerns	<ul style="list-style-type: none"> • Inconsistent with WTO/TBT Agreement (mandated local standard when international standard exists) 	<ul style="list-style-type: none"> • Technology neutrality (regulating technologies that offer the same service in a similar manner)
Promotion/mandate by China	<ul style="list-style-type: none"> • Initiated by Chinese government, 2001 • Mandated standard, 2003 • Mandatory status suspended in 2004 following JCCT meeting • Government procurement preference, 2005 • WAPI approved in mobile phones, April 2009 • WAPI/Wi-Fi stack approved in mobile phones, May 2009 	<ul style="list-style-type: none"> • Initiated by Chinese government, 1998 • Approved as voluntary national standard, 2006 • Licenses allocated to China Mobile, 2009 • Export credits provided to ZTE for European export sales • Subsidies for R&D and users of TD-SCDMA terminals
Current status	<ul style="list-style-type: none"> • Both WAPI and Wi-Fi hot spots and equipment are expected to increase in China as major telecommunications companies expand networks due to increased mobile phone usage 	<ul style="list-style-type: none"> • China Mobile currently expanding TD-SCDMA network infrastructure in China • Future plans to expand network in foreign countries

Sources: C114, "China Mobile to Subsidize TD-SCDMA Terminal Users," June 23, 2010; An, "Intellectual Property Rights in Information and Communications Technology Standardization," 2009; Zhan and Tan, "Standardisation and Innovation in China," 2010; Interfaxchina.com, "MIIT Gives Green Light to WAPI Handsets," April 2009; International Business Times, "China Braces for Wi-Fi Boom," July 13, 2010.

companies broaden their networks to accommodate increasing Wi-Fi use because of the recent MIIT approval of Wi-Fi compliant phones.⁷¹

Given that China has more mobile phone users than any other country in the world, its development of TD-SCDMA 3G technology was an important industry event. China's State Council agreed to award 3G licenses for TD-SCDMA technology in January 2009 to China Mobile, Ltd., the world's largest mobile network in terms of subscribers.⁷² As China moves to allocate spectrum among the three competing 3G mobile standards, U.S. industry has raised concerns about technology neutrality.⁷³ Industry sources also indicate

⁷¹ International Business Times, "China Braces for Wi-Fi Boom," July 13, 2010. The approval of Wi-Fi in mobile phones was reportedly due to the large number of Wi-Fi compliant gray market phones and existing base stations already in China prior to May 2009.

⁷² Cellular-News, "China Confirms 3G License Awards," January 7, 2009, 1.

⁷³ USITC, hearing transcript, June 15, 2010, 232 (testimony of Christian Murck, American Chamber of Commerce in China), 233.

that China Mobile plans to further expand the use of TD-SCDMA technology by providing subsidies for users of TD-SCDMA terminals in 2010, developing an R&D fund, and linking cooperative agreements with nine mobile phone makers and three chip designers in China and abroad.⁷⁴

ICT, Encryption, and CCC Standards

U.S. industry representatives also have raised concerns about Chinese CCC regulations, implemented in May 2010, that cover 13 categories of commercially available ICT products in the context of indigenous innovation. These regulations require testing and certification to Chinese standards for information security functions when the covered ICT products are sold to Chinese government agencies.⁷⁵ The rules will require sellers to provide China's Certification and Accreditation Administration (CNCA) and the General Administration of Quality Supervision, Inspection, and Quarantine (AQSIQ) with complete details of the inner workings of computer products in these 13 product categories. According to Chinese sources, the regulations were issued for national security reasons.⁷⁶ The CCC program for the 13 ICT products differs from the Common Criteria for Information Technology Security Evaluation (Common Criteria), an ISO/International Electrotechnical Commission (IEC) standard for computer security certification in which users specify their security requirements and testing laboratories evaluate vendor claims.⁷⁷

Industry sources have noted that these rules will require companies to reveal encryption secrets to the Chinese government, with the result that global companies doing business with the Chinese government might lose business in third-country markets due to buyer concerns about the Chinese government having access to their encryption codes.⁷⁸ According to U.S. government sources, U.S. companies seeking to participate in the Chinese government procurement market may have to develop products specifically for the Chinese public sector, or lose out in the Chinese government market entirely.⁷⁹ U.S., Japanese, and European protests about these regulations resulted in the Chinese government limiting the requirements to government procurement and delaying the implementation date to May 2010.⁸⁰

Future Competitiveness Issues Regarding Standards

U.S. industry representatives have also raised concerns regarding indigenous innovation and China's development of future standards in a number of sectors, including ICT and electricity generation. One issue is China's strategy of developing closed, national

⁷⁴ C114, "China Mobile to Subsidize TD-SCDMA Terminal Users," June 23, 2010. Companies involved with China Mobile in the TD-SCDMA network include Nokia, Motorola, ZTE, Huawei, and Samsung, among others.

⁷⁵ USTR, *2010 Report on Technical Barriers to Trade*, March 2010, 51; McGregor, China's Drive for "Indigenous Innovation," July 2010, 30. The products covered include smart cards, firewalls, routers, database systems, and other network and internet security systems.

⁷⁶ Defense Tech, "China Demands Computer Encryption Codes from Cyber Security Firms," May 3, 2010.

⁷⁷ See, for example, the comment by U.S. Trade Representative Ron Kirk that the CCC standards are inconsistent with international norms. USTR, "Statement from U.S. Trade Representative Ron Kirk and Japan Economy, Trade, and Industry Minister Toshihiro Nikai, May 2009.

⁷⁸ McGlaun, "China Forces Foreign Firms Selling to Government to Provide Encryption Codes," May 4, 2010, 1; McGregor, China's Drive for "Indigenous Innovation," July 2010, 30.

⁷⁹ USTR, *2010 Report on Technical Barriers to Trade*, March 2010, 51.

⁸⁰ China filed 13 TBT notifications to the WTO covering the selected products in August 2007.

standards for trusted computing through Trusted Cryptography Modules (TCM), rather than through participation in the ISO and the Trusted Computing Group (TCG).⁸¹ The Chinese TCM requires that cryptographic algorithms and protocols used to perform specific security tasks, such as verifying that only authorized codes run on a system, be based on Chinese technology.⁸² U.S. industry representatives have raised concerns that Chinese development of TCM is motivated by the desire to reduce royalties for patents embedded in TCG technology standards and that it will negatively affect interoperability and globally integrated supply chains.⁸³

A second area of concern in the ICT sector involves China's plans for developing Time Division Long Term Evolution (TD-LTE), a fourth-generation mobile telecommunications technology based on the TD-SCDMA standard.⁸⁴ Support for TD-LTE is being led by the Chinese government, China Mobile, and Chinese manufacturers. According to industry sources, China Mobile is also testing TD-LTE in foreign markets and has plans to cooperate with foreign operators to develop TD-LTE trial networks. Additionally, 31 nations and regions have already announced plans for commercial deployment of TD-LTE.⁸⁵

A third area of concern in the ICT sector is China's recent enforcement of its Multi-level Protection Scheme (MLPS)—a set of rules for computer security certification that apply to government agencies, SOEs, and Chinese infrastructure companies, including financial and transportation institutions.⁸⁶ Although the MLPS has been in place for three years, it has been reported recently that Chinese inspectors are starting to strengthen their enforcement of these rules.⁸⁷ The MLPS could significantly affect U.S. sales of information security technology products, such as network firewalls and digital identity systems in China.⁸⁸ The MLPS classifies computer systems into five tiers of increasing sensitivity and requires that security technology for the top three tiers be supplied by a Chinese-owned company and that core technology and key components be based on Chinese IP.⁸⁹ Foreign suppliers of products classified in level three and above will be allowed if there is no Chinese alternative; however, industry representatives have noted that domestic replacements could be developed by Chinese companies in the next 5–10 years.⁹⁰ U.S. industry concerns regarding the MLPS include lack of transparency, its broad coverage, uncertainty as to how the program will be enforced, requirements to provide source codes, and the restrictions on foreign access.⁹¹ The MLPS also differs from the ISO/IEC Common Criteria in its requirements for computer security certification.⁹²

⁸¹ The TCG is an international industry standards group. Wolff, Dempsey, and Oh, "Policy Issues Arising in China's Development of State-Sponsored Domestic Standards," September 2009, 1–2.

⁸² Wolff, Dempsey, and Oh, "Policy Issues Arising in China's Development of State-Sponsored Domestic Standards," September 2009, 4.

⁸³ *Ibid.*, 13.

⁸⁴ Industry representative, interview by USITC staff, Washington, DC, July 30, 2010.

⁸⁵ C114, "China Mobile to Test TD-LTE Overseas," June 4, 2010.

⁸⁶ Neuffer, written testimony to the USITC, June 15, 2010, 5.

⁸⁷ McDonald, "China Braces for New Computer Security Battle," August 27, 2010, 1.

⁸⁸ *Ibid.*, 2. Additionally, the MLPS could have adverse consequences for all China-based exporting firms to the extent the program raises prices in China. Ernst and Martin, *The Common Criteria for Information Security Technology*, January 2010, 8.

⁸⁹ United States Council for International Business, "Comments to NIST: Re: USCIB Comments on Cybersecurity, Innovation, and the Internet Economy," September 22, 2010, 5.

⁹⁰ Industry representatives, interviews by USITC staff, Beijing, September 8, 2010.

⁹¹ *Ibid.*

⁹² Ernst and Martin, *The Common Criteria for Information Security Technology*, January 2010, 4.

Outside of the ICT sector, industry sources report that China's State Grid, a state-owned company that controls electricity transmission in a majority of China's provinces and regions, is setting standards as it moves into developing smart grid technologies.⁹³ These sources expressed concern that the lack of public and transparent standards could pose a challenge to foreign companies interested in competing for the \$60–\$100 billion that China is expected to spend on smart grid upgrades in the future.⁹⁴

Patented Technology and Standards

The SAC's release of the *Proposed Regulations for the Administration of the Formulation and Revision of the Patent-Involving National Standards* in 2009 raised concerns among U.S. industry representatives about Chinese indigenous innovation policies and rules for patented technology in standards. The SAC's draft rules established three general principles: (1) mandatory national standards should not incorporate patented technologies as a general principle; (2) if a mandatory standard does involve a patent, the relevant government agency will negotiate license terms, and, failing to do that, could require compulsory licensing of relevant patents; and (3) patented technology relevant to national standards should not be included unless the patent holder agrees to grant a royalty-free license, or one that provides royalties at a price significantly lower than the norm.⁹⁵ USTR views this practice as in conflict with those followed by standards-developing organizations in other countries, where reasonable and nondiscriminatory (RAND) licensing policies are incorporated into standards.⁹⁶ U.S. industry representatives have expressed concern that these draft rules followed instances in which the Supreme People's Court of China offered guidance to lower courts suggesting that IP incorporated into a national standard need not be compensated at the market value.⁹⁷

In January 2010, the China National Institute of Standardization (CNIS) issued and requested comments from all stakeholders on its *Disposal Rules for Inclusion of Patents in National Standards* (Disposal Rules), a key component of the SAC regulations. Based on feedback from U.S. and other foreign stakeholders, the Disposal Rules did not include a number of provisions that had been in the 2009 SAC Proposed Regulations, particularly those related to compulsory licensing in mandatory standards and to requirements that royalties be licensed on a lower-than-fair basis.⁹⁸ The Disposal Rules do, however, require the disclosure of pending as well as existing patents during the formulation and revision of national standards, which may prove onerous for holders of patent applications that have not yet been published.⁹⁹ Standards observers have noted that, for the Disposal Rules to be better aligned with international standards and patent policies, they should further clarify rules for essential patents and claims in regard to patent disclosure and licensing, obligations regarding nonparticipants, and obligations regarding

⁹³ Wall Street Journal China Real Time Report, "State Grid Guns for China's Smart Grid," June 30, 2010. Energy technology and China's standards approach, including the smart grid, were mentioned at the Commission's hearing as areas to watch. USITC, hearing transcript, June 15, 2010, 283 (testimony of Jeremie Waterman, U.S. Chamber of Commerce).

⁹⁴ Under the Energy Independence and Security Act of 2007, the National Institute of Standards and Technology (NIST) is currently coordinating development of standards and protocols for the U.S.-based smart-grid system.

⁹⁵ USTR, *2010 Report on Technical Barriers to Trade*, March 2010, 75; Freshfields Bruckhaus Deringer, "Patents and Standards-setting in China," January 2010, 1.

⁹⁶ USTR, *2010 Report on Technical Barriers to Trade*, March 2010, 75.

⁹⁷ USITC, hearing transcript, June 15, 2010, 238–39 (testimony of Jeremie Waterman, U.S. Chamber of Commerce).

⁹⁸ Freshfields Bruckhaus Deringer LLP, "Patents and Standard-Setting in China," March 2010, 2.

⁹⁹ *Ibid.*

the patent license declaration form.¹⁰⁰ USTR has indicated that the United States will monitor these developments in the future.¹⁰¹

Competition Policy/Anti-Monopoly Law

Another area that is seen as falling under China's broad indigenous innovation policies is the enforcement of the recently enacted AML. U.S. businesses have raised three concerns in this area: (1) the conditions under which mergers and acquisitions (M&A) between foreign and Chinese firms will be approved by Chinese authorities; (2) the way Chinese authorities are likely to enforce the provisions of the law related to a company's alleged abuse of a dominant market position; and (3) the apparent exception for enforcement related to SOEs under Article 7 of the AML.¹⁰² All of these concerns are forward-looking, i.e., they raise questions about actions that the Chinese government might take, rather than actions that have actually taken place as of September 2010. Moreover, the concerns largely focus on how Chinese government agencies and courts will implement and enforce the law, rather than on the AML's actual provisions.

Some observers have voiced concerns that foreign M&A of Chinese companies will be approved only under conditions that encourage or mandate technology transfer, or that M&A transactions involving foreign acquisitions of SOEs, famous Chinese brands, and state-controlled industries will not be approved.¹⁰³ However, policy objectives do not appear to have played a substantial role in the first several merger approvals for which the Chinese Ministry of Commerce (MOFCOM) required antitrust remedies under the AML (through August 2010).¹⁰⁴ Protection of famous Chinese brands may be another story. One prominent merger (Coca-Cola's proposed takeover of Huiyuan Juice) was blocked by MOFCOM, and because the reasoning was not transparent, there has been speculation that the merger was denied to protect the Chinese juice company and its well-known brand from takeover by a foreign company, rather than to preserve market competition.¹⁰⁵

The AML provisions related to abuse of a dominant market position remain an evolving area of Chinese law that raises concerns among foreign firms.¹⁰⁶ One concern is that the draft rules may establish a "refusal to deal" provision that presumes "illegality for routine transactions by dominant businesses."¹⁰⁷ Foreign firms that hold large market shares in several high-tech industries in China are concerned that the regulations may limit their

¹⁰⁰ Willingmyre, "China's Latest Draft Disposal Rules for Patents in Standards," April 1, 2010.

¹⁰¹ USTR, *2010 Report on Technical Barriers to Trade*, March 2010, 75.

¹⁰² USITC, hearing transcript, Washington, DC, June 15, 2010, 246–47 (testimony of Jeremie Waterman, U.S. Chamber of Commerce).

¹⁰³ AmCham-China, *2010 White Paper*, 2010, 56.

¹⁰⁴ Zhang, "An Anti-Monopoly Legal Regime in the Making," 2010, 1469–94. The article was published after only the third MOFCOM merger review. As of September 2010, MOFCOM has approved seven mergers for which antitrust remedies were required, all involving foreign companies, but there is no evidence that technology transfer objectives played a role in the later decisions either.

¹⁰⁵ Zhang, "An Anti-Monopoly Legal Regime in the Making," 2010, 1469–94; Coca-Cola Company, "Acquisition of Huiyuan Juice Group in China Not to Proceed," March 18, 2009.

¹⁰⁶ The State Administration of Industry and Commerce (SAIC) released a second draft of the relevant regulations in May 2010; as of September 2010, final regulations have not been released and there has been no enforcement activity by Chinese agencies. SAIC, *Regulations on the Prohibition of the Abuse of Dominant Market Positions by Industrial and Commercial Administration Authorities (Draft for Comments)*, released May 25, 2010. Unofficial translation.

¹⁰⁷ Singham, statement to the U.S. House Judiciary Subcommittee on Competition and the Courts, July 13, 2010; industry officials, interviews by USITC staff, July 15, 2010.

ability to refuse to enter into unreasonable business transactions with competitors unless they first prove to Chinese regulators that such refusals would not have anticompetitive effects. Such regulatory interpretations might endow China's anticompetition enforcement agency (SAIC) with wide-ranging powers to manage competition in a way that would benefit Chinese competitors of foreign companies.¹⁰⁸ It may also be possible for the Chinese government to impose compulsory licensing requirements, which would allow access to a company's IP in the context of an abuse of dominance antitrust remedy, based on provisions of the Patent Law that to date have not been enforced.¹⁰⁹

An additional area of concern is what appears to be a potential exception to the anticompetition rules for "industries that are controlled by the state-owned economy and that are critical to the well-being of the national economy and national security and of sectors involving state-sanctioned exclusive monopolies."¹¹⁰ This provision of the AML appears to provide some scope for China to give preference to particular SOEs, in line with the national goal of promoting "national champion" companies or infant industries. In particular, mergers between companies controlled by the State Assets Supervision and Administration Commission (SASAC)¹¹¹ have received exemptions from premerger reviews for anticompetitive effects—treatment which appears to encourage mergers between Chinese companies that will lead to the creation of new companies with significant market power. The language of the law reportedly is ambiguous, and much of the practical effect of the apparent exception for SOEs will depend on China's implementation of the law in coming years.¹¹²

Favorable Tax Rates for High-Technology Enterprises

Another Chinese government policy for promoting indigenous innovation is the substantial tax break accorded to high- and new-technology enterprises (HNTEs) under the Enterprise Income Tax Law, passed in January 2008. Under the law, Chinese enterprises designated as HNTEs pay income tax at a rate of 15 percent rather than the general corporate tax rate of 25 percent. Under Circular 172 (April 2008), an entity can qualify for the lower tax rate only if it "conducts continuous R&D activities" in China. Such enterprises need Chinese IP ownership to qualify; location and employment of Chinese staff is not sufficient.¹¹³

According to the *Guidebook on Managing Certification of High- and New-Technology Enterprises*, released jointly by MOST, MOF, and the State Administration of Taxation (SAT) in July 2009, companies qualify for this special tax rate by applying through their

¹⁰⁸ For example, a foreign company could be forced to permit competitors to access prized assets such as supply chains. Singham, statement to the U.S. House Judiciary Subcommittee on Competition and the Courts, July 13, 2010; industry official, interview by USITC staff, July 7, 2010.

¹⁰⁹ Singham, statement to the U.S. House Judiciary Subcommittee on Competition and the Courts, July 13, 2010; industry officials, interviews by USITC staff, July 7 and 15, 2010.

¹¹⁰ Bush, "The PRC Antimonopoly Law," October 2007, 5.

¹¹¹ SASAC performs investor's responsibilities, supervises and manages the state-owned assets of the enterprises under the supervision of the Central Government (excluding financial enterprises), and enhances the management of the state-owned assets. SASAC Web site, "Main Functions and Responsibilities of SASAC."

¹¹² Singham, statement to the U.S. House Judiciary Subcommittee on Competition and the Courts, July 13, 2010; USITC, hearing transcript, Washington, DC, June 15, 2010, 247–48 (testimony of Jeremie Waterman, U.S. Chamber of Commerce); industry officials, interviews by USITC staff, July 7 and 15, 2010.

¹¹³ AmCham-China, *2010 White Paper*, 218; McGregor, *China's Drive for "Indigenous Innovation,"* July 2010, 19.

provincial science and technology committee, which evaluates enterprises according to four criteria:

- Core IP,¹¹⁴
- Technology commercialization ability,
- R&D organizational management level, and
- Enterprise growth rate.¹¹⁵

If an enterprise scores more than 70 points out of a possible total of 100, as determined by a panel of local technical and scientific experts, a public notice is posted. If no objections are raised, the enterprise is awarded HNTE status, which is filed with MOST in Beijing.¹¹⁶ In practice, qualification criteria for the designation reportedly vary by province. According to anecdotal accounts, foreign companies have successfully applied for the special tax status in a number of provinces, but more precise information is not available.¹¹⁷ There are also reports that not all Chinese companies that have achieved the HNTE designation actually meet the criteria, with one anonymous MOST official reportedly claiming that “at least 50 percent of the companies that have already received high-tech certification are not truly qualified. They were certified under falsified materials.”¹¹⁸ The implementation of the tax status has also spawned a cottage industry of firms that help existing companies to qualify.¹¹⁹

Other Indigenous Innovation Incentives for Chinese Firms

In December 2009, several Chinese ministries jointly issued a catalogue of industrial equipment products that domestic companies are urged to develop. The catalogue offers Chinese manufacturers tax and financing incentives to focus on those products, and gives manufacturers of listed equipment priority in accrediting their products as national indigenous innovation products. Domestic companies developing these products are also eligible for preferential financing for product commercialization and possible R&D subsidies. The reference to indigenous innovation products raises concerns as to whether foreign companies’ products are eligible for these programs. The announcement is quite recent, so as with other policies related to indigenous innovation, foreign interests reportedly will continue watching to see whether the program is implemented in a way that excludes foreign products.¹²⁰

Central and provincial government funding for R&D performed by Chinese firms, particularly SOEs in strategic areas identified by the MLP, reportedly also favors Chinese

¹¹⁴ Core IP is defined in SAT regulations as “inventions, utility models, designs for non-simple alterations to product patterns and shapes, software copyrights, exclusive rights to integrated circuit designs, and new plant varieties. . . . An exclusive license refers to a global technology licensee enjoying exclusive usage rights for at least five years for the agreed and determined IP . . . ; within this period the technology provider and any third party are prohibited from using that technology. Core IP designated by HNTEs must be registered in China, or must enjoy at least five years of global exclusive licensing rights.”

¹¹⁵ USCBC, “Qualification Criteria for China’s High- and New-Technology Enterprise (HNTE) Status,” 2010.

¹¹⁶ Ibid.

¹¹⁷ Industry officials, interview by USITC staff, Washington, DC, July 26, 2010.

¹¹⁸ Zhou and Yang, “Caing Report,” August 10, 2010.

¹¹⁹ Ibid.

¹²⁰ The catalogue of industrial equipment products targeted for domestic companies to develop was jointly issued by MOST, MOF, MIIT, and SASAC in December 2009. USCBC, “Issue Brief: New Developments in China’s Domestic Innovation and Procurement Policies,” January 2010, 4.

firms. According to AmCham-China, for example, Chinese telecommunications firms have essentially entered “zero bids” for major contracts, once government subsidies are accounted for, greatly reducing the competitiveness of foreign firms.¹²¹

Opting Out of China Is Not an Option for Many U.S. Firms

As discussed in this report, U.S. industry representatives have voiced serious concerns about the potential effects of China’s indigenous innovation policies on their market prospects in China, their ability to safeguard their IP while doing business in China, and their future in China even after making significant investments there. Even so, these industry voices uniformly agree that their companies have no choice but to remain active in the Chinese market and work with the policies promulgated by the Chinese government, for several reasons. First, China is the world’s largest and fastest-growing market, making it critical for global companies to remain active there. Second, U.S. industry representatives believe that even if they were to refrain from operating in China, their global competitors would fill the gap, leading to both large revenue losses and the likelihood that Chinese companies would be able to access similar IP elsewhere. Finally, in some industries, technology advances so quickly that by the time foreign companies in China are competing against technology stolen from them, they expect to be ready with a new generation of technology, so the stolen IP is no longer a critical competitive factor.¹²² In any event, because U.S. and other foreign firms are certainly profiting from their ongoing participation in the Chinese market, their shorter-term interest in maximizing current profits may encourage them to set aside their longer-term concerns regarding IP infringement and market access. Thus, U.S. companies expect to continue operating in China for the foreseeable future, despite their serious concerns about the direction of Chinese government policies regarding intellectual property and indigenous innovation.

¹²¹ AmCham-China, *2010 White Paper*, 218.

¹²² USITC, hearing transcript, Washington, DC, June 15, 2010, 251–53 (testimony of Christian Murck, American Chamber of Commerce in China; Shaun Donnelly, National Association of Manufacturers; Jeremie Waterman, U.S. Chamber of Commerce); industry officials, interviews by USITC staff, May 12, June 2, July 2, 7, 15, and 22, 2010.

CHAPTER 6

Frameworks for Assessing the Quantitative Effects of IPR Infringement and Indigenous Innovation Policies in China on the U.S. Economy

In the request for this investigation, the Commission was asked to “outline analytical frameworks for determining the quantitative effects of the infringement and indigenous innovation policies on the U.S. economy as a whole and on sectors of the U.S. economy, including lost U.S. jobs.”¹ These frameworks will be employed in the Commission’s follow-up investigation, *China: Effects of Intellectual Property Infringement and Indigenous Innovation Policies on the U.S. Economy* (hereinafter inv. no. 332-519), which was initiated under the same request. This chapter presents a series of strategies, including econometric methods, simulation methods, and survey methods, for quantifying such effects.

A quantitative analysis of IPR infringement begins with the question of the economic effects of strong IP protections; if strong IP protections have observable positive economic effects, IPR infringement would at least partially reverse those effects. The improvement of IP protection in China could benefit the Chinese economy as well as have potentially significant positive effects on the U.S. economy. Strong IP protections reward innovative firms, whereas weak or limited protections inhibit innovation. Where innovation rewards are higher, firms are likely to invest more in research and development (R&D) and related activities. Such investments by U.S. firms have made substantial contributions to U.S. productivity growth, and in turn to U.S. economic growth.² For example, the social rate of return on R&D in the G-7 economies has been estimated to be approximately 120 percent, with substantial spillover benefits for productivity and growth in countries other than those in which the R&D was originally undertaken.³ Thus, the conditions under which innovation is rewarded have economic effects that go well beyond rewarding individual innovators, or even to the country in which the innovation originates, extending also to other entities and economies. Similarly, the potential effects of IPR infringement also extend beyond the initial transaction. By lowering the rewards for innovation, infringement can discourage investment in R&D and related activities, lowering the rate of innovation and, in turn, productivity growth and economic growth. Thus, the negative economic consequences of infringement could be significant even if the purchasers of infringing products derive a short-term benefit in terms of lower prices.

¹ See request letter, app. A.

² Pham, “The Impact of Innovation and the Role of Intellectual Property Rights,” 2010.

³ Coe, Helpman, and Hoffmaister, “North-South R&D Spillovers,” 1997.

Strategies for Quantification

There is an extensive econometric literature showing that countries with stronger IPR regimes engage in a higher level of international transactions, both with the United States and with other countries. This literature, reviewed later in this chapter, shows that countries with stronger IPR regimes pay more license and royalty fees to the United States, receive more foreign direct investment (FDI) from the United States, and, in some cases, import more patent-intensive goods from the United States; the literature relates foreign IPR policies to other variables of interest as well. To a great extent, this literature takes as a starting point that much of the international effects of IPR infringement is mediated through multinational companies (MNCs), which helps to provide a unifying framework. As a first step, the Commission will use the results of this literature to derive implications for U.S. international transactions with China under a scenario in which China's IPR regime becomes stronger. This could be done by comparing the current level of U.S.-China transactions with the level that would be expected if China improved its IPR policies.

The Commission may also need to produce new econometric estimates of the relationship between foreign IPR regimes and U.S. international transactions because comparing China's IPR policies with those of other countries presents special challenges. Most of the literature uses IPR policy indices to compare countries' IPR regimes. In some instances, China's IPR policies appear relatively strong when using indices based on the Chinese IPR laws as written. Alternatively, China's IPR policies may appear relatively weak when indices more heavily weighted toward enforcement are used. Moreover, China's national IPR policies have recently changed, and their implementation continues to evolve. The fact that China is very large, relatively poor, and very rapidly growing also makes it challenging to identify economies that are close comparators.

Next, the Commission will examine the estimates generated in the first round for internal consistency in order to produce a usable set of estimates of first-round impacts. The variation in methods between different available studies implies that they are likely to give rise to a range of estimates for the effects of China's IPR infringement on variables affecting the U.S. economy, such as exports, FDI, and license and royalty fees. Moreover, these variables have particular relationships with each other that must be considered. As discussed later in the chapter, activities of U.S. parent companies are likely to be positively associated with activities in their foreign affiliates. For example, if stronger IPR protection encourages more FDI in China, so that affiliates of U.S. MNCs in China employ more people and engage in more R&D, employment and R&D in U.S. parents are also likely to expand.⁴ Changes in R&D spending will be used to infer changes in productivity.

To the extent feasible, the Commission will identify further impacts of China's IPR regimes on the U.S. economy using simulation methods, in particular computable general equilibrium (CGE) modeling. The estimates of first-round impacts of IPR infringement for such variables as U.S. exports, productivity, and investment will be used as inputs into the model to infer second-round effects on particular industries and sectors, including impacts on employment, as well as on economy-wide variables such as income and wages. Because of the particular challenges involved in modeling changes in the rate of economic growth in a CGE framework, the Commission's simulation estimates will

⁴ See the discussion below, "Effects in the U.S. Market," for citations to relevant studies.

likely focus on static or one-time impacts on particular sectors. While the Commission recognizes that the relationship between IPR protection and economic growth is potentially significant, an explicit estimate of the impact of infringement in China on U.S. GDP growth rates is not contemplated at present. The dynamic issues involved in analyzing growth rates would add additional complexity to an already complex analytical question.

The survey of companies being conducted by the Commission for inv. no. 332-519 is independent of the modeling exercise, providing a complementary assessment of the effects of China's IPR policies on the U.S. economy as self-reported by firms potentially affected by such policies. Moreover, estimates from the survey may also be used as inputs into the Commission's simulation modeling, complementary to those inputs generated by econometrics. The Commission's decision on whether to use survey results as an input into other quantitative exercises will take into account such factors as the degree to which firms choose to participate in the survey, the internal consistency of the questionnaire results, and the possibility that self-reported effects may systematically differ from those generated by other methods.

Estimates of the impact of China's indigenous innovation policies on the U.S. economy are even more challenging. As chapter 5 points out, such policies are complex and rapidly evolving. Many of the effects of indigenous innovation policies are expected to be observed only in the future. Furthermore, the economic principles linking such policies to outcomes for U.S. firms and the U.S. economy are not as well understood as the corresponding principles for infringement. Therefore, much of the analysis of indigenous innovation 332 is likely to be qualitative, deepening and updating the analysis in the current report. However, the Commission will undertake an econometric investigation of the import behavior of China's state-owned enterprises (SOEs) with respect to the goods most likely to be affected by indigenous innovation policies. Because it has been suggested that such policies apply to the procurement behavior of SOEs, and that such behavior may already show preferences for Chinese-made goods, such an analysis may provide at least partial insight into the implications of indigenous innovation policies for U.S. exports of innovative goods to China.

This second investigation will involve the Commission in novel areas of research. Details are likely to evolve as Commission staff confronts new issues arising in the course of the analysis. Also, the use of multiple methods—the survey, econometric analysis, and simulation analysis—creates the possibility of differing estimates of the same effects, subject to varying degrees of confidence and credibility. In research of this type, which involves both complex policies and illegal activity, this is to be expected. The use of several methods, both for cross-checking and to potentially inform each other, is a strength of the proposed approach, not a limitation. In addition, wherever feasible the Commission will conduct sensitivity analysis to provide a range of estimates in order to reflect the inherent uncertainties involving quantification of this type, and will present appropriate caveats to indicate any remaining unknown factors that may escape formal quantification. The Commission may also present more basic analyses of trends in U.S.-China economic transactions, not involving econometrics, as a further cross-check. It is hoped that the results of this research will prove to have applications beyond the present study.

Considerations Involving Surveys

Targeting the Right Firms and Sectors

All industries and sectors of the U.S. economy are exposed to IPR and technology issues to some degree. However, the degree of involvement varies widely from sector to sector and from firm to firm. A survey that recognizes and exploits these differences is more likely to generate useful information than a purely random survey of U.S. companies. This principle has been recognized in other studies that attempt to assess the contributions of IP to the U.S. economy as a whole. For example, one study focuses on “convergence industries” (industries that create, manipulate, and distribute information in a digital format), other industries that are patent-intensive, and non-dedicated support industries involved in transport and distribution of IP-intensive products.⁵

The Commission has used a broad range of criteria to identify relevant industry sectors to survey, including quantitative technology indicators such as R&D, license fees and royalties, patenting, FDI in China, and Customs seizures, as well as qualitative indicators such as expressions of concern over China IPR issues raised by particular industries in other reports and studies. It should be recognized that different indicators may be appropriate for firms exposed to different kinds of IP. Within each sector, a special effort has been made to sample firms with a particularly high likelihood of experiencing effects from infringement and/or indigenous innovation—for example, the largest firms in each sector, firms with FDI in China, and firms with globally valuable trademarks.

Nonresponse and Self-Reporting

In any survey, some recipients are likely not to respond, either to the survey as a whole or to individual questions in the survey. Careful selection of the firms receiving the survey, as discussed above, may improve the response rate. If nonresponse shows systematic patterns, the Commission will use standard statistical techniques to address such patterns. The Commission has received some indications that firms may be particularly reluctant to provide information about infringement and indigenous innovation, either because they themselves cannot easily assess the effects of infringement and indigenous innovation or because such information is considered highly sensitive. In addition, firms wishing to highlight the importance of China IPR issues may have an incentive to self-report large values for monetary effects, which are not easily corroborated by other forms of analysis. The reliability of information generated from the survey will be assessed using both the qualitative information developed in this report and the subsequent report, as well as information developed using econometric techniques or other statistical analyses.

Considerations Involved in Econometric Work

The Commission will use a variety of indicators in its econometric work in order to capture the strength of the current Chinese IPR regime. Existing econometric literature is being examined for insight into methods for estimating the effects on the U.S. economy of improved IPR in China. Any new econometric work done by the Commission will pay close attention to the joint relationship between exporting, FDI, and license fees and royalties, both in the activities of U.S. MNCs and in transactions not involving MNCs.

⁵ Siwek, “Engines of Growth,” 2005.

An important component of any econometric or statistical analysis will be to identify an indicator of the strength of China's IPR regime relative to other countries. In the widely used Park indices, China's formal IPR regime ranked fairly high in 2005, with a score of 4.05 out of a best-possible 5, as compared to a score of 4.88 for the United States.⁶ However, this index reflects primarily the observable features of written IPR law, rather than the enforcement regime. China's IPR enforcement is considered to be weaker than that presupposed by its written policies, as discussed in chapter 1. Also, the index does not reflect China's new Patent Law, which includes some potentially troublesome provisions in areas such as compulsory licensing. Another strand of literature attempts to quantify the average effect of a "major patent reform" on a before-and-after basis.⁷ In this connection, the question arises whether the difference between China's current IPR regime and international best practices would amount to something more, or less, than the "major patent reform" in an average country.⁸

Considerations Involved in Simulation

The Commission has frequently made use of simulation methods, both partial equilibrium and general equilibrium, in its assessments of trade issues. The use of such methods has been rarely, if ever, applied to IPR questions. The use of simulation methods, particularly general equilibrium, potentially has certain desirable features. First, simulation methods can be used to identify economy-wide implications of effects that have been estimated using either the survey or econometric methods. Second, simulation methods will be useful in identifying impacts on jobs, which arise from the effects of IPR on other variables; in particular, such methods will be helpful in identifying employment that may be displaced between IPR-intensive sectors and the rest of the economy. Given the number of new issues involved in applying simulation to IPR questions, the Commission is focusing on applications of well-vetted methods used in previous studies, and in particular will emphasize methods that focus on shifting of resources between sectors and industries, i.e. comparative static methods.

How IPR Infringement and Indigenous Innovation Policies Can Affect the U.S. Economy

By Type of IP or Issue Area

As shown in chapters 3 and 4, the types of IP protected by governments can take many forms. Patents and trade secret protection, copyright protection, and trademark protection are the most commonly used classifications. However, policies aimed at developing domestic innovation, and favoring the growth of domestic firms in certain sectors associated with innovation—in China's case, the indigenous innovation policies

⁶ Park, "International Patent Protection: 1960–2005," 2008.

⁷ Branstetter, Fisman, and Foley, "Do Stronger Intellectual Property Rights Increase International Technology Transfer?" 2006; Branstetter et al., "Intellectual Property Rights, Imitation, and Foreign Direct Investment," 2007.

⁸ Professor Foley, one of the authors engaged in analysis using the concept of a "major patent reform," opined in testimony to the Commission that the economic effects of moving from China's current IPR regime to international best practice might be less than the effects associated with a typical "major patent reform" in his studies. USITC, hearing transcript, June 15, 2010, 174 (testimony of C. Fritz Foley, Harvard Business School).

described in chapter 5—also can be considered in this context. The following discussion (unlike that in earlier chapters) focuses on economic rationales for IP policies.

Patents and Trade Secrets

The patent system has long been a principal means by which the United States and other industrial countries have sought to encourage and reward innovation. The temporary exclusive rights held by patent holders enhance the ability of firms to deter imitators, collect royalties, gain market lead times over competitors, and otherwise obtain economic benefits from the firm's innovation and knowledge. The presence of such benefits presumably means that a stronger patent system provides greater incentives for firms to engage in R&D, leading in turn to accelerated productivity growth and the development of new products. However, the extent to which patents are effective means for firms to reap the returns from their knowledge and innovations varies widely from industry to industry. For example, executives in the pharmaceutical and chemical industries have consistently rated patents as relatively more important than do firms in other sectors.⁹

In certain cases, firms prefer to use methods other than patents to preserve IP. Patenting a product or process requires disclosure of the underlying technology to the public and thus to competitors, so firms may prefer to safeguard their advances using trade secrets, using their own internal measures to protect information valuable to their market position. Similarly, in rapidly evolving areas of technology, the time required to apply for and obtain a patent may be long relative to the time it takes to develop a new generation of technology. In these situations, firms may try to preserve their IP primarily by maintaining lead time over competitors in the introduction of new products and processes.¹⁰

Copyrights

Copyrights provide protection for the producers of creative works analogous to those provided by patents. Copyrights are temporary legal monopolies granted to create incentives for artistic works which, without such a monopoly, might be copied very cheaply. Under perfect competition, the market price of such works of art could fall to the marginal cost of reproducing them, which is virtually zero for things that can be reproduced electronically. Copyrights are generally granted for a longer period of time than patents.¹¹

One area in which copyrights are likely to have important measurable economic effects is that of software, which in the United States can be both copyrighted and patented.¹² Since software represents a significant part of costs for business, and can be copied very cheaply relative to its retail price, firms that use pirated software may obtain substantial competitive advantages and lower their cost structure. In the United States, private fixed investment in software in 2009 amounted to \$242 billion, accounting for over 17 percent of all nonresidential private fixed investment and substantially outstripping investments in industrial equipment, which amount to \$150 billion.¹³ Cost advantages gained by

⁹ Levin et al., "Appropriating the Returns from Industrial Research and Development," 1987; Granstrand, *The Economics and Management of Intellectual Property*, 1999.

¹⁰ Industry official, interview by USITC staff, July 7, 2010.

¹¹ See chapter 1 for comparative information on the duration of copyrights, patents, and trade marks in China and the United States.

¹² Scotchmer, *Innovation and Incentives*, 2004, 75, 129–30.

¹³ Department of Commerce data and USITC staff calculations.

software piracy thus may significantly improve the performance of Chinese firms engaging in such piracy.¹⁴

Trademarks

Trademarks serve a variety of functions including helping consumers identify and purchase a product based on its source or quality, eliminating confusion in the marketplace, and protecting a trademark owner's investment in its reputation or consumer goodwill.¹⁵ Trademark counterfeiting generally involves the unauthorized imitation of a brand name or logo. Consumers may either unwittingly buy counterfeit products believing they are the true article, or deliberately buy counterfeit products because they are priced lower. In either case, sales are diverted from the producers of trademarked items to the counterfeiter.

In addition, consumers associate trademarks with a certain level of quality, allowing the trademark holder to build brand loyalty and charge higher prices. Consumers who purchase a counterfeit product unwittingly and expect higher quality than they receive, may mistakenly attribute the poor quality to the legitimate trademark holder, thus harming the brand's reputation. Some trademarked goods are also innovative (e.g., consumer electronic goods and high-end athletic shoes). Thus, counterfeiting of the trademark also erodes the return to IP embodied in the innovative product and protected by patents and/or trade secrets. There may also be potential health and safety risks associated with the purchase and use of counterfeit goods, ranging from shoddy manufacturing to ineffectual or even dangerous drugs.¹⁶

Indigenous Innovation

As indicated in chapter 5, China's indigenous innovation policies take a wide variety of forms, from general efforts to enhance the technological capacities of China's firms in certain sectors to specific provisions aimed at granting preferences to producers of certain enumerated "innovative" products by Chinese domestic firms in possession of Chinese-generated IP. Although the term "indigenous innovation" covers a wide variety of policies, the general thrust of such policies appears to be to enhance the performance of Chinese firms in specific industries, in particular increasing their growth and market share relative to foreign firms.

To the extent that China's policies succeed in accelerating technological progress, productivity, and innovation in the Chinese economy, they could provide spillover benefits for other countries. But if indigenous innovation policies act as a form of technological import substitution, systematically favoring Chinese domestic firms over foreign firms in relevant industries, they would be expected to have a negative effect on foreign firms and economies roughly analogous to what would occur if China simply imposed a protective tariff on imports of goods in the relevant sectors or levied a discriminatory excise tax on the sales of FIEs in the Chinese market.

¹⁴ USITC, hearing transcript, June 15, 2010, 206 (testimony of Robert Holleyman, Business Software Alliance).

¹⁵ Horan, Johnson, and Sykes, "Foreign Infringement of Intellectual Property Rights," 2005, 28.

¹⁶ See chapter 3, trademark counterfeiting.

By Market Channel

IPR violations in China affect the U.S. economy through several channels. First, they limit access to the Chinese market by U.S. firms, whether they are producing goods locally in China or exporting to China. Second, they harm sales by U.S. firms in their home market when, for example, counterfeit goods enter the U.S. market and unfairly take market share. And third, they similarly interfere with U.S. firms' market in third countries.

Effects in China's Market

How China's IPR infringement influences the Chinese market depends on the behavior of MNCs in China. As in any country, MNCs engage in China's market in different ways. These include, but are not limited to, exporting goods, either directly or to foreign affiliates in China; selling goods in China that are produced by foreign affiliates in China; and through licensing and royalty fee contracts for the purpose of transferring technology or other IP to affiliates and non-affiliates in China.

Effects mediated through MNCs

Exports, FDI, and licensing are interrelated,¹⁷ and to some extent represent alternate methods of serving the same market. When viewed in this way, weak IP protection is likely to have the strongest negative effect on income from licensing and royalty fees, because the contracts under which such payments are made require recognition and enforcement of IPR. By contrast, U.S. merchandise exports may not be as affected by IP protection in other countries. For example, in cases where production of the goods involves trade secrets, the fact that such trade secrets can be safeguarded at U.S. production facilities may mean that exports of those goods are less influenced by IP protection in other countries.

The situation of FDI, or affiliate sales associated with FDI, falls midway between that of exports and that of licensing fees and royalties. FDI may be not quite as sensitive to IP policies as license fees and royalties, but may be more sensitive to such policies than are exports. A priori, one would expect FDI to be less strongly associated with IPR infringement than license fees and royalties, but more strongly associated than exports. This is because IPR infringement affects both location decisions of firms (where to conduct business or serve markets from) and internalization decisions (whether to exploit knowledge within the boundaries of the firm or through the marketplace by licensing or using a joint venture partner). Stronger IP protection in foreign countries (especially for locally developed IP) may make MNCs more willing to locate IP-intensive activities abroad, favoring both FDI and licensing and disfavoring exports. On the other hand, stronger IP protection also makes it more likely that firms will be willing to exploit technology by selling it to parties outside the firm, favoring licensing at the expense of FDI. Thus, strengthening IP protection in a particular country could, in principle, either increase or decrease U.S. FDI to that country.

These possibilities can be considered in reverse in the case of weak IP protection. Measures taken to preserve secrecy or to compartmentalize information in a foreign affiliate may serve to some extent to counteract weak IP protection in the country in

¹⁷ See Smith, "How Do Foreign Patent Rights Affect U.S. Exports, Affiliate Sales, and Licenses?" 2001, and the sources cited therein, for a helpful discussion.

which the affiliate is located. However, a general inability to enforce IP protection is likely to increase incentives for employees to leave a foreign affiliate with stolen technology, setting themselves up as competitors.¹⁸ Similarly, foreign affiliates with local joint venture partners in an environment of weak IP protection are more likely to suffer loss of IP through opportunistic behavior on the part of the venture partner.

It is important to recognize that the various international flows (exports, affiliate sales, and license and royalty fees) are interrelated because they are often intertwined in the general operations of MNCs. In 2007, approximately 41 percent of exports of parents of U.S. MNCs worldwide were exports to their foreign affiliates. Similarly, in 2008, approximately 61 percent of all U.S. receipts of license and royalty fees worldwide were receipts by parents of U.S. MNCs from their foreign affiliates (62 percent for receipts from China). Thus, factors that tend to encourage or discourage U.S. FDI in China tend to encourage or discourage complementary flows of U.S. exports and U.S. receipts of license and royalty fees.

Exports

The strength of IP protection may affect the magnitude of U.S. exports to China independently of the relationship of such exports to FDI. Analysts have noted that stronger IP protection has both a market-expansion effect and a market-power effect on exports.¹⁹ The market-expansion effect, which associates stronger IP protection with more exports, takes place because exporters are less willing to ship goods to countries with weak IP protection because of concerns that the goods will be imitated or reverse-engineered. The market-power effect, which associates stronger IP protection with fewer exports, could arise because rights-holders use the monopoly power generated by IP protection to reduce exports in order to raise prices.

These effects depend on the imitative capabilities of firms in the importing country. If technical capacities are strong because of a large supply of scientists and engineers and high R&D spending, such as in China, the threat of imitation is greater. In such a case, raising IP protection from a formerly weak level would be expected to have a larger positive impact on exports. Similarly, in importing countries where patent rights are strong and the imitative capacity of local firms is weak, exporters have fewer concerns about imitation. Thus, exporters are better able to exercise monopoly power, and the market-power effect would more likely dominate, associating stronger IP protection with a contraction in exports. In intermediate cases (strong IP protection/strong imitative capacity or weak IP protection/weak imitative capacity) the effect on trade of strengthening IP protection on trade is ambiguous.

¹⁸ USITC, hearing transcript, June 15, 2010, 24 (testimony of C. Fritz Foley, Harvard Business School).

¹⁹ Smith, "Are Weak Patent Rights a Barrier to U.S. Exports?" 1999; Yang and Huang, "Do Intellectual Property Rights Matter to Taiwan's Exports?" 2009.

A number of studies have found that exports are greater to countries with stronger IP protection. These results have been found for U.S. exports,²⁰ in multi-country studies,²¹ and for Taiwan's exports.²² However, the effect of stronger IP protection on exports depends on the type of goods exported and the characteristics of the importing country. Additionally, the effects of stronger IP protection on exports have been found to be greater when the goods exported are technology-intensive or patent-intensive.²³ Stronger IP protection may also be more likely to promote exports in cases where the importing country has strong imitative capacity, as measured by such indices as high levels of R&D or high employment of scientists and engineers in the importing country.²⁴ As discussed above, there is a disincentive to export to countries with both weak IP protection and strong imitative capacities, since exported goods may be subject to imitation through reverse engineering.²⁵

Foreign Direct Investment

The consensus of empirical research is that stronger IP protection in the host country is associated with greater FDI. This suggests that the ability to enforce licensing contracts between parents and affiliates is important for MNCs, and that the possibility of substitution between FDI and licensing to outside parties as alternate methods of market service is less important. If substitution between FDI and licensing were widespread, stronger IP protection would likely lead to more licensing and less FDI.

Stronger IP protection is more likely to be associated with more inbound FDI in industries with high R&D or technology intensity,²⁶ and for MNCs that receive larger technology payments from their affiliates.²⁷ The type of FDI engaged in by MNCs may also depend on the strength of IP protection—countries with stronger IP protection tend to attract more production-oriented FDI, while FDI in countries with weaker IPR is more likely to be limited to sales offices.²⁸ It has been shown that countries that increase their

²⁰ Branstetter et al., "Intellectual Property Rights, Imitation, and Foreign Direct Investment," 2007; Smith, "Are Weak Patent Rights a Barrier to U.S. Exports?" 1999. The paper by Branstetter et al. uses the number of new goods exported to a country that has undergone a patent reform as a measure of exports. Counting new goods avoids the problem that exists when using the value of exports, i.e., determining whether increases in values due to increases in quantities exported (the market expansion effect) or increases in prices (the market power effect).

²¹ Falvey, Foster, and Greenaway, "Trade, Imitative Ability and Intellectual Property Rights," 2009; Ivus, "Do Stronger Patent Rights Raise High-Tech Exports?" 2010; Maskus and Penubarti, "How Trade-Related Are Intellectual Property Rights?" 1995; Vichyanond, "Intellectual Property Protections and Patterns of Trade," 2009.

²² Yang and Huang, "Do Intellectual Property Rights Matter to Taiwan's Exports?" 2009.

²³ Ivus, "Do Stronger Patent Rights Raise High-Tech Exports?" 2010; Vichyanond, "Intellectual Property Protections and Patterns of Trade," 2009.

²⁴ Falvey, Foster, and Greenaway, "Trade, Imitative Ability and Intellectual Property Rights," 2009; Ivus, "Do Stronger Patent Rights Raise High-Tech Exports?" 2010; Smith, "Are Weak Patent Rights a Barrier to U.S. Exports?" 1999.

²⁵ There are some counterexamples of studies finding that increased IP protection is negatively associated with U.S. exports. These include An, Maskus, and Pttitanun, "Duration of Rent Extraction and the Entry Mode Decision" 2008; Nair-Reichert and Duncan, "Patent Regimes, Host-Country Policies, and the Nature of MNE Activities," 2008 (for exports to unaffiliated parties). The results of these studies could be interpreted as favoring the market-power hypothesis, but they may also arise from differences in the variables included and methods used.

²⁶ Nair-Reichert and Duncan, "Patent Regimes, Host-Country Policies, and the Nature of MNE Activities," 2008; Smith, "How Do Foreign Patent Rights Affect U.S. Exports, Affiliate Sales, and Licenses?" 2001.

²⁷ Branstetter et al., "Intellectual Property Rights, Imitation, and Foreign Direct Investment," 2007.

²⁸ Smarzynska Javorcik, "The Composition of Foreign Direct Investment," 2004.

FDI in China also tend to increase their level of patent applications in China,²⁹ providing further evidence of linkages between FDI and IP protection in China's market specifically.

License fees, royalties, and other technology payments

Countries with stronger IP protection have been consistently found to pay more in license fees, royalties, and other technology payments,³⁰ as one would expect. Both U.S. firms³¹ and Japanese firms³² receive higher technology payments from countries with stronger IP protection. As with exports and FDI, the effect of IP protection on technology payments is variable, and is likely to be greater for MNCs for which patents and/or licensing are more important to begin with. The types of technology transferred may also depend on the strength of IP protection. For Japanese MNCs, for example, technology payments from countries with stronger IP protection include a greater share of patent license fees, as opposed to payments for know-how not associated with a patent.³³

Effects in the U.S. Market and in Third-country Markets

IPR infringement affects more than just goods and services sold in the infringing country. An infringing country may also export infringing products to the IP holder's home country and third-country markets. Thus, infringement in China can affect the markets of U.S. firms in the United States and in third countries.

Effects mediated through the parents of U.S. MNCs

The level of IP protection in China is likely to affect licensing and royalty fees received from China, U.S. FDI in China (i.e., the activities of U.S. foreign affiliates), and exports to China. These changes, in turn, affect the performance of U.S. MNCs with exposure to China. In principle, these effects could be either positive or negative. For example, an increase in FDI could substitute for exports from the United States, reducing activity in the parent firm's U.S. operations. This could happen if an MNC chooses to serve a foreign market by producing in that market rather than exporting from the United States. Conversely, an increase in FDI could lead to more exports of the U.S. parent to its own affiliate, increasing activity in the parent firm's U.S. operations. This could happen, for example, if the production process is fragmented, so that parts or components are exported from the United States for final assembly in another country.³⁴

On balance, though, U.S. parents and their foreign affiliates are likely to either grow together or contract together. U.S. parents with expanded affiliate activity are likely to export more to their foreign affiliates, to receive greater license and royalty payments from their foreign affiliates, and to engage in more general headquarters activities to

²⁹ Awokuse and Yin, "Intellectual Property Rights and the Surge of FDI in China," 2010.

³⁰ Other technology payments include payments for consulting and engineering services.

³¹ An, Maskus, and Puttitanun, "Duration of Rent Extraction and the Entry Mode Decision", 2008; Branstetter, Fisman, and Foley, "Do Stronger Intellectual Property Rights Increase International Technology Transfer?" 2006; Branstetter et al., "Intellectual Property Rights, Imitation, and Foreign Direct Investment," 2007; Nair-Reichert and Duncan, "Patent Regimes, Host-Country Policies, and the Nature of MNE Activities," 2008.

³² Wakasugi and Ito, "The Effect of Stronger Intellectual Property Rights on Technology Transfer," 2009.

³³ Nagaoka, "Does Strong Patent Protection Facilitate International Technology Transfer?" 2009.

³⁴ See also Branstetter, Fisman, and Foley, "Do Stronger Intellectual Property Rights Increase International Technology Transfer?" 2006.

oversee and coordinate the activity of foreign affiliates, than are U.S. companies with little or no activity in foreign affiliates.³⁵ This general complementarity between different kinds of MNC activity needs to be taken into account in assessing the effects of any potential change in China's IP policies on the U.S. economy.

Competition from counterfeit goods

U.S. sales of genuine products are likely to be negatively affected by sales in the United States of counterfeit goods imported from China. Because counterfeit goods can usually be produced relatively cheaply, they can undercut the sales of authentic goods, reducing the profits of the producers of the authentic goods. Moreover, because counterfeit goods are often of lower quality than the authentic goods, they can tarnish the brand reputation of the authentic goods and can also lead to false warranty claims directed to the producers of the authentic goods. In some industries, such as shoes and handbags, Chinese counterfeits may displace sales of authentic imported goods from third countries (e.g., Italy). These goods can enter into U.S. distribution channels, affecting wholesalers and retailers who either handle the counterfeits unknowingly or who handle legitimate merchandise in competition with counterfeits. In other cases, the displaced sales may represent goods originally produced by U.S. firms.

Counterfeit goods also compete with goods of third countries in markets around the world.³⁶ Chinese firms that imitate key technologies of non-Chinese origin through infringement may be able to sell such imitative goods internationally, displacing sales or undercutting prices of legitimate goods and potentially threatening the ability of U.S. firms to appropriate the rewards from their core innovative competencies.³⁷

Literature Review

Previous Surveys

While there have been studies that attempt to measure either the global effects of IPR infringement or the sectoral effects of IPR infringement within the U.S. economy, the only previous effort to quantify the effect of IPR infringement broadly across the entire U.S. economy was the USITC's 1988 study of foreign protection of intellectual property rights.³⁸ The scope of the study was the effect of infringement worldwide, and results were based on responses to questionnaires sent to the 1986 Fortune 500 and to 236 other firms; the latter were selected specifically to focus on firms expected to rely on IP—firms in the computer software/hardware, motion pictures, records and tapes, fashion apparel, toys, and sporting goods sector.

Although not all firms queried responded to the questionnaire, the study estimated, based on plausible assumptions about the loss-to-sales ratios for non-respondents and non-

³⁵ Examples of evidence of positive linkages between domestic activity and investment abroad include Desai, Foley, and Hines, "Foreign Direct Investment and Domestic Economic Activity," 2005, and Hanson, Mataloni and Slaughter, "Expansion Abroad and the Domestic Operations of U.S. Multinational Firms," 2003. Also, Koncz, "International R&D, Technological Capability, and Productivity," 2010, finds that increased R&D in affiliates of U.S. MNCs enhances productivity in the parent company.

³⁶ USITC, hearing transcript, June 16, 2010, 322–23 (testimony of James D'Addario, D'Addario and Company).

³⁷ See generally chapters 3, 4, and 5.

³⁸ USITC, *Foreign Protection of Intellectual Property Rights*, 1988, appendix H.

surveyed firms, that the loss to the U.S. economy was \$43–\$61 billion. One limitation of the methodology was the self-reported nature of the empirical loss estimates, suggesting a likely upwards bias.³⁹ In addition, extrapolating beyond the respondents to the entire economy was problematic (as was noted in the report). Moreover, the study did not directly address the question of lost profits to domestic firms.

In 2008, the Organization for Economic Co-operation and Development (OECD)⁴⁰ employed a different methodology for measuring the economic effects of IPR infringement. It relied on global customs seizure data to estimate the worldwide value of infringing trade (which it estimated at up to \$250 billion for 2007) and the value of counterfeit and pirated goods in world trade (which it estimated at 1.95 percent of the value of 2007 world trade). The crucial assumption in all of the OECD's estimates is that the rate at which certain products are seized by customs authorities is highly correlated with the total counterfeit trade in that product.⁴¹ What the OECD referred to as a "ceiling" estimate of \$250 billion is based on an arbitrarily estimated share of counterfeit trade, referred to as a "fix-point,"⁴² in the imports most widely seized that originated from the most "infringement-intensive economies." Inferring an actual share of counterfeit trade from customs seizure data is problematic.⁴³ This estimate, moreover, does not account for lost export sales of legitimate exporters due to infringement, or lost domestic sales due to infringement, or lost digital sales resulting from Internet copyright piracy.⁴⁴

There have also been a number of industry sector studies sponsored by trade groups in recent years. A 2005 study conducted on behalf of the Motion Picture Association of America (MPAA) estimated global losses to MPAA members due to piracy at \$6.1 billion in 2005. The study estimated that piracy rates were highest in China, with over 90 percent potential market loss, and that MPAA members lost an estimated \$244 million in revenue to Chinese piracy.⁴⁵ The study, however, offers limited information about the survey and estimation techniques used. It does state that the firm conducting the research surveyed 20,600 consumers in 22 countries and estimated effects in 42 additional countries based on country-specific characteristics such as locals' capacity to pay for products similar to movies. Nonetheless, it is difficult to determine from the study how many movies would have been purchased, and at what price, if pirated movies were unavailable.

The Business Software Alliance (BSA) and International Data Corporation (IDC) publish annual piracy estimates based on country surveys. The most recent of these studies

³⁹ This could be due to unrealistic assumptions about the numbers of infringing products purchased at home and abroad, and the likely propensity of those consumers to purchase non-infringed products at full retail prices.

⁴⁰ OECD, "The Economic Impact of Counterfeiting and Piracy," 2008; OECD, "Magnitude of Counterfeiting and Piracy of Tangible Products," 2009.

⁴¹ One factor not considered in this study is that generally Customs authorities seize only products whose trademarks and copyrights are recorded with Customs (at least in the United States). The rate of recordation i.e., the share of trademarked and copyrighted products which IP holders notify to Customs is quite small and varies widely from industry to industry. See chapter 2.

⁴² OECD, "The Economic Impact of Counterfeiting and Piracy," 2008, 111–14.

⁴³ As such, this is neither a "ceiling" nor a "floor"—a higher "fix-point" would produce a larger estimate.

⁴⁴ It is worth noting that an earlier study produced for the European Commission (CEBR, "Counting Counterfeits," 2002, 6), stated that "although many existing estimates of the size of the counterfeiting and piracy problems are based on extrapolating from the number of seizures, arrests, or convictions made by enforcement agencies, we do not recommend this approach except in rare circumstances."

⁴⁵ LEK, "The Cost of Movie Piracy," 2005.

surveyed 6,000 consumer users and 4,300 commercial users in 28 countries.⁴⁶ IDC estimated piracy rates for 83 additional countries based on a correlation between the number of software units per PC and country characteristics such as GDP per capita, PC penetration, and the International Development Index,⁴⁷ an emerging market measure. The study estimated that 43 percent of all software installed on PCs globally was unlicensed, with a commercial value of approximately \$51.4 billion. China had an estimated 79 percent piracy rate in 2009, down 1 percent from the previous year. The commercial value of unlicensed software in China was estimated at approximately \$7.6 billion, ranking second behind the United States. The study calculated the commercial value of unlicensed software using a blend of prices, including retail, volume license, and original equipment manufacturer prices, and considered free/open source software. The report uses the term “commercial value of pirated software” in place of the previous term “losses,” recognizing implicitly that not all pirated software users would obtain a legal copy at the average system price, if the pirated software were not available.

Another recent study combined estimates of piracy losses generated by the MPAA and BSA studies mentioned above, along with estimates for some other “copyright” industries, with multipliers for how these losses would impact upstream and downstream sectors of the U.S. economy.⁴⁸ The study concludes that direct losses to these industries in 2005 were over \$25 billion, but that the total cost to the U.S. economy exceeded “\$58 billion in lost output, 373,375 lost jobs, \$16 billion in lost employee earnings and more than \$2.6 billion in lost tax revenues.”

The International Chamber of Commerce (ICC) has launched an initiative to combat piracy—the Business Action to Stop Counterfeiting and Piracy (BASCAP). BASCAP has commissioned a series of reports to provide more reliable piracy loss estimates. In the past year, two firms (TERA Consultants and Frontier Economics) published reports quantifying piracy for a number of countries.⁴⁹ TERA Consultants’ report estimates the effect of piracy on employment for the “most at risk” creative core industries and supporting non-core industries.⁵⁰ The study integrates Eurostat data with country-specific and industry-specific survey results in the five largest EU countries.⁵¹ It extrapolates effects in these countries to the EU-27. It assumes a much smaller substitution rate⁵² than industry has reported—5 percent for digital and 10 percent for physical cinema piracy. The study finds a total of €9.9 billion (\$13.8 billion)⁵³ in retail losses for the creative industries in the EU, with 186,400 direct and indirect job losses. Based on increasing Internet access and file-sharing, it predicts €30 billion (\$41.8 billion) in lost retail revenue and 610,000 job losses due to piracy by 2015.

⁴⁶ BSA and IDC, “Seventh Annual BSA/IDC Global Software and Piracy Study,” 2010.

⁴⁷ This is published by the International Telecommunications Union.

⁴⁸ Siwek, “The True Cost of Copyright Industry Piracy to the U.S. Economy,” 2007. The core “copyright industries” examined were motion pictures, sound recordings, packaged software, and video games.

⁴⁹ Frontier Economics, “The Impact of Counterfeiting on Governments and Consumers,” 2009; TERA Consultants, “Building a Digital Economy,” 2010.

⁵⁰ The four core industries analyzed are recorded music, film, TV series, and software. The non-core industries convey goods and services to consumers. TERA Consultants, “Building a Digital Economy,” 2010, 5.

⁵¹ These countries are the UK, France, Germany, Italy, and Spain.

⁵² The substitution rate is defined as the percentage of sales that would go to a legitimate product of pirated product became unavailable.

⁵³ Based on the 30-day average exchange rate (October 13–November 12, 2010) reported in IMF, IMF Exchange Rate Database.

Frontier Economics' publication builds upon the OECD findings. It studies four at-risk industries: luxury goods, food and beverage products, pharmaceuticals, and software. It uses OECD data to determine the size of the industry, and surveys both firms and consumers to determine the rate of those who knowingly and unknowingly purchase counterfeit and pirated goods. Frontier Economics assumes that unknowing purchasers of counterfeit and pirated goods are more price-sensitive than knowing purchasers—i.e., they have a higher elasticity of substitution of demand, although they do not substitute fake goods for authentic goods one-to-one. The substitution rate for knowing consumption is much lower—for example, 2 percent for food and beverage products in the UK. The study examines the United Kingdom (UK) and Mexico, and extrapolates these results⁵⁴ to all G20 countries.⁵⁵ It estimates that lost taxes and higher welfare spending cost the UK government €4.1 billion (\$5.7 billion), and the Mexican government €1.4 billion (\$2.0 billion), and that the UK and Mexico, respectively lost 380,000 and 480,000 jobs due to piracy and counterfeiting. To extrapolate monetary losses to the government from the four sectors to the rest of the economy, the study discounts the losses for the rest of the economy by 50 percent to account for the fact that the sectors might be more prone to counterfeiting than the rest of the economy. The totals for the UK and Mexico are then extrapolated to the G20 economies, assuming that monetary and employment losses are proportional to GDP and employment. The study estimates that counterfeiting and piracy cost the G20 economies €62 billion (\$86.4 billion) in lost taxes and welfare spending, and that they destroy approximately 2.5 millions jobs annually.

A recent U.S. Government Accountability Office (GAO) report has criticized prior estimates of IPR infringement losses, including the BSA and MPAA studies discussed above, questioning the underlying assumptions on which the estimates were made.⁵⁶ Two of these assumptions were: (1) the substitution rate, (the amount of legitimate goods consumers would purchase in place of pirated goods); and (2) the value of infringing goods (which may be of lower quality and significantly cheaper than the original.) The GAO expressed concern about BSA's use of a one-to-one substitution rate and its method for extrapolating results from surveyed countries to non-surveyed countries. As for studies that use multipliers derived from input-output analysis to estimate the impact of piracy to the broader economy,⁵⁷ the report questioned the usefulness of multipliers for this purpose. The multiplier approach ignores both the fact that resources in expanding industries must be drawn from other sectors in the economy and the effects of changes in consumer income on demand. The GAO report did not itself attempt to quantify the effects of IPR infringement.

Econometric Methods

Estimating the Effects of IP Policies on International Transactions

As discussed earlier, there is an extensive body of literature that attempts to estimate the relationship between IP protection and international trade and transactions. In general, the

⁵⁴ That is, only 2 percent of knowing purchases of such fake products would go to legitimate products if the fakes became unavailable.

⁵⁵ The G-20 is a group of 19 countries, plus the European Union, whose finance ministers and central bank governors meet on a regular basis. The members of the G-20 are Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, Republic of Korea, Turkey, United Kingdom, the United States, and the European Union.

⁵⁶ GAO, "Intellectual Property," 2010.

⁵⁷ For example, Siwek, "The True Cost of Copyright Industry Piracy to the U.S. Economy," 2007.

results support the hypothesis that countries with stronger IP protections both attract more FDI and generate more license fees and royalties for MNCs investing in those countries. On balance, the results also suggest that exports tend to be greater to countries with stronger IP protections, particularly for patent-intensive or technology-intensive goods, and for exports to countries with high imitative capacity. The approaches vary across studies as well; importantly, while some studies focus on exports, FDI, or license fees and royalties individually, others consider more than one of these variables simultaneously.⁵⁸

Indices of the Quality of IPR Regimes

Measuring international differences in the strength of IPR regimes is an important part of quantitative analysis of the effects of IP protection. IP laws are multifaceted, and vary widely both in scope and in the provisions applied to various types of rights (i.e. patents, copyrights, and trademarks). They also vary by degree of implementation and enforcement. As a result, efforts to evaluate the strength of IP protection tend to include a great deal of subjective assessment. Several methods of assessing IP protection have been attempted. A simple approach is to construct a binary variable for major patent reforms, analyzing the difference between economic performance pre- and post-reform.⁵⁹ This approach can reduce subjectivity; on the other hand, it effectively assumes that each reform undertaken is similar in scope and that there was a one-time reformation rather than a gradual improvement of IP protection.

The most frequently used indicator of the strength of national patent rights is that developed in a series of papers by Walter Park and various coauthors.⁶⁰ The most recent of these papers presents four different indices, three of which are de jure measures of IP protection and one of which attempts to examine de facto implementation.⁶¹ The first three indices respectively focus on the de jure IP protection of patent, copyrights, and trademark rights. The patent rights index has been compiled for the longest period of time. There are five components to this measure: “extent of coverage [what types of IP can be protected], membership in international treaties, duration of protection, absence of restrictions on rights, and statutory enforcement provisions [legal recourses that can be undertaken].”⁶² The copyright index consists of “coverage, usage [control of others’ use], enforcement, and membership in international treaties.” The trademark rights index includes “coverage, procedures [including enforcement], and international treaties.”⁶³ It should be noted that although there is an enforcement component to each of these measures, it constitutes only a small share of the overall score.

⁵⁸ Studies considering exports, FDI, and license and royalty payments together include An, Maskus, and Puttitanun, “Duration of Rent Extraction and the Entry Mode Decision,” 2008; Branstetter et al., “Intellectual Property Rights, Imitation, and Foreign Direct Investment,” 2007; Nair-Reichert and Duncan, “Patent Regimes, Host-Country Policies, and the Nature of MNE Activities,” 2008; and Smith, “How Do Foreign Patent Rights Affect U.S. Exports, Affiliate Sales, and Licenses?” 2001. Ferrantino, “The Effects of Intellectual Property Rights on International Trade and Investment,” 1993, analyzes exports and FDI, but not license and royalty payments.

⁵⁹ Branstetter, Fisman, and Foley, “Do Stronger Intellectual Property Rights Increase International Technology Transfer?” 2006; Branstetter et al., “Intellectual Property Rights, Imitation, and Foreign Direct Investment,” 2007.

⁶⁰ Ginarte and Park, “Determinants of Patent Rights,” 1997; Park and Wagh, “Index of Patent Rights,” 2002; Park and Lippoldt, “Technology Transfer and the Economic Implications,” 2008.

⁶¹ Park and Lippoldt, “Technology Transfer and the Economic Implications,” 2008.

⁶² *Ibid.*, 15.

⁶³ *Ibid.*, 16.

Another indicator of national IP protections is a biennial survey of business executives conducted by the World Economic Forum.⁶⁴ This survey is based on overall IP protection, rather than on patents, copyrights, or trademark rights specifically. On the one hand, the responses display considerable subjectivity; as the survey is based on the opinion of executives regarding a particular country, the results may thus not be comparable across countries. On the other hand, the survey may capture valuable information on actual enforcement. Other variables used in international comparisons of IP protections include membership in international IPR agreements,⁶⁵ the Rapp and Rozek index,⁶⁶ and the business software piracy rate, discussed earlier in this chapter.⁶⁷

Indigenous Innovation

Like IPR infringement, China's indigenous innovation policies can affect the U.S. economy and employment. It is important to first clarify what is meant by such policies. For example, recent formal statements of China's policy regarding preferences for indigenous innovation goods in government procurement do not specify whether the policies cover purchases of SOEs, or only the purchases of government agencies. However, there is significant evidence that Chinese SOEs are sensitive to the authorities' desire to promote indigenous innovation, and may prefer to procure high-technology goods from Chinese domestic firms.⁶⁸ It is also widely recognized that indigenous innovation policies are a relatively new phenomenon, increasing in importance from about 2006 onwards.

If SOEs show preferences for Chinese domestic goods in product categories associated with indigenous innovation, and if those preferences have intensified in recent years, one would expect to see a decline in imports by SOEs in those product categories, either in absolute terms or relative to some benchmark (e.g., China's total imports of all goods, sales of SOEs, imports by China by firms other than SOEs, etc.). It may be possible to identify a trend in imports of product categories associated with indigenous innovation by SOEs to test the idea that SOEs' procurement preferences have recently changed. While the use of Chinese import data does not address all the ways in which Chinese firms may buy from foreign firms (in particular, by purchasing the output of foreign affiliates operating in China), it may provide important clues regarding recent changes in procurement practice.

Over the long term, indigenous innovation policies have the potential to fundamentally affect the balance of trade in IP-sensitive industries. It will be necessary to analyze the effects of these policies in conjunction with other elements of China's IP protection policies and the development of favored firms and industries in China, recognizing that these policies are still evolving and that data therefore may be difficult to obtain.⁶⁹

⁶⁴ This index is used in Yang and Huang, "Do Intellectual Property Rights Matter to Taiwan's Exports?" 2009.

⁶⁵ Ferrantino, "The Effect of Intellectual Property Rights on International Trade and Investment," 1993.

⁶⁶ Rapp and Rozek, "Benefits and Costs of Intellectual Property Protection in Developing Countries," 1990. This index is used in Maskus and Penubarti, "How Trade-Related Are Intellectual Property Rights," 1995; Smith, "How Do Foreign Patent Rights Affect U.S. Exports, Affiliate Sales, and Licenses?" 2001; and Vichyanond, "Intellectual Property Rights and Patterns of Trade," 2009.

⁶⁷ See Nagaoka, "Does Strong Patent Protection Facilitate International Technology Transfer?" 2009.

⁶⁸ See chapter 5.

⁶⁹ See Emergency Committee for American Trade (ECAT), written submission to the USITC, June 22, 2010, for a discussion of the relationships between indigenous innovation policies, IP protection, and the development of SOEs.

Simulation Methods

Simulation modeling, using general equilibrium methods, can be used to address “counterfactual” questions relating to IP protection in China. For example, what would be the effect on the U.S. economy if there were no IPR violations in China, or if IPR were adequately and effectively enforced, as required by TRIPS?

Simulation models relate economic observations and assumptions to derive their findings. They use a numerical description of the economy, combined with information on the ways aspects of that economy (such as IPR enforcement) may be changed, and derive implications or insights for the effects on the rest of the economy. Results of such models depend on the assumptions used in their construction and the quality of the underlying data used to construct the models.

Few studies have tried to use simulation methods to assess the effects of IPR infringement on the U.S. economy, or on any other economy. The OECD in 2008 enumerated the types of economic effects infringement can have (on employment, tax revenues, firm reputation, etc.) without quantifying the effects.⁷⁰ Another study went substantially further by applying input-output multipliers to some initial estimates of the direct costs of infringement, in order to derive effects on the upstream suppliers of the affected firms (which, in this study, consisted of the “copyright industries,” essentially software and entertainment).⁷¹ This is in fact the type of analysis that lies at the core of general equilibrium simulation, though it misses many of the effects of infringement on price levels, consumer welfare (including commercial consumers of IPR products), and trade. The analysis also relies on initial estimates of the direct effects of infringement that are derived from a variety of secondary sources, and may be constructed in arguably inconsistent ways, although it attempts to adjust these estimates to make them more conservative and relatively consistent.

A general equilibrium analysis of the effects of the improvement of IPR enforcement in China on the U.S. economy would, in the ideal case, provide a framework for simultaneously examining a variety of effects of IPR enforcement policy. Specifically, it could generate estimates of the effect of Chinese IPR infringement on output, employment, investment, and trade effects for (1) industries directly affected; (2) industries or agents who supply directly affected industries and agents with materials and services; (3) industries, agents, or final consumers who are the customers of the affected industries, (4) governments, and (5) trading partners. In this ideal case, one might also consider various types of IPR enforcement working simultaneously and reinforcing one another. This method would require a comprehensive depiction of the U.S. economy and perhaps of the Chinese economy, if it were to be modeled explicitly. It would also require information on the first-order effects of infringement on exports, productivity, and investment, as described in the section on “Strategies” above.

A single-country model of the U.S. economy, such as the USITC’s U.S. Applied General Equilibrium (USAGE) model, can show how that economy responds to changes in IPR policy. In order to do that, the model would have to be supplied with numerical descriptions of the estimated effects of those policy changes—that is, with changes in

⁷⁰ OECD, “The Economic Impact of Counterfeiting and Piracy,” 2008.

⁷¹ Siwek, “The True Cost of Copyright Industry Piracy,” 2007.

prices of goods, quantities of goods, or taxes corresponding to the policy changes. Such estimated effects could include:

- Changes in demand for exports of U.S. IPR goods, if the availability of low-cost infringing goods in China or other markets is reduced.
- Changes in the expected return to IPR-related U.S. investment in China.
- Effects of improved IPR on R&D spending in U.S. parents and in foreign affiliates, and of the effects of such spending on productivity.
- Changes in prices of IPR goods imported from China (if the availability of low-cost pirated goods is reduced, for example).

A global model, such as the model of the Global Trade Analysis Project (GTAP), would include a depiction of the Chinese economy as well as the U.S. economy and third-country markets. Such a model would enable some of the estimated effects of IPR policy changes on the U.S. economy to be derived from estimates of the initial effects on the Chinese economy. For example:

- Estimates of changes in production costs in China (for example, because of IPR enforcement increasing the price of software) would generate implications for changes in the price of Chinese exports, and in demand for imports.
- Changes in the return on investment in IP in China (again due to IPR enforcement) would also influence production costs and the supply of foreign investment.

The representation of the U.S. economy in the USAGE model is much richer than in GTAP, incorporating more information on a greater number of industry sectors, labor force segments, and capital investment instruments. The GTAP model lacks much of this detail, but incorporates information on economic relationships among many countries. Linking two such models is a possible way to take full advantage of the quantitative information on policy changes that can be derived from testimony, surveys, and official sources and from the econometric analysis of such information.

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APPENDIX A
REQUEST LETTER

M 7.19.2010

MAX BAUCUS, MONTANA, CHAIRMAN

JOHN D. ROCKEFELLER IV, WEST VIRGINIA
 KENT CONRAD, NORTH DAKOTA
 JEFF BINGAMAN, NEW MEXICO
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 MARIA CANTWELL, WASHINGTON
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 THOMAS R. CARPER, DELAWARE

CHUCK GRASSLEY, IOWA
 ORRIN G. HATCH, UTAH
 OLYMPIA J. SNOWE, MAINE
 JON KYL, ARIZONA
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 JOHN ENSIGN, NEVADA
 MICHAEL B. ENZI, WYOMING
 JOHN CORNYN, TEXAS

United States Senate

COMMITTEE ON FINANCE

WASHINGTON, DC 20510-6200

RUSSELL SULLIVAN, STAFF DIRECTOR
KOLAN DAVIS, REPUBLICAN STAFF DIRECTOR AND CHIEF COUNSEL



April 19, 2010

DOCKET NUMBER
2729
Office of the Secretary Int'l Trade Commission

The Honorable Shara L. Aranoff
 Chairman
 U.S. International Trade Commission
 500 E Street, S.W.
 Washington, DC 20436

Dear Chairman Aranoff,

We are writing to request that the U.S. International Trade Commission (Commission) conduct an investigation under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)) regarding the effect on the U.S. economy and U.S. jobs of intellectual property rights (IPR) infringement in China.

Intellectual property plays a key role in driving innovation, productivity, employment, and growth in the U.S. economy. The U.S. Department of Commerce reports that intellectual property accounts for more than half of all U.S. exports, and helps drive 40 percent of our economic growth. In 2008, for example, U.S. receipts of royalties and license fees from other countries yielded a \$75 billion trade surplus.

Infringement of U.S. IPR around the globe threatens American jobs. IPR infringement, both in the physical world and online, is estimated to cost U.S. companies billions of dollars per year in lost revenues in China alone. More than 80 percent of IPR-infringing goods seized at the U.S. border are of Chinese origin. And troubling recent developments in China, including China's "indigenous innovation" procurement policies, may exacerbate these losses by limiting the ability of U.S. innovative companies to participate in the Chinese market.

Despite widespread evidence of the harm to U.S. industries, authors, and artists resulting from IPR infringement in China, the U.S. Government has not conducted a comprehensive economic analysis of the effect of China's ineffective IPR protection and enforcement on the U.S. economy and U.S. jobs. To assist us in better understanding these effects, we request the Commission to provide two reports, as described below.

Report 1: Based on a review of the literature and other available information, we request the Commission to provide a report that:

- Describes the principal types of reported IPR infringement in China;
- Describes China's indigenous innovation policies; and
- Outlines analytical frameworks for determining the quantitative effects of the infringement and indigenous innovation policies on the U.S. economy as a whole and on sectors of the U.S. economy, including lost U.S. jobs.

This first report should be delivered by November 19, 2010.

Report 2: Based on an analysis of data and other information from available sources, including a survey of U.S. firms, and the application of the analytical frameworks outlined in the first report, we request the Commission to provide a second report that:

- Describes the size and scope of reported IPR infringement in China;
- Provides a quantitative analysis of the effect of reported IPR infringement in China on the U.S. economy and U.S. jobs, including on a sectoral basis, as well as potential effects on sales, profits, royalties, and license fees of U.S. firms globally, to the extent primary data can be collected; and
- Discusses actual, potential, and reported effects of China's indigenous innovation policies on the U.S. economy and U.S. jobs, and quantifies these effects, to the extent feasible.

This report should be delivered by May 2, 2011.

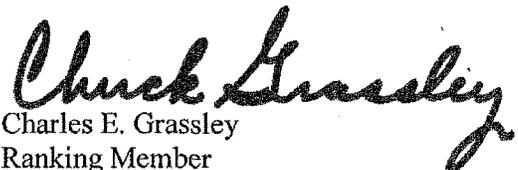
In preparing its reports, we do not expect the Commission to make findings in either report regarding the legal merits of any reported IPR infringement.

As we intend to make the reports available to the public, we request that the Commission not include confidential business information in its reports.

Sincerely,



Max Baucus
Chairman



Charles E. Grassley
Ranking Member

APPENDIX B
***FEDERAL REGISTER* NOTICE**

must submit a written request to Karl Sandwell-Weiss, Coronado National Forest Office at the address stated above by August 9, 2010. Upon determination by the authorized officer that a public meeting will be held, a notice of the time and place will be published in the **Federal Register** and in at least one local newspaper no less than 30 days before the scheduled date of the meeting.

The withdrawal extension application will be processed in accordance with the regulations set forth in 43 CFR 2310.4.

Authority: 43 CFR 2310.3-1(b).

Deborah E. Stevens,

Acting, Deputy State Director, Office of Communications.

[FR Doc. 2010-10989 Filed 5-7-10; 8:45 am]

BILLING CODE 4310-11-P

INTERNATIONAL TRADE COMMISSION

[Investigation No. 332-514]

China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy

AGENCY: United States International Trade Commission.

ACTION: Institution of investigation and scheduling of hearing.

SUMMARY: Following receipt of a request from the United States Senate Committee on Finance (Committee) dated April 19, 2010, the U.S. International Trade Commission (Commission) instituted investigation No. 332-514, *China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy*, for the purpose of preparing the first of two reports requested by the Committee, and has scheduled a public hearing in connection with investigations relating to both reports for June 15, 2010.

DATES:

June 1, 2010: Deadline for filing requests to appear at the public hearing.

June 3, 2010: Deadline for filing pre-hearing briefs and statements.

June 15, 2010: Public hearing.

June 22, 2010: Deadline for filing post-hearing briefs and statements.

July 9, 2010: Deadline for filing all other written submissions concerning investigation No. 332-514.

November 19, 2010: Transmittal of first report to the Senate Committee on Finance.

ADDRESSES: All Commission offices, including the Commission's hearing rooms, are located in the United States International Trade Commission Building, 500 E Street, SW., Washington, DC. All written submissions should be addressed to the Secretary, United States International Trade Commission, 500 E Street, SW., Washington, DC 20436. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at <http://www.usitc.gov/secretary/edis.htm>.

FOR FURTHER INFORMATION CONTACT:

Project Leaders Katherine Linton (katherine.linton@usitc.gov or 202-205-3393) or Alexander Hammer (alexander.hammer@usitc.gov or 202-205-3271) or Deputy Project Leader Jeremy Wise (jeremy.wise@usitc.gov or 202-205-3190) for information specific to this investigation. For information on the legal aspects of these investigations, contact William Gearhart of the Commission's Office of the General Counsel (202-205-3091 or william.gearhart@usitc.gov). The media should contact Margaret O'Laughlin, Office of External Relations (202-205-1819 or margaret.olaughlin@usitc.gov). Hearing-impaired individuals may obtain information on this matter by contacting the Commission's TDD terminal at 202-205-1810. General information concerning the Commission may also be obtained by accessing its Internet server (<http://www.usitc.gov>). Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202-205-2000.

Background: The Commission has instituted this investigation for the purpose of preparing the first of the reports requested by the Committee. The first report will:

- Describe the principal types of reported IPR infringement in China;
- Describe China's indigenous innovation policies; and
- Outline analytical frameworks for determining the quantitative effects of the infringement and indigenous innovation policies on the U.S. economy as a whole and on sectors of the U.S. economy, including lost U.S. jobs.

As requested by the Committee, the Commission will deliver this first report by November 19, 2010. The Committee asked the Commission to provide a second report by May 2, 2011, that describes the size and scope of reported IPR infringement in China; that provides a quantitative analysis of the impact of reported IPR infringement in China on

the U.S. economy and U.S. jobs and on the potential effects on sales, profits, royalties, and license fees of U.S. firms globally; and that discusses actual, potential, and reported effects of China's indigenous innovation policies on the U.S. economy and U.S. jobs, and quantifies these effects, to the extent feasible. The Commission will publish a notice shortly that announces institution of an investigation to prepare this second report.

Public Hearing: The Commission will hold a public hearing in connection with this investigation, and the investigation to be instituted in connection with the second report, at the U.S. International Trade Commission Building, 500 E Street, SW., Washington, DC, beginning at 9:30 a.m. on June 15, 2010 (continuing on June 16, 2010, if needed). Requests to appear at the public hearing should be filed with the Secretary, no later than 5:15 p.m., June 1, 2010, in accordance with the requirements in the "Submissions" section below. All pre-hearing briefs and statements should be filed not later than 5:15 p.m., June 3, 2010; and all post-hearing briefs and statements should be filed not later than 5:15 p.m., June 22, 2010. In the event that, as of the close of business on June 1, 2010, no witnesses are scheduled to appear at the hearing, the hearing will be canceled. Any person interested in attending the hearing as an observer or nonparticipant may call the Secretary to the Commission (202-205-2000) after June 4, 2010, for information concerning whether the hearing will be held.

Written Submissions: In lieu of or in addition to participating at the hearing, interested parties are invited to submit written statements concerning this investigation. All written submissions concerning this investigation should be addressed to the Secretary, and should be received not later than 5:15 p.m., July 9, 2010. All written submissions must conform with the provisions of section 201.8 of the Commission's *Rules of Practice and Procedure* (19 CFR 201.8). Section 201.8 requires that a signed original (or a copy so designated) and fourteen (14) copies of each document be filed. In the event that confidential treatment of a document is requested, at least four (4) additional copies must be filed, in which the confidential information must be deleted (see the following paragraph for further information regarding confidential business information). The Commission's rules authorize filing submissions with the Secretary by facsimile or electronic means only to the extent permitted by section 201.8 of the rules (see Handbook for Electronic

Filing Procedures, http://www.usitc.gov/secretary/fed_reg_notices/rules/documents/handbook_on_electronic_filing.pdf). Persons with questions regarding electronic filing should contact the Secretary (202–205–2000). Any submissions that contain confidential business information must also conform with the requirements of section 201.6 of the *Commission's Rules of Practice and Procedure* (19 CFR 201.6). Section 201.6 of the rules requires that the cover of the document and the individual pages be clearly marked as to whether they are the “confidential” or “non-confidential” version, and that the confidential business information be clearly identified by means of brackets. All written submissions, except for confidential business information, will be made available for inspection by interested parties.

In its request letter, the Committee stated that it intends to make the Commission's reports available to the public in their entirety, and asked that the Commission not include any confidential business information or national security classified information in the reports that the Commission sends to the Committee. Any confidential business information received by the Commission in this investigation and used in preparing this report will not be published in a manner that would reveal the operations of the firm supplying the information.

By order of the Commission.

Issued: May 5, 2010.

Marilyn R. Abbott,

Secretary to the Commission.

[FR Doc. 2010–11011 Filed 5–7–10; 8:45 am]

BILLING CODE 7020–02–P

DEPARTMENT OF JUSTICE

Office of Justice Programs

[OJP (NIJ) Docket No. 1518]

NIJ Body Armor Compliance Testing Program Workshop

AGENCY: National Institute of Justice.

ACTION: Notice of meeting.

SUMMARY: The National Institute of Justice (NIJ) is hosting a Body Armor Compliance Testing Program Workshop for manufacturers and test laboratories on Tuesday, May 18, 2010, from 8 a.m. to 3 p.m. NIJ is hosting this workshop specifically to update manufacturers and test laboratories with regard to the Compliance Testing Program, status of testing, administrative clarifications, and the follow-up inspection and testing

process. This will be an open forum and there will ample opportunities for attendees to ask questions. Participants are strongly encouraged to come prepared to ask questions.

Space is limited at this workshop, and as a result, only 100 participants will be allowed to register. We request that each manufacturer and test laboratory limit their representatives to no more than two per organization. Exceptions to this limit may occur, should space allow. Participants planning to attend are responsible for their own travel arrangements. Please use the following <http://www.justnet.org/Pages/RecordView.aspx?itemid=2396> to see an agenda and obtain the registration form to attend the Workshop. You will receive a response to your request within 2 business days.

DATES: The meeting will be held from 8 a.m. to 3 p.m.

ADDRESSES: Westin Annapolis Hotel, 100 Westgate Circle, Annapolis, MD 21401.

FOR FURTHER INFORMATION CONTACT:

Jennifer O'Connor, by telephone at 202–307–0070 [Note: this is not a toll-free telephone number], or by e-mail at Jennifer.O'Connor@usdoj.gov.

Kristina Rose,

Acting Director, National Institute of Justice.

[FR Doc. 2010–10922 Filed 5–7–10; 8:45 am]

BILLING CODE 4410–18–P

DEPARTMENT OF LABOR

Office of the Secretary

Submission for OMB Review: Comment Request

May 5, 2010.

The Department of Labor (DOL) hereby announces the submission of the following public information collection request (ICR) to the Office of Management and Budget (OMB) for review and approval in accordance with the Paperwork Reduction Act of 1995 (Pub. L. 104–13, 44 U.S.C. chapter 35). A copy of this ICR, with applicable supporting documentation; including among other things a description of the likely respondents, proposed frequency of response, and estimated total burden may be obtained from the RegInfo.gov Web site at <http://www.reginfo.gov/public/do/PRAMain> or by contacting Darrin A. King on 202–693–4129 (this is not a toll-free number)/e-mail: DOL_PRA_PUBLIC@dol.gov.

Interested parties are encouraged to send comments to the Office of Information and Regulatory Affairs, Attn: OMB Desk Officer for the

Department of Labor—Wage and Hour Division (WHD), Office of Management and Budget, Room 10235, Washington, DC 20503, *Telephone:* 202–395–7316/ *Fax:* 202–395–5806 (these are not toll-free numbers), *E-mail:*

OIRA_submission@omb.eop.gov within 30 days from the date of this publication in the **Federal Register**. In order to ensure the appropriate consideration, comments should reference the OMB Control Number (see below).

The OMB is particularly interested in comments which:

- Evaluate whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;
- Evaluate the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used;
- Enhance the quality, utility, and clarity of the information to be collected; and
- Minimize the burden of the collection of information on those who are to respond, including through the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses.

Agency: Wage and Hour Division.

Type of Review: Extension and Revision of a currently approved collection.

Title of Collection: Records to be kept by Employers—Fair Labor Standards Act.

OMB Control Number: 1235–0018.

Affected Public: Private Sector (Business or other for-profits, Not-for-profit institutions, and Farms); State, Local, or Tribal Governments; and Individuals or Households.

Total Estimated Number of Respondents: 3,486,025.

Total Estimated Annual Burden Hours: 853,924.

Total Estimated Annual Costs Burden (does not include hourly wage costs): \$0.

Description: Employers respond to these information collections to document compliance with the Fair Labor Standards Act, 29 U.S.C. 201, *et seq.* For additional information, see related notice published in the **Federal Register** on December 23, 2009 (74 FR 68284).

Darrin A. King,

Departmental Clearance Officer.

[FR Doc. 2010–10982 Filed 5–7–10; 8:45 am]

BILLING CODE 4510–27–P

APPENDIX C
HEARING PARTICIPANTS

CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

Subject: China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy

and

China: Effects of Intellectual Property Infringement and Indigenous Innovation Policies on the U.S. Economy

Inv. Nos.: 332-514 and 332-519 (respectively)

Date and Time: June 15 and 16, 2010 - 9:30 a.m.

Sessions were in connection with these investigations in the Main Hearing Room (room 101), 500 E Street, S.W., Washington, D.C.

Day 1: Tuesday, June 15, 2010

Panel 1:

ORGANIZATION AND WITNESS:

Carnegie Mellon University
Pittsburgh, PA

Professor Lee G. Branstetter, Associate Professor
of Economics and Public Policy

Harvard Business School
Boston, MA

Professor C. Fritz Foley, Associate Professor

International Intellectual Property Institute
Washington, D.C.

Bruce A. Lehman, Chairman and President

The Ohio State University
Moritz College of Law
Columbus, OH

Professor Daniel C.K. Chow, Joseph S. Platt-Porter
Wright Morris & Arthur Professor of Law

Panel 1 (continued):

ORGANIZATION AND WITNESS:

Drake University Law School
Intellectual Property Law Center
Des Moines, IA

Professor Peter K. Yu, Kern Family Chair in
Intellectual Property Law

Emergency Committee for American Trade
Washington, D.C.

Calman Cohen, President

Panel 2:

ORGANIZATION AND WITNESS:

U.S. Chamber of Commerce
Washington, D.C.

Jeremie Waterman, Senior Director, Greater China

American Chamber of Commerce
People's Republic of China
Beijing, China

Christian Murck, President

National Association of Manufacturers
Washington, D.C.

Shaun Donnelly, Senior Director, International
Business Policy

Business Software Alliance
Washington, D.C.

Robert W. Holleyman, II, President and CEO

IDC
Framingham, MA

John Gantz, Chief Research Officer

Panel 2 (continued):

ORGANIZATION AND WITNESS:

Information Technology Industry Council
Washington, D.C.

and

Software & Information Industry Association
Washington, D.C.

John Neuffer, Vice President for Global Policy,
Information Technology Industry Council

Mark Bohannon, General Counsel and Senior Vice
President, Public Policy, Software & Information
Industry Association

Day 2: Wednesday, June 16, 2010

Panel 3

ORGANIZATION AND WITNESS:

D'Addario & Company, Inc.
Farmingdale, NY

James D'Addario, Chairman and CEO

PCT Government Relations
Washington, D.C.

Chris Israel, Managing Partner

International Intellectual Property Alliance
Washington, D.C.

Michael Schlesinger, Co-Founder

U.S. Council of International Business
Washington, D.C.

Stephen Canner, Vice President

-END-

APPENDIX D
POSITIONS OF INTERESTED PARTIES

Summary of Views of Interested Parties

The Commission held a public hearing in relation to its investigations on intellectual property rights (IPR) infringement and indigenous innovation policies in China on June 15–16, 2010, in Washington, DC. Interested persons were also invited to file written submissions for the investigation. This appendix contains a summary of the views expressed to the Commission via testimony, written submission, or both, and reflects the principal points made by the particular party. The views expressed in the summarized materials should be considered to be those of the submitting parties and not the Commission. In preparing this summary, Commission staff did not undertake to confirm the accuracy of, or otherwise correct, the information summarized. For the full text of hearing testimony, written submissions, and exhibits, see entries associated with investigation nos. 332-514 and 332-519 at the Commission’s Electronic Docket Information System (<https://edis.usitc.gov/edis3-internal/app>).¹

Air-Conditioning, Heating, and Refrigeration Institute (AHRI)²

In a written submission on behalf of its 300 member companies, AHRI said that it supports efforts to increase international compliance with IPR treaties and that China is not the only country where violations appear. AHRI explained that it has taken an active role to support overall IPR protection, especially at industry trade shows, where, it notes, infringement is particularly visible. For example, AHRI noted that after one of its members found replicas of his equipment displayed by Chinese distributors at an expo in Chicago, AHRI signed a memorandum of understanding (MOU) with five other Chinese and American heating, ventilation, air-conditioning, and refrigeration (HVACR) associations and exhibition centers to protect IPR. The MOU called for a zero tolerance policy for counterfeit products at exhibitions, open communication among all parts of the HVACR industry, and U.S.-Chinese industry collaboration for IPR protection.

As part of its submission, AHRI also included a model letter developed by The International Council of Air-Conditioning, Refrigeration, and Heating Manufacturers Associations (ICARHMA) for its seven members, including AHRI, to forward to expositions and trade shows regarding good practices for IPR protection at these events. The recommendations included IPR protection language in exhibitor contracts, a no-tolerance policy for infringing items, a response procedure for when infringement is alleged, distribution of IPR information at events, and working with HVACR associations to share information and address counterfeiting.

American Apparel & Footwear Association (AAFA)³

In a written submission to the Commission, Kevin M. Burke, president and CEO of AAFA, cited statistics from the U.S. Customs and Border Protection estimating that

¹ Note that page numbers for exhibits are not precise because the exhibits volume is not paginated sequentially, the page numbers are those given by the Adobe PDF software.

² Written submission to the USITC, June 22, 2010.

³ Written submission to the USITC, July 8, 2010. For more information about AAFA and its representation, please see www.apparelandfootwear.org.

48 percent of IPR-infringing footwear entering the United States is from China. The IPR-infringing footwear, he added, was worth about \$98 million in 2009. Mr. Burke wrote that infringements mainly appear as trademark violations, explaining that AAFA believes it is easier to illegally reproduce trademarks than to recreate complicated patented production. Mr. Burke also noted that AAFA members have reported uneven law enforcement against these IP violators across China, as well as ineffective Chinese government prevention measures. Direct sales of IPR-infringing footwear to consumers via the Internet are a major problem for the industry, according to Mr. Burke, and can be seen as reducing employment at legitimate sales sites, reducing company revenue and government tax collection, and hurting brand reputations. Mr. Burke concluded by noting that AAFA member companies have not seen any direct impact from China's indigenous innovation policies but they will continue to monitor the situation.

American Chamber of Commerce in China (AmCham-China)⁴

Mr. Christian Murck, president of AmCham-China, said that the organization has a membership of over 1,200 U.S. companies operating in China. In his testimony, he summarized member companies' concerns about the ongoing problems that counterfeiting and IPR infringement have posed for U.S. business in China. He said that continued pressure on China to improve IPR protection has had results, as evidenced by the comprehensive Chinese IPR legislation that now exists. However, he said that AmCham-China's most recent Business Climate Survey indicates that businesses still consider IPR enforcement in China to be weak and ineffective. In its prehearing submission, AmCham-China said that the Chinese government occasionally appears to purposely pursue policies that weaken IPR.

Mr. Murck stated that the appearance of indigenous innovation policies has concerned AmCham-China even more. He said that although the Chinese government has since modified some of its original indigenous innovation proposals regarding IPR nationality requirements, its continued intent to develop a catalogue of certified indigenous innovation products is worrisome. Besides indigenous innovation, he listed several other policies he considered aimed at protecting domestic Chinese companies, including Chinese government procurement measures, the backing of Chinese "famous brands," the development of unique Chinese technology standards incompatible with world standards, potentially larger compulsory licensing requirements for patent holders, and patent infringement exemptions.

Lee Branstetter, Associate Professor of Public Policy and Economics, Carnegie Mellon University⁵

In hearing testimony presented to the Commission, Professor Branstetter expressed the view that China's poor record of enforcing its own domestic IP legislation has resulted in possibly billions of dollars in losses to U.S. firms, including lower profits and licensing revenues. Based on his joint IPR research with Fritz Foley, Ray Fisman, and Kamal

⁴ USITC, hearing transcript, June 15, 2010, 177-184; written testimony to the USITC, June 15, 2010; written submission to the USITC, June 3, 2010. For more information about AmCham-China, please see <http://www.amchamchina.org/>.

⁵ USITC, hearing transcript and exhibits, June 15, 2010, 8-18 and 8-12, respectively.

Saggi, Professor Branstetter also stated that the export of IPR-sensitive U.S. products to China has been lower than if China's IPR enforcement were better. Professor Branstetter said that not only has this harmed U.S. firms, but he is convinced that China has been injured as well.

Professor Branstetter said that China has begun to improve in some areas of IPR enforcement, particularly for patents. He cited a large increase in Chinese domestic utility model patents, more international patents filed by Chinese companies, and a national increase in Chinese IPR litigation.

Professor Branstetter stated that the U.S. government's ability to influence Chinese institutions is limited and that China's World Trade Organization (WTO) membership prevents the use of consequential economic sanctions to influence Chinese policy. He added that attempts by the United States to use the WTO dispute settlement process to bring cases against China have had mixed results: the United States was mostly unsuccessful in its copyright case due to insufficient evidence, but successful in its case regarding Chinese national policies inequitably favoring Chinese semiconductor and auto parts manufacturers.

Professor Branstetter said that the scope and number of China's indigenous innovation policies are so large that measurement of their potential effects on U.S. firms in a study will be difficult, especially since many of the policies do not break any international trade laws and may possibly benefit U.S. companies. Finally, he said that although China's indigenous innovation policies may exclude foreign firms from qualifying for Chinese government procurement contracts, more recent Chinese guidelines and his own contacts indicate that the final legislation will not be as discriminatory.

Business Software Alliance (BSA)⁶

Mr. Robert W. Holleyman, II, president and CEO of the software company association BSA, said that BSA represents the global software industry and its hardware partners. In his testimony before the Commission, he described the software industry's particular difficulties attributed to China's lax IPR enforcement. According to Mr. Holleyman, the PC software industry is dependent upon trade; recent estimates put the legitimate market's worth at \$76 billion, 60 percent of which is U.S. receipts. However, he noted that estimates indicate that illegal copying, including the use of unlicensed software by state-owned enterprises, has greatly reduced software sales to China. He cited findings by the market research firm International Data Corporation that 79 percent of software installed in China during 2009 was unlicensed, representing a total value of \$7.6 billion, \$3.4 billion of which was U.S.-developed software. Mr. Holleyman also expressed concern that the adoption of indigenous innovation policies may completely exclude U.S. software firms from the Chinese market.

In terms of the broader U.S. economy, Mr. Holleyman noted there were a number of negative consequences of this illegal software use. First, considering these numbers as losses to the industry, he said they can also be viewed as lost employment opportunities and harmful to future innovation, as firms have fewer investment resources. Further, he said, illegal software use can also be seen as subsidizing the Chinese industry because lax

⁶ USITC, hearing transcript, June 15, 2010, 193-99; written testimony to the USITC, June 15, 2010. For more information about BSA and its membership, please see www.bsa.org.

IPR enforcement allows them to obtain software at lower cost than U.S. and other competitors who must purchase legal software. Mr. Holleyman said that the latter effect is of particular concern since IP-intensive industries are typically high-tech industries in which the United States has a comparative advantage.

With respect to China's indigenous innovation policies, Mr. Holleyman expressed concern that the Chinese government would continue trying to develop policies that exclude foreign software from the market and force transfers of technology to Chinese entities. As it stands, he said, the indigenous innovation catalogue already includes software requirements that could exclude U.S. software from Chinese government procurement.

Daniel C.K. Chow, Professor, Ohio State University College of Law⁷

In hearing testimony to the Commission, Professor Chow gave his view of China's counterfeit trade and estimated that trade at \$19–24 billion annually. Professor Chow described the counterfeit industry as consisting of two parts: the first is manufacturing, located in the southern Guangdong and Fujian provinces and often having criminal connections to Hong Kong and Taiwan, respectively; the second is distribution, located in cities along the coast and in Wulumqi on the northwestern border.

He said that millions of Chinese people make their livelihoods from counterfeiting, and cited in particular activities in Yiwu city, in Zhejiang Province. He said that Yiwu's economy is largely based on trade in counterfeit goods and that the activity results in 24-hour-a-day road congestion as goods are shipped to and from the city. He also said the counterfeit industry is endorsed by the local Yiwu government, which receives tax revenue both from the wholesalers and infrastructure businesses associated with the market, such as restaurant and hotel owners. He said that, given the importance of the counterfeiting industry to the area and other comparable locations, the Chinese government may be concerned that abrupt counterfeiting suppression could result in social disruption.

Professor Chow also expressed the opinion that multinational companies located in China have been too focused on administrative enforcement as a means to deal with the counterfeit industry. He said that although the number of lawsuits and raids against counterfeiters has increased dramatically, they have been ineffective, largely because court and administrative rulings are unpredictable, the fines imposed are inconsequential, and the raids may actually increase output, as counterfeiters factor seizures into their production planning. Finally, he expressed the view that the estimation methods used by companies to approximate losses from counterfeiting are flawed. In his opinion, the idea that a recovered counterfeit item is equivalent to a recovered sale is not always correct, especially since the item is often destined for markets where the authentic product is not available.⁸

⁷ USITC, hearing transcript and exhibits, June 15, 2010, 32–41; hearing transcripts, 126; exhibits, 54–68.

⁸ USITC, hearing transcript, June 15, 2010, 112.

D’Addario & Company (D’Addario)⁹

In written and oral testimony to the Commission, Mr. James D’Addario, chairman and CEO of D’Addario & Company, described how his musical instrument string manufacturing business has been impacted by Chinese counterfeiting. He noted that the company began operations in New York State in 1905 and still maintains 90 percent of its manufacturing in the United States.

Mr. D’Addario recounted the company’s recent history selling in China, beginning with indirect shipments to China through Hong Kong and followed by direct exports after 2001. He stated that, in 2004, D’Addario’s trademark was not properly registered in China because of a filing error, and a counterfeiting competitor registered the D’Addario trademark as his own to package an inferior product. He said that D’Addario has recently recovered its brand name after a protracted legal battle, winning the case based on prior use¹⁰ as well as the competitor’s labeling of packages with “Made and Printed in the USA.”¹¹

Mr. D’Addario said that this was not the only counterfeiting problem D’Addario has had in China. He said that based on his company’s research, 70 percent of the strings labeled as D’Addario in China are counterfeit. He stated that an even greater concern is that these counterfeit products are now making their way onto international markets, particularly through online auction sites, which has damaged their brand reputation.

To combat this problem, Mr. D’Addario said that two raids in China on Kim Byeng Sam’s firm and another counterfeiter, Bright Strings, have been conducted on D’Addario’s behalf. However, he expressed concern about the high cost of these raids, their limited results, and the insignificant penalties imposed on IP violators by Chinese law. He also stated that D’Addario has spent more than \$200,000 on an ongoing program called “Play Real” that embeds unique serial numbers on each set of strings to allow consumers to verify whether their product is genuine or not. He added that the company has implemented a new Chinese pricing program to make its strings more competitive against counterfeit products and to curb counterfeit sales within China. He said that unfortunately this has made it more difficult for Chinese consumers to determine which string set is the real product because salespersons used to know, and offer, the genuine item based on the price difference.

Emergency Committee for American Trade (ECAT)¹²

In hearing testimony presented to the Commission, Mr. Calman J. Cohen, president of ECAT, said that his organization is a U.S. business association with global operations representing members from all major U.S. sectors. He said that the general business opinion is that China represents a huge potential market that has been working towards

⁹ USITC, hearing transcript and exhibits, June 16, 2010; hearing transcript, 328–37; exhibits, 120–49, also, written submissions to the USITC, May 24, 2010; June 16, 2010; June 21, 2010. Also of note, Congressman Steve Israel, 2nd district, New York, wrote to the Commission on behalf of D’Addario for the company’s inclusion in the June 15th hearing. For more information about D’Addario, please see <http://www.daddario.com/DaddarioHome.Page?ActiveID=1740>.

¹⁰ USITC, hearing transcript, June 16, 2010, 374.

¹¹ USITC, hearing transcript, June 16, 2010, 450.

¹² USITC, hearing transcript, June 15, 2010, 51–59; written submission to the USITC, June 22, 2010. For more information about ECAT, please see <http://www.ecattrade.com/>.

liberalization, but said that some Chinese policies, such as indigenous innovation, have countered this progress towards opening the nation's economy. He expressed concern that certain of the policies may be especially challenging for U.S.-Chinese trade relations because of the never-before-used government procurement condition that the intellectual property (IP) of a government purchase must be owned by a domestic entity. Although the Chinese, he said, have made modifications to the original indigenous innovation policies, he said in his post-hearing submission that it is still unclear if products already licensed for use in China by foreign-owned firms would qualify and that trademark ownership requirements have not been clarified.

According to Mr. Cohen, indigenous innovation policies pose additional concerns, as they may be implicitly followed by both the private and public sector, whether implemented into law or not. Mr. Cohen also said that U.S. access to Chinese government procurement is already limited due to China's ongoing delay in joining the WTO Government Procurement Agreement, in spite of their 2001 accession commitment. According to Mr. Cohen, had China joined this agreement, nondiscriminatory treatment of foreign suppliers would already be required in Chinese government procurement.

Mr. Cohen also noted problems with China's IPR protection, and said that part of the IPR problem results from China's market restrictions. These restrictions, he said, limit the importation of legitimate products, and that this incentivizes counterfeit products. He cited as examples the annual limit (20) on foreign films and the restriction on printing and distribution by foreign publishers. From his perspective, this has negative consequences for the entire U.S. economy, from lower U.S. industry revenue and U.S. tax payments to unfair Chinese cost advantages gained from using free, unlicensed products.

C. Fritz Foley, Associate Professor, Harvard Business School and Faculty Research Fellow, National Bureau of Economic Research¹³

In testimony at the Commission's hearing, Professor Foley outlined the three principal ways IPR violations in China, in his view, affect the U.S. economy: (1) through international trade flows; (2) via cross-border royalty flows; and (3) in foreign direct investment (FDI).

For international trade, Professor Foley stated there is evidence that U.S. exports are lower to nations with poor IPR enforcement, but only when those nations have the capacity to imitate products. Professor Foley also cited a study that shows large export increases to countries reforming their IPR legislation. He said that these effects are the result of U.S. companies' reluctance to sell original products in a nation with no IPR protection. Another way Professor Foley noted that international trade could be affected by IP violations was if Chinese imitations entered the U.S. market on a large scale. He said that in his view, actual occurrences of this are relatively insignificant, compared to the import value of genuine articles.

With regard to cross-border royalty flows, Professor Foley said that although U.S. licensing fee receipts from IP are relatively small compared to total exports, they

¹³ USITC, hearing transcript, June 15, 2010, 18-26; written testimony to the USITC, June 15, 2010.

represent high profit margins for businesses. Professor Foley also cited the possibility of lower inter- and intra-company technology transfers to foreign firms or branches based in countries with weak IPR protection. In the case of inter-company technology transfers, he said, firms are concerned that once a licensee receives their technology, they will no longer have any incentive to continue to pay a user fee because IPR are not enforced. For intra-company transfers of information he noted the possibility that an employee will transfer “sensitive business information” to a competitor if there is no penalty for doing so. Professor Foley expressed the view that this second possibility was particularly relevant for U.S.-Chinese business relations, and predicted that stronger IPR protection in China would likely increase the amount U.S. firms earn from technology transfers.

Professor Foley concluded with some observations on the effects of IPR on FDI. He noted that past analyses have been concerned that stricter IPR enforcement could increase production in more developed countries with better IPR protection, thereby lowering global welfare. However, Professor Foley said that this analysis does not take into account the possibility that a firm headquartered in a developed nation might choose to take advantage of lower costs in a developing nation for manufacturing only if the nation’s IPR protection was sufficient. He said that FDI in low-labor-cost nations could free resources for innovation in developed nations, and said that he has found some evidence to support this theory. Finally, Professor Foley asserted that FDI does not necessarily increase investment in foreign firms at the expense of U.S. firms. He said that this is particularly true when considering China and the United States, where businesses are more often counterparts than rivals.

Harkins Cunningham LLP¹⁴

In written testimony to the Commission, Mr. Ehrenhaft, senior counsel at the law firm Harkins Cunningham, LLP, provided his views relating to the role of lawyers in protecting IPR within, and coming from, China. According to Mr. Ehrenhaft, U.S. laws limiting how foreign nationals may appear before the U.S. Patent and Trademark Office (USPTO) have led to similar policies by other nations, thereby disadvantaging U.S. patentees. Based on indications by other countries, Mr. Ehrenhaft wrote that he believes this situation could be alleviated if the United States were to move first and change legislation to allow “non-immigrant” foreign lawyers to represent clients before the USPTO. If China were then to do the same, U.S. companies could obtain more assistance in the Chinese patent application process.

Mr. Ehrenhaft stated that U.S. lawyers face other problems in China, such as Chinese laws restricting U.S. firms from opening more than one office and also requiring U.S. lawyers to forfeit their local bar admission in order to work in China. In his view, the latter is especially discriminatory, considering that Chinese lawyers admitted to the bar in the United States often return to China and advertise themselves as U.S. lawyers. Finally, Mr. Ehrenhaft expressed concern that Chinese practice inhibits the use of standard arbitration clauses in international transactions.

¹⁴ Written submission to the USITC, June 14, 2010. For information on Harkins Cunningham LLP, please see <http://www.harkinscunningham.com/>.

Information Technology Industry Council (ITI)¹⁵

In hearing testimony, Mr. John Neuffer stated that he is ITI's vice president for global policy and a representative of the information and communications technology industry. He said that China is a particularly important export destination for ITI's member companies and the United States as a whole.¹⁶ He said that if the United States is to achieve President Obama's goal of doubling exports in five years, a fair and open trading system will have to be developed in China.

Mr. Neuffer said that ITI is not against China's desire to pursue innovation, but is concerned that China's indigenous innovation policies will create market access problems, especially in regard to the development of a product catalogue for Chinese government procurement. According to Mr. Neuffer, considering that China's Ministry of Finance reported 2008 government spending at \$88 billion, this is a significant market in which, in his view, a product catalogue might exclude U.S. businesses.

Besides the catalogue, Mr. Neuffer also mentioned his concern with China's push to create country-specific standards which, he said, especially discriminate against foreign firms developing products based on international standards. He stated that China has already developed a unique wireless standard, WLAN Authentication and Privacy Infrastructure (WAPI), which, although technically optional, has become the Chinese norm; the standard forces international firms to reconfigure products made to internationally recognized standards in order to be compatible. According to Mr. Neuffer, China may be moving in a similar direction with PCs and servers.

Mr. Neuffer remarked that in addition to the above-mentioned problems, foreign companies also often face "unnecessary," and sometimes overlapping, regulations. These regulations include burdensome testing and certifications, and sometimes even require the disclosure of sensitive business information.

Intellectual Property Owners Association (IPO)¹⁷

In a written submission, IPO said that its membership consists of over 200 companies and 11,000 individuals who own technology-related IP. IPO expressed concern that China's indigenous innovation policy may limit the rights of IP holders based on their nationality, particularly for Chinese government procurement. IPO stated that it is concerned about the proposed indigenous innovation product catalogue for Chinese government procurement, covering six important technology areas: computer devices, telecommunications, office appliances, software, alternative-energy products, and energy-efficient products. Although IPO noted that the original Chinese product accreditation standards for qualification have been relaxed, a company still must meet the

¹⁵ USITC, hearing transcript and exhibits, June 15, 2010, 205–11, 24–34, respectively; written testimony to the USITC, June 15, 2010. For more information about ITI, please see <http://www.itic.org/index.php?submenu=who&submenu=who&src=gendocs&ref=WHOWEARE&category=Main>.

¹⁶ During the hearing, Mr. John Neuffer shared his allocated time with ITI's fellow member of the United States Information Technology Office (USITO) in Beijing, the Software and Information Industry Association. A summary of the testimony of the Software and Information Industry Association appears later in this appendix (arranged alphabetically).

¹⁷ Written submission to the USITC, July 9, 2010. For more information about IPO, please see <http://www.ipo.org//AM/Template.cfm?Section=Home>.

following six criteria: (1) products must meet Chinese regulations; (2) the applicant must have full IP rights with no dispute; (3) the applicant must have exclusive trademark rights; (4) the products must be technologically advanced; (5) the product must be of reliable quality; and (6) the product should have profit potential. IPO said that it is apprehensive about the vagueness of criteria 1, 2, 4, and 6 because no precise regulations are specified for the first criterion and key terms such as “dispute,” “advanced,” and “profit potential,” are undefined in the second, fourth and sixth criteria.

International Data Corporation (IDC)¹⁸

In hearing testimony, Mr. John Gantz, the chief research officer of IDC, said that IDC is an international computer industry research firm with analysts around the world. He said that IDC’s clients range from large private computer companies and U.S. government agencies to small end users of technology. He said that IDC was very involved in the work done for BSA in 2003 to investigate worldwide PC software piracy. The IDC study examined the difference between shipped and sold legitimate software and the amount of software that would have needed to be installed in 110 countries based on PC sales. The study found that in 2009, 79 percent of the software in China, the second largest PC market in the world, was illegal, while only 20 percent of software installed in the United States was illegal. Mr. Gantz noted that IDC’s most recent study valued all pirated software at \$7.6 billion, a value that IDC has argued in the past can be considered direct industry loss.

Besides software vendor losses, Mr. Gantz described how losses from pirated software are not limited to the legitimate industry but accrue throughout the economy. According to Mr. Gantz, although the software services sector is the most directly affected, piracy ultimately leads to lost tax revenue and reductions in job creation and employment. Mr. Gantz cited projected gains in tax revenue and job creation identified in another recent IDC study analyzing the effect of a 10 percent reduction in piracy rates in China and Russia. Mr. Gantz added that, the IDC projection underestimated the actual gains in the two countries.¹⁹

The International Imaging Technology Council (Int’l ITC)²⁰

Tricia Judge, Executive Director of the Int’l ITC, provided a written submission that includes a report addressing how its members have been affected by Chinese IPR infringement. The report states that the Int’l ITC is a non-profit association representing approximately 2,500 North American ink jet and toner cartridge remanufacturers. The report states that Chinese companies are infringing on legitimate remanufacturing business by producing new cartridges in violation of original manufacturer IPR and then marketing them as both new and remanufactured products. The report says that these sales, facilitated by the Internet, have undercut the North American industry.

The report also states that when the infringing cartridges are imported into the United States and then returned empty to remanufacturers, the remanufacturers are open to

¹⁸ USITC, hearing transcript, June 15, 2010, 199–205. For more information about IDC, please see <http://www.idc.com>.

¹⁹ USITC, hearing transcript, June 15, 2010, 219.

²⁰ Written submission to the USITC, July 7, 2010. For more information about the Int’l ITC, please see <http://www.i-itc.org>.

potential lawsuits by original manufacturers. The report states that the Int'l ITC is increasingly concerned that its environmentally-friendly, labor-intensive recycling business is threatened by the growing number of illegal Chinese products.

International Intellectual Property Alliance (IIPA)²¹

In testimony at the Commission's hearing, Mr. Michael Schlesinger, co-founder of IIPA,²² expressed the view that some proposed Chinese domestic innovation policies will not only be ineffective, but will also obstruct market access for U.S. businesses. He stated that a more effective method of enhancing national innovative efforts would be for China to effectively enforce its IPR legislation and implement international market access obligations.

Mr. Schlesinger estimated the cost to U.S. companies of copyright infringement in China at \$18–20 billion per year. He stated that IIPA's 2009 study, "Copyright Industries in the U.S. Economy: The 2003–2007 Report," included in IIPA's post-hearing submission, shows that core U.S. copyright industries accounted for a significant percentage of both U.S. gross domestic product and total economic growth.

Mr. Schlesinger said that technology, particularly the Internet and mobile phones, is aiding the distribution of copyright-infringing products, and estimated that 99 percent of the music downloaded in China is illegal. He said that enforcement has been mixed, and noted by way of example that whereas in August 2009 the operators of the Tomato Garden Web site, tomatolei.com, were criminally convicted in China for providing free downloads of Windows XP, no charges have been made against Kangjian Shixun, a well-known paid subscription-based site that provides unlicensed electronic copies of scientific journal articles. Mr. Schlesinger also listed other types of general copyright infringement prevalent in China, including end-user piracy of business software, optical disc infringement, hard-disk loading infringement, published material infringement, and illegal camcording of movies. He also described problems that contribute to infringement, including Chinese Internet cafés that do not prevent access to copyright-infringing online content, and cited insufficient compensation for the use of copyrighted music on television. Mr. Schlesinger stated that IIPA is also concerned about the market access problems generated by foreign film and television broadcast quotas, the Chinese censorship system, and now, possibly, by indigenous innovation policies.

Finally, he suggested the Commission consider all forms of infringement in the study, especially infringement via the Internet; the effects of infringement on the entire U.S. economy and not just the copyright holder; and the impact of market access restrictions in China. For supplemental detail, IIPA included in its written submission its 2010 Special 301 Report, with recommendations to the USTR on China.

²¹ USITC, hearing transcript, June 16, 2010, 345–54; written testimony to the USITC, June 3, 2010; written submission to the USITC, July 9, 2010.

²² IIPA is a coalition of seven trade associations representing the U.S. copyright industries. These associations are: the Association of American Publishers, the Business Software Alliance, the Entertainment Software Association, the Independent Film & Television Alliance, the Motion Picture Association of America, the National Music Publishers' Association, and the Recording Industry Association of America. According to IIPA, their members represent over 1,900 companies producing and distributing copyright-protected materials. For more information about IIPA, please see <http://www.iipa.com>.

International Intellectual Property Institute (IIPI)²³

In testimony at the Commission's hearing, Mr. Bruce A. Lehman said that he is the founder of the nonprofit think tank IIPI, which is devoted to helping developing countries understand and use IPR to their advantage. Mr. Lehman provided views regarding current U.S.-China trade relations and also recounted his experiences during the 1990s as Assistant Secretary of Commerce and Commissioner of Patents and Trademarks under the Clinton Administration.

Mr. Lehman said that the U.S.-China trade relationship has not fulfilled the expectations developed in the course of negotiating the 1999 bilateral agreement. He said it was hoped at the time that, by facilitating trade with China, the United States would benefit from exporting its technology, while China would profit from its relatively low labor costs. According to Mr. Lehman, the lack of protection and recognition for the value of intangible U.S. IP exports has contributed to a growing trade imbalance between the two nations as American firms receive less than full value for their exports. Mr. Lehman said that this same level of imbalance is not seen in the trading relationship between the United States and other advanced economies with strong IPR protection that fully recognizes U.S. export value.²⁴

Mr. Lehman said that although China has improved some aspects of its domestic IPR protection, copyright piracy is still rampant. He also expressed concern that China has restricted market access for U.S. technology and information exports through internationally incompatible technology standards, government procurement requirements, and Internet censorship. In addition, he cited the increased use of utility model patents that do not require examination of prior art, saying that this practice has been found to occasionally exclude original developers of a product from obtaining full patent protection in China. He concluded by saying that although China will likely have a strong IPR protection regime in the future, it may not be soon enough for U.S. companies to benefit.

The Law Offices of Stewart and Stewart²⁵

In a written submission, the law firm of Stewart and Stewart described the types of IPR violations in China and the extensive problems they pose for businesses and consumers throughout the world. The firm said that, although no country has perfect IPR protection, in recent years China has been the largest problem country, with complicating factors such as Chinese provincial governments' disregard of central government efforts to improve enforcement.

The firm said that counterfeit products are infiltrating all industry sectors and global regions, boosted by less-regulated Internet sales. The firm said that the costs to U.S. businesses from counterfeiting go beyond lost business revenue because counterfeit goods typically use inferior materials and production methods. These costs include warranty costs for servicing illegitimate products, recall costs to remove dangerous

²³ USITC, hearing transcript, June 15, 2010, 26–32; written testimony to the USITC, June 15, 2010. For more information about IIPI, please see <http://iipi.org>.

²⁴ USITC, hearing transcript, June 15, 2010, 79.

²⁵ Written submission to the USITC, July 8, 2010. For information on The Law Offices of Stewart and Stewart, please see <http://www.stewartlaw.com/stewartandstewart>.

counterfeit products and preserve brand reputations, and national security threats as fake and inferior items are even accidentally purchased by the U.S. military. Stewart and Stewart noted that some of these costs are not quantifiable, but in the interest of the study they believe it could be useful to survey industries to gather information on warranty cost increases, spending for brand protection, and product recall costs.

The firm also described China's indigenous innovation policies, particularly those relating to government procurement, and said that although these policies are not prohibited by China's current WTO obligations, they would be if China fulfilled its 2001 accession commitment to become a member of the Government Procurement Agreement. The firm added that while changes in April 2010 to the indigenous innovation policies have eased some worries, it remains concerned about how the policy will be applied across all three levels (national, provincial, and local) of the Chinese government.

Philip I. Levy, Resident Scholar, American Enterprise Institute²⁶

In a written submission to the Commission, Dr. Philip Levy expressed the view that it might prove useful for the study to take a comparative statics approach, i.e., comparing economic outcomes under various Chinese IPR scenarios. He also suggested separating the problem of U.S. IP appropriation in China into two categories: unauthorized and authorized. He said that under his analysis, unauthorized IP appropriation, such as street vendor sales of knockoff items or illegally copied DVDs, is a question of demand elasticity—in other words, that certain consumers value genuine products, while others are price-dependent. He said that it is unrealistic in his view to quantify IPR violations based on total demand and the legitimate item's current price, because a business with market power is likely to set a lower price to capture more sales when they perceive demand elasticity. He also said that there are questions surrounding the appropriate level of enforcement against unauthorized IP violations. Citing the WTO TRIPS annex, Dr. Levy stated that there are acknowledged differences in enforcement levels dependent on country development and resource limitations, increasing the options for the scenario to use in analyzing Chinese IPR enforcement. Options he proposed were complete enforcement, which he felt was idealistic; enforcement on a par with best-practice countries or comparably developed countries, which he noted is an ongoing debate; or enforcement on a par with the best-protected Chinese goods.

According to Dr. Levy, authorized IP violations are Chinese government requirements that foreign firms reveal certain information to do business in China, which is a matter that is at issue in China's indigenous innovation policies. He said that he views the problem as one of rent sharing, where foreign businesses and the Chinese government must come to an agreement on how firm revenue will be divided. For purposes of the Commission's study, Dr. Levy said that damage to U.S. businesses could be quantified as the difference in profit between a scenario with and without these government requirements.

²⁶ Written submission to the USITC, July 8, 2010.

Motorcycle Industry Council (MIC)²⁷

In a written submission, the Motorcycle Industry Council (MIC) said that it is a not-for-profit national industry association with more than 250 members from all segments of the motorcycle and all-terrain vehicle industry. MIC presented the results of an industry survey it conducted regarding experienced and perceived IPR violations. MIC said the survey was issued after receiving notice of the Commission's investigation and was based on the responses of 53 member companies. MIC said that 94 percent indicated that powersports industry members' IPR had been infringed in China and 96 percent said that infringement was significant or modestly important to the industry. The MIC submission stated that of the 53 respondents, 40 said they had been personally affected by China IPR infringement in all parts of the motorcycle industry, including actual vehicles, their parts, outerwear and accessories, and handbooks or training material. MIC said that patent violations were the most reported type of infringement, but indicated that everything from trade secrets to service marks was mentioned. According to MIC, reported Chinese methods for creating the infringing products are diverse, including reverse engineering, exact copying of entire products, reproduction with inferior materials, and misrepresentation of brands. MIC also reported that members discovered IPR infringement in multiple ways, from trade shows to stores to online auction sites.

Finally, MIC stated that although some members reported that they try to combat IPR infringement, such as with "cease-and-desist letters" and faster new product development to outpace counterfeits, other members reported doing nothing because of lack of knowledge, doubts as to any action's effectiveness, and cost concerns. MIC suggested that, based on this information, education programs, an industry forum, IPR enforcement at ports, and better tracking of illegitimate product manufacturers would be helpful to the industry.

National Association of Manufacturers (NAM)²⁸

In testimony at the Commission's hearing, Mr. Shaun Donnelly, NAM's senior director of international business policy, said that NAM is the largest industrial trade association in the United States. Mr. Donnelly stated that NAM has long had a subcommittee on IPR, but that, with China in mind, NAM appointed an additional task force to investigate international IPR problems and their U.S. domestic effects. Mr. Donnelly said that IPR is an issue for U.S. manufacturers of every size and in every sector, even for small and medium-sized manufacturers that have never exported but find counterfeit versions of their product sold internationally.

With respect to counterfeit goods, Mr. Donnelly identified areas of concern for U.S. manufacturers, including lost sales and jobs, investigation and litigation costs in pursuing legal action in China, translation and travel expenses, injury to brand reputation by lesser quality counterfeit items, and consumer health and safety risks. Additionally, Mr. Donnelly noted that prosecution in China is difficult and that rather than facing criminal convictions, most offending parties are only assessed an administrative fine. Mr. Donnelly expressed the view that more and better coordinated U.S. government assistance could alleviate some of these burdens.

²⁷ Written submission to the USITC, July 9, 2010. For more on MIC, please see <http://www.mic.org>.

²⁸ USITC, hearing transcript and exhibits, June 15, 2010, 184-93 and 12-22, respectively; written testimony to the USITC, June 15, 2010. For more information about NAM, please see <http://www.nam.org>.

Finally, Mr. Donnelly noted NAM's concern about China's indigenous innovation policies, as well as its desire for China to fulfill its WTO accession commitments by signing the Government Procurement Agreement.

PCT Government Relations, LLC²⁹

In hearing testimony, Mr. Chris Israel, managing partner of PCT Government Relations LLC, described damage done and the increasing danger posed by weak and unpredictable IPR enforcement in China. Mr. Israel said that he recognized and expressed appreciation for unilateral actions taken by U.S. officials working to prevent counterfeit imports, and noted bilateral U.S.-Chinese efforts, such as U.S. and Chinese officials working together for joint criminal prosecution and the recently signed memorandum of understanding on patent cooperation.

He said that other effective measures taken by the U.S. government include meetings of the U.S.-China Joint Commission on Commerce and Trade and the U.S.-China Strategic and Economic Dialogue. Mr. Israel also said that U.S. trade tools, such as USTR's Special 301 Report and a 2006 WTO dispute settlement case against China, have also been relatively effective. For the future, he suggested that the United States continue to pressure China to sign the WTO Government Procurement Agreement and emphasize the importance of Chinese law enforcement and of U.S. customs cooperation with China.

On the whole, he said, the United States is "treading water" as opposed to moving forward with regard to changes in Chinese policy. Mr. Israel also expressed the view that better coordination within the U.S. Government is necessary to truly combat this problem, particularly since policies, such as China's indigenous innovation policies, are only one tool in China's ongoing experiment to promote domestic innovation.

Software and Information Industry Association³⁰

In testimony at the Commission's hearing, Mr. Mark Bohannon, general counsel and senior vice president of the Software and Information Industry Association (SIIA), described the group as the oldest and largest software and digital content association, whose members are mainly small and medium-sized software publishers.³¹ Mr. Bohannon stated that beyond lost employment and industry revenues, there are important "social" considerations to be taken into account by the Commission in considering IP issues, especially when analyzing pirated software. He said that, in his experience, pirated software is much more susceptible to Internet security threats, and that frequently the same individuals selling the illegal product are involved in other illegal activity, such as identity theft.

Mr. Bohannon also said that it was important to keep in mind that the IPR discussion has changed from its previous enforcement focus to broader concerns about a "web" of

²⁹ USITC, hearing transcript, June 16, 2010, 337-45; written testimony, June 16, 2010. For more information about PCT Government Relations, please see <http://www.pctgr.com>.

³⁰ USITC, hearing transcript, June 15, 2010, 211-14. For more information about SIIA, please see <http://www.sii.net>.

³¹ During the hearing, Mr. John Neuffer of ITI shared his allocated time with the Software and Information Industry Association, ITI's fellow member of the United States Information Technology Office (USITO) in Beijing. A summary of ITI's testimony appears earlier in this appendix.

Chinese policies tied to indigenous innovation goals aimed at promoting domestic interests. Mr. Bohannon said these policies have reached the point where they are now a structural issue in the U.S.-China economic relationship, one that is recognized by both sides as requiring further discussion.

Telecommunications Industry Association (TIA)³²

In a written submission, TIA, which describes itself as an association of the global information and communications technology industry with 600 members, said that China's indigenous innovation goal has increasingly become a structural issue. TIA said that this strategy, which encompasses many policies even beyond the proposed indigenous innovation catalogue, will limit the ability of U.S. firms to directly compete within China. TIA said that China must fulfill its international commitments and recognize that innovation is global and requires cross-border collaboration. TIA also noted its concern about mandated Chinese domestic standards and technologies that differ from international norms and that lack transparency in terms of both development and implementation. TIA said that this problem partially stems from a narrow interpretation of international standards which, while in compliance with China's WTO commitments, means China will only implement standards developed in an international forum and not unofficial technology norms.

In addition, TIA noted that China continues to unfairly favor domestic companies or technologies, which they believe is especially true of the Chinese telecommunications industry. TIA noted that China recently had developed its own third-generation mobile phone standard aided by government subsidization and other forms of public support, and expressed concerns that China's mobile phone standard and its promotion of other domestic technologies will disadvantage foreign firms in the Chinese marketplace.

Tessera Technologies, Inc. (Tessera)³³

In a written submission Tessera presented its views relating to the value of IPR in its industry as well as the need for its protection. In its submission, Tessera, headquartered in California, stated that it mainly performs research and development in miniaturization technologies, primarily semiconductors. It said that after significant research investments, which amounted to \$71 million in 2009 alone, the company is dependent on licensing fees to recoup research and development expenditures and finance its next innovations. Tessera said that licensing fees have become increasingly important to the U.S. economy and represented one of the few areas in which the U.S. has a trade surplus. Tessera said that "non-practicing," or non-manufacturing, innovators are an important component of the American segmented supply chain business model. Additionally, Tessera noted the importance of the Commission's ability to restrict the import of patent-infringing components into the United States. Tessera claimed this is a benefit to companies such as theirs which would not be able to identify, or have the resources to sue, all infringing foreign firms.

³² Written submission to the USITC, July 7, 2010. For more information about TIA, please see <http://www.tiaonline.org>.

³³ Mark A. Kressel and Benjamin W. Hattenbach of Irell & Manella LLP, counsel for Tessera Technologies, Inc., written submission to the USITC, July 9, 2010. For more information about Tessera, please see <http://www.tessera.com/Pages/tessera.aspx>.

Tessera expressed the view that the Commission must continue its work to protect U.S. IPR. Additionally, Tessera stated that it felt the Commission should clarify a recent Federal Circuit court decision in *Kyocera Wireless Corporation v. International Trade Commission* that may restrict the Commission's ability to ban downstream products based on a patent-infringing component. Tessera also recommended that the Commission focus on Chinese IPR infringement and its negative effects on non-practicing U.S. innovators; the decrease in competitiveness for firms with valid IP licenses versus those without; and widespread IPR infringement for difficult-to-detect components within a finished product.

U.S. Chamber of Commerce³⁴

In testimony at the Commission's hearing, Mr. Jeremie Waterman, senior director in Greater China for the U.S. Chamber of Commerce, said that the U.S. Chamber of Commerce represents the interests of more than 3 million businesses, and is the largest such federation in the world. Noting the importance of the U.S.-China trade relationship, Mr. Waterman said that weak Chinese IPR protection, combined with the development of discriminatory Chinese indigenous innovation policies, is undermining the relationship's benefits for U.S. businesses. Mr. Waterman also expressed concern that the entire U.S. economy may be harmed by continued IPR violations, and referenced a recent U.S. Chamber of Commerce paper that reported that U.S. IP-intensive industries create high-paying jobs, invest heavily in research that drives innovation and future competitiveness, lead in exports, and have a positive trade balance.

Mr. Waterman said that Chinese counterfeits are a continuing concern, particularly since such items are being exported from China to the world, aided by the Internet. He said that these violations result in lost U.S. sales and lower current and future U.S. competitiveness. He expressed the view that although China has laws in place to protect IPR and patent infringement lawsuits have increased, Chinese court rulings are unpredictable and may implicitly recognize indigenous innovation goals for political reasons. As an example, he cited two advisory rulings by China's Supreme People's Court, in which the court seemed to find that holders of patents on technology crucial to a Chinese national standard should be entitled to a less-than-normal royalty to compensate for their technology's use.

Mr. Waterman also described the origins of China's indigenous innovation policies, and said they are part of the nation's search for sustainable development, national security, and greater international competitiveness. Indigenous innovation, he said, was first explicitly introduced in China's National Medium- and Long-Term Plan for the Development of Science and Technology (2006–20). Mr. Waterman pointed to the 16 megaprojects and government procurement policies as particularly important. He said that two laws that took effect in 2008 are also troubling: the antimonopoly law and the Third Amendment to China's patent law. The first, he said, has the potential to be used against foreign firms through enforced limits on IPR charges and licensing fees, while the second expands the grounds for compulsory licensing.

³⁴ USITC, hearing transcript and exhibits, June 15, 2010, 167–77, and 70–98, respectively; written testimony to the USITC, June 15, 2010. For more information about the U.S. Chamber of Commerce, please see <http://www.uschamber.com>.

Finally, Mr. Waterman recommended that the Commission assess three markets—the Chinese, the American, and the world—separately, giving particular attention to emerging industries and possible services sector goals, which he believed China may target to expand domestic capacity.

U.S. Council for International Business (USCIB)³⁵

In testimony at the Commission’s hearing, Mr. Steve Canner, vice president of USCIB, described USCIB as the American affiliate of three global business groups: the International Chamber of Commerce, the International Organization of Employers, and the Business and Industry Advisory Committee to the OECD. He said the USCIB represents over 300 U.S. corporations, professional firms, and business associations, and that many of its members have substantial trade and investment interests in China.

Mr. Canner described USCIB’s concerns regarding IPR enforcement in China and China’s development of indigenous innovation policies. He also referred to a study by Professor Matt Slaughter regarding the benefits of international engagement by U.S. firms and supporting the need for better Chinese market conditions. Finally, he suggested that the Commission staff use the Bureau of Economic Analysis database as an information source.

In a post-hearing submission, USCIB discussed the U.S. economic costs of Chinese IPR infringement, noting that a 2007 OECD study estimated the cost of international trade in counterfeit goods at \$250 billion. USCIB acknowledged the work China has done so far to combat copyright violations, but said more work is needed. USCIB said that these activities should be supported by better information sharing between Chinese and international enforcement agencies as well as between the public and private sectors. USCIB also noted that U.S. companies have reported that, with the exceptions of Shanghai and Beijing, IPR enforcement is hindered by the insignificant penalties for violating firms, the failure to destroy equipment involved in the illegal copying of products, and the administrative cost of bringing a criminal case. Finally, USCIB noted the importance of bilateral dialogue between the United States and China to correct and prevent these problems.

Peter K. Yu, Professor, Drake University Law School³⁶

In testimony at the Commission’s hearing, Professor Yu described four challenges that, in his opinion, faced the Commission’s study: (1) analyzing how weak IPR may support democracy in China; (2) determining true economic gains and losses for the entire U.S. economy; (3) assessing Chinese indigenous innovation policies; and (4) predicting how stronger Chinese IPR might impact the U.S. economy.

With regard to the first point, Professor Yu said that there are many recognized problems with IPR violations in general. However, he noted there may be one positive outcome—namely, the freer movement of information in China, which is otherwise heavily controlled. In his view, the freer movement of information, even from movies and television programs, can assist Chinese democracy.

³⁵ USITC, hearing transcript, June 16, 2010, 354–63; written submission to the USITC, July 20, 2010. For more information about USCIB, please see <http://www.uscib.org>.

³⁶ USITC, hearing transcript, June 15, 2010, 42–50.

Addressing the second challenge, Professor Yu expressed the view that determining gains and losses to the entire American economy from IPR infringement is extremely difficult. He said that firms whose IPR have been violated are undeniably hurt, but other U.S. sectors may see benefits. By way of example, he said that Chinese tourists and students have been inspired by illegally reproduced movies to come to the United States, that industry standards favoring some U.S. products have been set in response to the wide availability of certain pirated U.S. items, and that counterfeit products may benefit consumers who can buy similar items at a lower price.

For the third challenge, Professor Yu said that China's overall indigenous innovation goal includes both good and bad policies. On the one hand, Professor Yu pointed to the long-standing idea that increasing the number of Chinese innovators would also increase the number of domestic stakeholders in favor of improved IPR protection and reform. On the other hand, he noted that some policies, such as those discriminating against foreign companies, could violate China's WTO obligations.

In conclusion, Professor Yu suggested that the United States may have a comparative advantage in its superior IPR protection for retaining research and development firms, one that could potentially be undermined if China were to better enforce its legislation but retain its low labor costs. Finally, he expressed concern that more Chinese IPR enforcement could work against American firms that might eventually face a barrier to entry in the form of Chinese lawsuits against them.