

## **SECTION 3: INDIGENOUS INNOVATION AND INTELLECTUAL PROPERTY RIGHTS**

### **Introduction**

China's program for encouraging "indigenous innovation" has its origin in the central government's decades-old policy of favoring domestic goods and services over imports. A new element was added to the policy with the publication in 2009 of government procurement catalogues at the national, provincial, and local levels. The catalogues were written to exclude the services and products of foreign-based corporations, including those with foreign affiliates operating in China that have not transferred their technology. The move represented an escalation in China's longstanding efforts to substitute domestic goods and services for imports.

The Commission held hearings in Washington on May 4 and June 15 to examine China's indigenous innovation policy and the likelihood that it will require the transfer of critical technology to Chinese companies. In addition, the Commission examined China's intellectual property protections related to business software during the May 4 hearing. This section will trace the development of China's indigenous innovation policy in the context of China's industrial policy and its potential effect on the economy of the United States. This section will also examine China's failure to enforce intellectual property protections for business software.

U.S. and European-based companies raised two main objections to the new procurement catalogues. First, foreign-based companies as well as their affiliates operating within China would be excluded from sales to governments in China, since only domestic companies or those holding registered Chinese patents were eligible to be included in the procurement catalogues. Second, any attempt to qualify a foreign affiliate for the official procurement catalogue would likely require foreign companies to transfer or reveal sensitive and proprietary technology to Chinese companies.

The stakes for foreign companies hoping to sell to all levels of government in China are substantial. The indigenous innovation policy involves a number of separate requirements including patent and trademark filing and registration regulations that may lead to involuntary releases of proprietary information. The European Chamber of Commerce estimated in April 2011 that the discriminatory policy would cover more than \$1 trillion in goods and services purchases on an annual basis.<sup>217</sup> The international business community criticized the proposed indigenous innovation regulations by requesting that the U.S. government oppose the policy during future bilateral negotiations with China. In December 2009, the heads of 34 U.S., European, and Japanese companies and business associations wrote to Chinese leaders to protest the catalogues. In

January 2010, the heads of 19 U.S. business associations wrote to the Obama Administration to warn that the new Chinese policy posed “an immediate danger to U.S. companies.”

The government in Beijing subsequently responded by promising to modify the program and pledged to revoke the requirement that government purchases be made exclusively from the procurement catalogues. Despite such assurances by President Hu Jintao during his trip to Washington in January 2011, there are few signs that China intends to rescind its overall indigenous innovation policy and only inconclusive signs that the use of procurement catalogues will be abandoned.

The theft of intellectual property in China\* is a longstanding problem despite efforts by the Chinese central government over more than a decade to pass laws and regulations prohibiting such theft. In fact, Chinese officials are able to point to many Chinese statutes protecting copyrights, trademarks, and patents. And yet the problem persists because enforcement is ineffective. Administrative fines are low, and the threshold for criminal prosecution is high, according to U.S. government complaints. This allows Chinese pirates and counterfeiters to stay in business and pay fines out of their cash flow.

The cost to the United States of intellectual property violations in China is considerable. Based on a survey of U.S. companies operating in China, the U.S. International Trade Commission estimates that employment in the United States would increase by a range of 923,000 to 2.1 million jobs if China were to adopt an intellectual property system equivalent to that of the United States.<sup>218</sup>

### **Development of China’s Indigenous Innovation Policy**

Chinese leaders dating back to Deng Xiaoping have explicitly sought to bolster China’s high-technology industries by obtaining foreign technology and by favoring the products of China’s fledgling high-tech industries over foreign technology imports whenever possible. In 2002, for example, President Jiang Zemin proclaimed a Government Procurement Law limiting government purchases to domestically made goods.<sup>219</sup> China made a promise during the negotiations to allow China’s admission to the World Trade Organization (WTO) in 2001 to join the WTO’s Agreement on Government Procurement (GPA) “as soon as possible.” That agreement pledges the 41 GPA signatories to refrain from discriminating against foreign imports in government procurement. China still has not done so. (For more information on China’s refusal to join the WTO’s government procurement code, please see the Commission’s 2010 Annual Report, chap. 1, sec. 3.)

China’s current indigenous innovation policy was unveiled officially in the government’s *National Medium- and Long-Term Plan for the Development of Science and Technology (2006–2020)*.<sup>220</sup> That plan, known as the MLP and released in February 2006, directs government officials to “formulate policies that encourage independent innovation and restrict unscrupulous and redundant imports.”<sup>221</sup> Ma Kai, minister of the National Development and Re-

\* Counterfeiting refers to the violation of a trademark, while piracy is the violation of a copyright. Most seizures of such contraband at U.S. borders are for trademark infringements.

form Commission (NDRC), explained the need for the policy this way:

*China's competitive edge is to a great extent based on cheap labor, cheap water, land, resources, and expensive environmental pollution. [This] will be weakened with the rising price of raw materials and enhancement of environmental protection. Therefore, we must enhance independent innovation capability vigorously. ... [W]e will promote development by relying on enhancing independent innovation capability, and as a national strategy, shift economic growth from relying on the import of capital materials to relying on scientific and technological advancement and human resources."*<sup>222</sup>

### **The Size of China's Public Procurement Market**

China's Ministry of Finance estimates the annual total of government contracts at \$103 billion at the government's official exchange rate.<sup>223</sup> But this estimate does not include purchases by China's state-owned enterprises, many of which are the largest in their industrial sector.

Also excluded from this total are almost all large-scale infrastructure and public utility projects.<sup>224</sup> These huge projects were estimated by the office of the United States Trade Representative (USTR) to represent at least one-half of China's total government procurement market.<sup>225</sup> These include such public projects as the Three Gorges Dam; the Bird's Nest, Water Cube, and other Olympic venues; and China's high-speed railroad network.

In addition, the official finance ministry figures exclude provincial and municipal government purchases. Once all those additional contracts are added in, the total is far larger. The European Chamber of Commerce included purchases by central and local governments as well as state-owned enterprises and public infrastructure projects in its estimate of \$1 trillion annually. If the European Chamber's figures are correct, China's indigenous innovation policy and official procurement catalogues would wall off 17 percent of China's \$5.9 trillion economy from foreign participation.<sup>226</sup>

The indigenous innovation plan specifically envisions reducing China's reliance on products containing foreign technology to 30 percent by 2020 from an estimated 60 percent in 2006.<sup>227</sup> To do so, the plan calls for "enhancing original innovation through 'co-innovation' and 're-innovation' based on the assimilation of imported technologies."<sup>228</sup> In 2007, the Ministry of Finance issued two notices providing implementation regulations for the indigenous innovation initiatives outlined in the MLP. The first, *Administrative Measures on Government Procurement of Imported Products*, established procedures and rules that severely limited the procurement of imported products. The second, *Administrative Measures for the Government to Initially and Selectively Purchase Indigenous Inno-*

vation Projects,\* promoted the development of domestic companies not currently competitive in the marketplace. This was to be accomplished during the evaluation process for government procurement through preferential treatment to “accredited indigenous innovation products.”<sup>229</sup>

The “chief aim” of the MLP and its subsequent regulations and guidelines “was to foster the development, commercialization, and procurement of Chinese products and technologies,” said John Neuffer, vice president for global policy at the Information Technology Industry Council.<sup>230</sup> “More precisely, it was developed to give a leg up to domestic producers by compelling government agencies to adopt rules and regulations favoring products that use Chinese-developed ideas and technologies,” Mr. Neuffer told the Commission.

Various agencies of the central government continued to promulgate rules and regulations to implement the MLP by discriminating against non-Chinese products. In November 2009, Beijing issued the *Notice of the Launch of National Indigenous Innovation Product Accreditation Work for 2009* (Circular 618).† Circular 618 defined an “indigenous innovation product” as one with intellectual property fully owned by a Chinese company and a trademark initially registered within China. At this point, the intent of the indigenous innovation goal became clear: Chinese government agencies at all levels were to shun even those goods manufactured in China by joint ventures with foreign affiliates and to demand that original patents be filed first in China, a particular requirement of Chinese patent law. Because Chinese patent law is less protective of proprietary information contained in patent applications, foreign affiliates risk having their intellectual property compromised. In addition, the Chinese government in 2010 expanded the conditions under which the government can require a company to license its patent to other companies.<sup>231</sup> For example, Chinese patent law allows the government to grant a compulsory license on a patent involving semiconductor technology if the government rules that expanding production to other producers would be “in the public interest.”<sup>232</sup>

In December 2009, the central government produced a list of 240 types of industrial equipment in 18 categories that the government wished to support and offered domestic producers a range of tax incentives and government subsidies as well as priority status in indigenous innovation product catalogues.<sup>233</sup>

U.S., European, Canadian, and Japanese business groups complained in a December 2009 letter to the heads of four relevant Chinese ministries that “the very restrictive and discriminatory program criteria would make it virtually impossible for any non-Chinese supplier to participate—even those non-Chinese companies that have made substantial and long-term investments in China, employ Chinese citizens, and pay taxes to the Chinese govern-

\* Along with these broader policies, the Finance Ministry issued a number of other measures in 2006 and 2007 detailing the accreditation for indigenous innovation products as well as administrative measures on budgeting, contract requirements, and evaluation of the government procurement of indigenous innovation products.

† For a more detailed discussion of Circular 618, see U.S.-China Economic and Security Review Commission, *2010 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2009), pp. 47–48.

ment.”<sup>234</sup> In response, the Chinese government revised Circular 618 in April 2010 to remove the requirement that trademarks and brands must first be registered in China and that the intellectual property be owned entirely by the Chinese company.<sup>235</sup>

Despite the revisions to Circular 618 in 2010, many local policies on government procurement and indigenous innovation product accreditation still contain references to intellectual property requirements and the substitution of domestic goods for imports.\* Of the 31 provincial and municipal accreditation rules and guidelines for indigenous innovation product certification identified in a February 2011 report by the U.S.-China Business Council, all 31 contained intellectual property qualifications, and 23 contained references to requirements for import substitution.<sup>236</sup>

The apparent discrepancy between the central government’s promised revisions and the continued publication of discriminatory local product catalogues indicates a struggle between the two levels of government that is familiar to close observers of China. An alternative interpretation is that Beijing uses the excuse that it cannot control localities as a justification to do business as usual. Another theory ascribes Beijing’s lax enforcement to a deliberate decision to enforce only those laws and regulations that benefit China at the expense of foreigners. For example, because revisions to Circular 618 refer only to the proposed national product catalogue, there is no guarantee that such reforms will apply at a provincial or local level. Furthermore, circulars issued by the government “do not require that its content be implemented,” according to Kenneth Lieberthal of The Brookings Institution.<sup>237</sup>

Provincial and municipal governments continue to grant strong preferential treatment to domestic firms in their indigenous innovation product catalogues. In a 2011 article published on the Ministry of Finance government procurement website, an unnamed source within a provincial-level government procurement office explained that, while the establishment of a national indigenous innovation catalogue is unlikely, local government catalogues exist regardless.<sup>238</sup> The composition of these catalogues often reflects the strong barriers to entry for foreign-invested enterprises seeking government procurement contracts at the provincial and municipal level.

The U.S.-China Business Council report identified 61 separate indigenous innovation catalogues released by 22 provincial- and municipal-level governments by mid-November 2010.<sup>239</sup> Among the 59 products listed in Beijing’s government procurement catalogue through November 2010, only one is produced by a foreign company.<sup>240</sup> Nanjing’s draft catalogue, published in June 2010, is comprised of 42 products, not one of which is produced by a foreign-invested enterprise.<sup>241</sup>

The persistence of local catalogues indicates that the promised reforms of the central government are not reflected in the provinces. Without strong support at the provincial and municipal levels for delinking government procurement from indigenous innova-

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\*“IP [intellectual property] Qualification” refers to the inclusion of certain intellectual property conditions such as origin or country of ownership. “Import substitution” refers to policies that encourage the development of domestic products that can replace imports.

tion catalogs, foreign affiliates of U.S. and European companies will continue to face discrimination, according to U.S. business groups.<sup>242</sup>

### **Policies Favoring Chinese Enterprises**

Although China's government procurement policies have garnered the greatest attention from the international media and business community, Chinese indigenous innovation strategy is multifaceted, incorporating numerous other laws and regulations that promote domestic industry.

#### **Tax Incentives**

China has implemented a number of tax laws that favor innovative domestic industries. In September 2006, China's Tax Bureau issued the *Circular on Preferential Tax Policies for Innovation Enterprises*, which offers "innovation enterprises" a two-year exemption from the enterprise income tax.<sup>243</sup> In January 2008, the National People's Congress issued the *Enterprise Income Tax Law of the People's Republic of China*, Article 28 of which states, "Enterprise income tax for State-encouraged high and new technology enterprises shall be levied at a reduced rate of 15 percent" rather than the standard 25 percent top corporate tax rate.<sup>244, 245</sup>

#### **Subsidies and Loans**

The Chinese government has long provided extensive subsidies to favored industries and companies, both private and state owned. The direct subsidies include low-interest-rate loans and loan forgiveness, discounted or free land, electricity, fuel, water, and sewerage. Indirect subsidies can include lax enforcement of environmental standards and workers' rights laws. The Chinese government in particular provides subsidies to a large number of designated "strategic industries" and included \$216 billion in subsidies for its green technology sector as part of its economic stimulus package.<sup>246</sup>

At the May 5, 2011, hearing before the Commission, Thea Lee of the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO) characterized Chinese industrial policy as "targeting favored sectors and technologies through below-market loans and subsidies."<sup>247</sup> (For more on subsidies, see the Commission's *2009 Annual Report to Congress*, chap. 1, sec. 3, "China's Industrial Policy and its Impact on U.S. Companies, Workers, and the American Economy.")

#### **Patent Regulations**

The development of the Chinese patent system follows the goals specified in the 15-year MLP and the 12th Five-Year Plan (2011-2015). Provincial and municipal governments provide technical assistance for preparing patent applications as well as subsidies for patent application fees.<sup>248</sup> The Chinese government has encouraged state-owned enterprises (SOEs) to file numerous patents.<sup>249</sup> These measures have already made China's State Intellectual Property Office "the 3rd largest patent office in the world in terms of the number of invention patent applications received per year" and put it on track to become the largest patent office in the world by 2010.<sup>250</sup>

### **Policies Favoring Chinese Enterprises—Continued**

Skeptics have noted that many of these patents represent only small adjustments or changes from previous patents and are unlikely to foster substantial innovation. In the May 5, 2011, hearing before the Commission, Alan Wm. Wolff described many of these patents as “utility model patents, just having incremental technology change, requiring and getting no review.” In fact, even these seemingly mundane patents serve a particular purpose. According to Dieter Ernst, senior fellow at the East-West Center, “Chinese firms regularly file ‘utility patents’ on known products in order to prevent their original foreign developers from selling these products within China.”<sup>251</sup> Commissioners have also heard from American businesses in Beijing that Chinese companies can use these utility patents as reprisals for litigation in other areas. Chinese holders of utility patents can file a patent infringement case against a foreign competitor who has filed an infringement lawsuit outside of China.<sup>252</sup> The Chinese holder might expect to win in Chinese courts even if the case has no merit.

#### **Technical Standards**

China has sought to impose Chinese technical standards on foreign competitors even in cases where widely accepted technical standards already exist. For example, China’s government created a third-generation mobile telecommunications standard, the Time Division Synchronous Code Division Multiple Access to compete with the U.S. CDMA (Code Division Multiple Access) and the European GSM (Global System for Multiple Communications) standards. The Chinese standard “requires firms to incur large costs to obtain access to the Chinese market as well as reduce the royalties that would otherwise accrue to U.S. firms and shift some royalties to Chinese firms,” according to Karen Laney, acting director of operations at the U.S. International Trade Commission.<sup>253</sup>

More recently, the Chinese government developed regulations to require testing and certification to Chinese standards for information and computer technology sold to Chinese government agencies. “These regulations require sellers to provide Chinese regulators with complete details of the inner workings—including information security functions such as encryption codes—of computer products in 13 product categories,” said Ms. Laney.<sup>254</sup>

### **High-level Dialogues Address the Indigenous Innovation Dispute**

Complaints by the U.S. business community and the Obama Administration to Chinese officials over the indigenous innovation policy and its link to official procurement catalogues placed the issue on the agenda for three high-level meetings during the past year. In December 2010, the Joint Commission on Commerce and Trade concluded with a promise by China to submit a revised proposal to join the WTO’s Agreement on Government Procurement. Previous Chinese proposals were rejected by other members of the GPA be-

cause Beijing had sought to exclude subcentral governments and SOEs even when the companies were performing government functions. At the conclusion of the talks in Washington, China agreed to provide equal treatment to companies operating in China and to refrain from measures to make the location or ownership of intellectual property a condition for eligibility for government procurement.<sup>255</sup>

USTR Ron Kirk, a co-chair of the 2010 U.S.-China Joint Commission on Commerce and Trade, concluded:

*China's announcement that it will not discriminate in government procurement decisions based on where the intellectual property component of the products was developed is a valuable outcome for America's innovators and entrepreneurs who can continue to create American jobs and selling to the Chinese Government without concern that they will be unfairly blocked from the market.*<sup>256</sup>

One month later, during the January summit between President Barack Obama and President Hu Jintao in Washington, the Chinese leader made further commitments to opening the government procurement market to foreign firms. In a U.S.-China Joint Statement, China agreed to “not link its innovation policies to the provision of government procurement preferences.”<sup>257</sup> At a joint press conference, President Obama said:

*I did also stress to President Hu that there has to be a level playing field for American companies competing in China that trade has to be fair. So I welcomed his commitment that American companies will not be discriminated against when they compete for Chinese government procurement contracts.*<sup>258</sup>

The third round of the Strategic and Economic Dialogue in May 2011 strengthened these promises with a further commitment that “China will revise Article 9 of the Draft Regulations Implementing the Government Procurement Law\* to eliminate the requirement to link indigenous innovation products to the provision of government procurement preferences.”<sup>259</sup> However, the U.S. Information Technology Office reports that it “continues to find current provincial and municipal policies that still require domestic intellectual property for government procurement preferences or otherwise give preferences to domestic products and the thematic underpinnings of China’s indigenous innovation drive remains strong in official rhetoric.”<sup>260</sup>

### **Chinese Policy Adjustments Following the High-level Dialogues**

In recent months, central authorities have announced steps to break the link between indigenous innovation preferences and government procurement. On June 23, China’s Ministry of Finance rescinded a 2007 series of measures concerning the evaluation, budg-

\* Article 9 states, “Government procurement agencies should strictly enforce the government procurement product catalogue and carry out all relevant policies and regulations.”

eting, and contract management of government procurement of indigenous innovation projects.\* The revoked measures included:

- Price credits of 5 to 10 percent for indigenous products during the evaluation process.
- Extra credits in the evaluation of the price point and technology of indigenous products.
- Priority given to indigenous suppliers unless their products exceed the quoted price for nonaccredited goods by 5 to 10 percent.
- The transfer of core technology as a requirement for foreign suppliers entering government procurement contracts.<sup>261</sup>

On July 4, 2011, the Chinese Ministry of Finance, the Ministry of Science and Technology, and the NDRC announced the repeal of the 2006 measure *Trial Measures for the Administration of the Accreditation of National Indigenous Innovation Products*.<sup>262</sup> The policy established specific certification criteria for the accreditation of indigenous innovation products, including the Chinese ownership of core intellectual property and trademarks.<sup>263</sup>

U.S. and European Union (EU) business organizations applauded these repeals yet remained careful not to overstate their significance. In a June 29 press release, the U.S.-China Business Council noted that while “the measures represent only a portion of the full list of regulations that tie indigenous innovation and government procurement, the elimination of these measures is an important step towards fulfilling pledges made by PRC [People’s Republic of China] leaders during President Hu Jintao’s January 2011 visit to the United States and the May 2011 Strategic and Economic Dialogue.”<sup>264</sup> Paul Ranjard, chair of the European Chamber’s Committee on Intellectual Property Rights, noted that central policy shifts do not always precipitate change at the provincial and municipal levels but said the repeal was “especially important because it is addressed to all levels of government departments, including provincial and municipal levels.”<sup>265</sup>

In some cases, however, local governments responded immediately to the central policy repeals with corresponding adjustments to local policies or practices. A report summarizing the Jiangsu Province semiannual conference on the government procurement of indigenous products held in Nanjing on July 17 emphasized the provincial government’s commitment to incorporate national-level policy revisions into the province’s procurement protocol.<sup>266</sup> The vice minister of the Jiangsu Ministry of Finance, the conference’s most distinguished participant, called on all members of government in attendance to review the implementation of provincial procurement policies in light of the central policy revision.<sup>267</sup>

Some of China’s large municipalities also were quick to step in line with central policy adjustments. Following the repeals of the central-level policies, both Shanghai and Xiamen municipal authorities effectively suspended accreditation programs for indige-

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\*The three measures are *Evaluation Measures on Indigenous Innovation Products for Government Procurement*, *Administrative Measures on Budgeting for Government Procurement Contracts for Indigenous Innovation Products*, and *Administrative Measures on Government Procurement Contracts for Indigenous Innovation Products*.

nous innovation products. The Shanghai Finance Bureau announced that on July 1 it would cease implementing the 2009 *Shanghai Municipality Operating Procedures on the Government Procurement of Indigenous Innovation Products*.<sup>268</sup> While the repeal of this law is significant, the Shanghai municipal government did not announce plans to repeal a more recent law dictating product accreditation, the 2010 *Shanghai Municipality Measures for the Administration of the Accreditation of Indigenous Innovation Products*. Among the accreditation requirements of the 2010 measure, products must hold indigenous intellectual property rights developed by Chinese companies.

### **Will the Promises Be Kept?**

U.S. politicians, businessmen, and academics have expressed doubt that China's central and subcentral governments will comply with commitments made during high-level dialogues. Following President Hu's visit, then Commerce Secretary Gary Locke noted that when he talked to U.S. business leaders, "they continue to voice significant concerns; the fundamental problem often boils down to the distance between the promise of China's government and its actions."<sup>269</sup>

Months later, in a speech before the Asia Society in May 2011, Mr. Locke noted a history of noncompliance by China: "The Chinese pledges—at the S&ED [Strategic and Economic Dialogue] two years ago and at last year's JCCT [Joint Commission on Commerce and Trade]—that they would lift prohibitions in the revised catalogue on many industries in which U.S. firms are world leaders and have much to offer the Chinese economy. . . . Well, the new foreign investment catalogue falls far short of that promise."<sup>270</sup>

At the Commission's March 30 hearing, Theodore Moran, who holds the Marcus Wallenberg Chair in International Business and Finance at Georgetown University's School of Foreign Service, also expressed skepticism: If China "heads in that direction, I think that would be spectacular," he said. "But there are so many interests trying to force technology transfer that I'll believe it when I see it."<sup>271</sup> Mr. Ernst warned at the Commission's June 15 hearing that China may instead follow a well-established pattern of promising much but delivering little:

*A detailed analysis of recent developments of China's innovation policies finds a fairly consistent pattern of China's response to foreign complaints. In round one PRC [People's Republic of China] government regulations start out with quite demanding requirements that exceed established international norms. This typically gives rise to a wave of criticism from foreign enterprises and business organizations, but also from Chinese companies that have established a significant position in the international market and that have begun to accumulate a reasonably broad portfolio of intellectual property rights. In response to this criticism, round two then leads to some adjustments in PRC government regulations that combine a selective relaxation of contested requirements with persistent ambiguity.*<sup>272</sup>

Despite these promising examples, many local governments may still favor domestic companies for government procurement contracts. Without a strict requirement that local government procurement policy reflect changes made at the central level, provincial and municipal governments can favor domestic products, partially nullifying the expected improvements to the procurement environment for foreign firms in China. An article on the Finance Ministry's website reported that many representatives of provincial-level government procurement offices believe repealing central government policies that discriminate against foreign firms will not change the propensity of local governments to favor domestic goods.<sup>273</sup> For example, only two days after the last central policy repeal went into effect, the Shenzhen Science, Industry, Trade and Information Technology Committee officially called for support of indigenous innovation policies. Specifically, it called on reporting enterprises—those applying for product accreditation—to adhere to the *Shenzhen Municipality Measures for the Administration of the Accreditation of Indigenous Innovation Products*, Shenzhen's municipal counterpart to the already repealed national regulation.

Commerce Secretary Locke, who is now the U.S. ambassador to the People's Republic of China, anticipated the difficulty of implementing agreements made with China's central government only. Ambassador Locke outlined five key steps for the China's promises to become reality:

1. Chinese officials pledge to resolve the issue of market access
2. The agreement is codified into binding laws or regulations
3. The law is strictly implemented by the central government
4. The law is strictly implemented at local and provincial levels
5. The law or regulation becomes standard practice in China<sup>274</sup>

Speaking of China's current progress, then Secretary Locke remarked, "When it comes to indigenous innovation, intellectual property, or a variety of other market-access issues, an enduring frustration is that in too many cases only the earliest steps are taken, but not all five." Recent developments support this claim. While the Chinese government did make promises (step 1) and has begun efforts to reflect those promises in policy decisions (step 2), China continues to struggle to translate policy changes into institutional reform. The central policy repeals, although a political victory for the United States and Europe, will do very little for U.S. and European businesses without strict implementation by the central government and equally firm commitments from local authorities.

#### **China in Search of Western Technology: A Case Study**

While China has refrained since 2001 from explicitly requiring foreign companies operating in China to share technology and trade secrets, the Chinese government still seeks to obtain critical information on cutting-edge technology by other means. One example involves the Chevrolet Volt, a plug-in hybrid that employs three important technologies sought by the Chinese government: electric motors; complex electronic controls; and power storage devices, including batteries and fuel cells.

**China in Search of Western Technology: A Case Study—  
*Continued***

The Chinese government has refused to extend to General Motors (GM) a \$19,300 per car subsidy that is available to Chinese competitors unless GM provides its core technology to a Chinese car company. Thus far, GM has refused, even though the Chinese subsidy is nearly half the sales price of the Volt in the United States, \$41,000.<sup>275</sup> The car has not yet been priced in the Chinese market. Lacking the subsidy, GM would likely find it difficult to sell the Volt against its Chinese competitor, BYD, which manufactures two versions of a plug-in electric car. Complicating GM's dilemma is the fact that the Chinese market for auto sales is now the world's largest and the fastest growing, and GM is the largest foreign manufacturer in China. Said GM Chief Executive Officer Dan Akerson: "There are technology risks, there are relationship risks. I am sure China will do what's best for China. ... But you ignore China at your own peril."<sup>276</sup>

Meanwhile, GM has an eye on its major Detroit rival, the Ford Motor Company, which has announced plans to build four new plants in China and roll out 15 new vehicles there by the end of 2015. That move would double its capacity in China. Ford has not yet decided how much of its technology it would be willing to share in order to qualify for the subsidies.<sup>277</sup> The Chinese government is thus encouraging Ford and GM to compete on the basis of which company will surrender the most technology to Chinese rivals.

**Intellectual Property Infringement in China: The Business Software Case**

All members of the World Trade Organization, including China, are required to provide minimum levels of protection to the intellectual property of fellow WTO members. An agreement within the WTO specifically ensures that copyright protections extend to computer programs, which are protected as literary works under the amended Berne Convention of 1886.<sup>278</sup> The People's Republic of China agreed to enforce these widely recognized rules and regulations when it joined the WTO in 2001.

By nearly all accounts, however, the People's Republic of China is one of the largest sources in the world of counterfeit and pirated goods. China in 2011 remains first on the "priority watch list," a designation shared with 11 other countries, which are among the world's worst enforcers of intellectual property rights, according to the Office of the U.S. Trade Representative.<sup>279</sup> The Chinese government itself estimates that "counterfeits constitute between 15 percent and 20 percent of all products made in China and are equivalent to about 8 percent of China's GDP [gross domestic product]."<sup>280</sup>

China is by far the dominant source of counterfeit and pirated goods that U.S. customs agents seize at ports and airports around the United States. According to U.S. Customs and Border Protection, Chinese-sourced goods accounted for 53 percent of the sei-

zures at U.S. ports of entry in 2010, up from 6 percent in 1995. The second-largest number of seizures originated from Hong Kong.<sup>281</sup> It is likely that many of the illicit goods from Hong Kong actually originated on the mainland; in all, more than three-quarters of the seizures of infringing goods were from mainland China and Hong Kong in 2010.<sup>282</sup>

### **The Importance of Intellectual Property to the U.S. Economy**

Intellectual property plays a key role in creating high-wage jobs and fueling new economic growth. Much of the U.S. economy consists of intellectual assets such as patents, copyrights, and trademarks. These assets compose an estimated 76 percent of the *Fortune 100*'s total market capitalization and approximately 80 percent of the value of the Standard & Poor's 500.<sup>283</sup> Within the United States, intellectual property-intensive companies generated nearly \$7.7 trillion in gross output in 2008, totaling a third of U.S. total gross output.<sup>284</sup>

Intellectual property-intensive industries are particularly critical in the tradable goods\* sector and accounted for 60 percent of all U.S. exports in 2007, a total of \$910 billion.<sup>285</sup> Intellectual property-intensive industries also provide high wages. Between 2000 and 2007, the salary of all workers in intellectual property-intensive industries was on average about 60 percent higher than their counterparts at nonintellectual property-intensive industries.<sup>286</sup>

Major copyright industries—including software—contribute nearly 6.5 percent of the total U.S. gross domestic product (GDP), employ over 5.5 million workers, and generate more than \$125 billion annually in foreign sales and exports.<sup>287</sup> Solely looking at software, in 2010, “the direct, commercial value of stolen software tools for personal computers came to \$59 billion globally ... [and] the indirect costs are even greater. Enterprise software theft undercuts legitimate business activity and imperils job creation in every sector of the economy.”<sup>288</sup>

Business associations also list China as among the largest sources of intellectual property infringement. An estimated 78 percent of the software on personal computers in China is pirated, according to an annual study by the Business Software Alliance. That figure was down from 82 percent in 2006, but the total commercial value of unlicensed software on mainland Chinese computers rose from \$5.4 billion in 2006 to \$7.8 billion in 2010.<sup>289</sup> Hong Kong's piracy rate was considerably lower than on the mainland—45 percent in 2010.<sup>290</sup> Further evidence that China is a large-scale source of piracy: China was the second-largest market for computer hardware in the world—\$64.4 billion in 2009, behind only the United States. But in terms of software sales, China was eighth—behind Canada and Italy, at \$5.4 billion.<sup>291</sup>

The International Intellectual Property Alliance reports that China's lack of enforcement and lack of market access “suggest a con-

\*Tradeable goods are those that can be exported or imported.

scious policy seeking to drive Chinese competitiveness while permitting free access to foreign content through unapproved pirate channels.”<sup>292</sup> Says the Alliance:

*High copyright piracy levels persist in China, from pervasive use of unlicensed software by businesses and pre-installation of unlicensed software (hard disk loading piracy) at the distribution level, to widespread online piracy of music, films, television programming and other copyright materials, and piracy of hard goods. . . . China’s principal reliance on its woefully under resourced administrative system to deal with IPR [intellectual property rights] infringements rather than through criminal enforcement presents a significant hurdle to effective enforcement.*<sup>293</sup>

Among the remedies suggested by the United States and required by the WTO<sup>294</sup> during negotiations with China is the greater use of criminal penalties rather than administrative fines, which are too often levied at a nominal rate and are absorbed by Chinese counterfeiters as a cost of doing business.

#### **A Case Study: The Rise of Internet Piracy in China**

The increased use of the Internet to market and to sell products and services has also created a new and hard-to-trace pathway for illicit sales of copyrighted software. The case of music piracy offers an illustration of how the Internet eventually could facilitate lawbreaking on a massive scale in other information technology sectors, such as business software. In the case of music, Chinese government statistics indicate that nearly 80 percent of listeners use the Internet to obtain music. And nearly all music downloads are pirated. “Legitimate [music] content is not made available in significant quantities online in China due to the prevalence of piracy, market access restrictions, and other discriminatory measures which effectively keep legitimate content out,” according to Michael Schlesinger of the International Intellectual Property Alliance.

In addition, music piracy in China is facilitated by official tolerance for websites, such as the search engine Baidu, that directs users to infringing content and is supported by advertising. The website has promised to end the practice of providing pirated music but only in the case of music with a Chinese copyright.<sup>295</sup> As a result, the International Intellectual Property Alliance estimates the piracy level for music in China on the web is 99 percent.<sup>296</sup> Many of the same websites and techniques used to distribute pirated music can be employed to distribute pirated business software, including Internet auction sites, peer-to-peer sites, BitTorrent sites, and social networking sites.<sup>297</sup>

China’s 457 million Internet users constitute the largest group of computer users in the world, most of them with broadband connections. Two-thirds of them use mobile phones to surf the web for music downloads.

**A Case Study: The Rise of Internet Piracy in China—  
Continued**

The International Intellectual Property Alliance calculates the value of legitimate music sales in 2009 in China at \$94 million. By contrast, in Thailand, with just 5 percent of China's population and the same GDP per capita, sales were \$142 million. Legitimate sales in the United States were \$7.9 billion, about 7,000 times as much as in China.<sup>298</sup>

The trend of Internet piracy established for music downloads is having a spillover effect on business software, noted Commission witness Ken Wasch, president of the Software and Information Industry Association: "What we are finding increasingly is that China is becoming the primary source for illegal intellectual property goods of all kinds being distributed through Chinese servers."<sup>299</sup>

**China's Recent Efforts to Protect Software**

Chinese leaders made significant promises over the past 12 months to improve the level of intellectual property enforcement. At the December 2010 Joint Commission on Commerce and Trade negotiations in Washington and in the joint statement following the summit between President Obama and President Hu in January 2011, China's government committed to buy legitimate software licenses for central government agencies (although not provincial or local government offices.) The central government committed to a pilot program for 30 SOEs to increase the level of software licenses and agreed to audit central government agency budgets to ensure that they appropriated money for legitimate software purchases (although not to audit installed software nor to appoint independent auditors.)<sup>300</sup>

However, China has been making promises in bilateral negotiations to buy only licensed software for government offices since 2004 and during that time, the value of unlicensed software use in China rose from \$3.6 billion in 2004 to \$7.6 billion in 2009, according to Commission witness Mr. Schlesinger.<sup>301</sup>

China also announced in late 2010 that the government would conduct a six-month campaign against intellectual property theft, denoted the "Special Campaign to Strike IPR [intellectual property rights] Infringements and Counterfeit and Shoddy Goods." After complaints that such temporary campaigns in the past had produced a flurry of activity followed by a resumption of counterfeiting and piracy, the campaign was extended for three months until the end of June.

Skeptics noted that the timing coincided with the start of the Joint Commission on Commerce and Trade negotiations in Washington and that such a move might have been made for political reasons. One American businessman operating in China told the Commission during an interview in Hong Kong:

*The problem is that authorities preannounce, for example, six month crackdowns; this allows people to close up shop temporarily and get back in business later. More vagueness would help. Another problem is corruption. Local Party of-*

*officials are sometimes shareholders in counterfeiting companies. Other times, if a factory that produces counterfeit closes in a small city, 30 to 40 percent of the local population might become unemployed, which would reflect poorly upon the local government.*<sup>302</sup>

After Premier Hu's visit and the special campaign ran its original course, Business Software Alliance President and Chief Executive Officer Robert Holleyman told Congress that his member companies "report no significant uptick in sales to the Chinese government, in contrast to what had been expected in light of the commitments" made by China to boost government agencies' purchase of legal software.<sup>303</sup> In May, Mr. Holleyman told the U.S. International Trade Commission that "the towering piracy rate [in China] remains stagnant, the commercial value of it continues to rise, and US software companies are seeing very little in the way of new sales even though China's PC [personal computer] market is surging."<sup>304</sup>

Not all software companies were equally affected, however. One computer executive from a company that aggressively pursues court challenges in China of users of unlicensed operating system software told Commission members during an August trip to China that sales of software had increased by 7 percent in 2010. Still, said the executive, the company's revenue in China is only about 5 percent of the revenue in the United States, despite the fact that China is now the world's largest market for computer sales.<sup>305</sup>

Losses to U.S. software companies from intellectual property theft in China include the loss of royalty and licensing fees that would otherwise be paid to U.S. software firms such as Microsoft, Oracle, and Symantec. In fact, royalties and licensing fees are the most heavily impacted of all U.S. export receipts, since they are derived directly from the protection of intellectual property. The May 2011 U.S. International Trade Commission study notes that software makes up the largest share—nearly a third—of the total of all royalties and licensing fees that Chinese users paid to American companies.

The U.S. International Trade Commission calculated that an improvement in Chinese intellectual property protection would more than double the fees collected by U.S. software firms. Fees paid to U.S. software companies totaled \$737 million in 2009. That amount would increase by \$1 billion if China were to raise its intellectual property protections to the U.S. level.<sup>306</sup>

#### **Reciprocity in Intellectual Property Protection**

In testimony before the Commission on May 4, former U.S. Senator Slade Gorton cited the lack of incentives as the reason for China's failure to enforce intellectual property protections. "As a matter of fact," he said, "all the incentives are in the other direction. There's no real penalty for piracy, and there's a great deal of profit to be made by it." Mr. Gorton noted a troubling new trend—Chinese-produced, counterfeit business software is being exported to the United States and is now being purchased in "significant" numbers by American consumers.

**Reciprocity in Intellectual Property Protection—  
Continued**

The solution, said Mr. Gorton, is to levy a punitive tariff on all imports from China and other countries that fail to safeguard intellectual property. The tariff should exceed the value of trade lost to piracy and counterfeiting. While such a tariff “obviously violates various international trade agreements,” he said, “a country (such as China) with a \$273 billion trade surplus with the United States is never going to win a tit-for-tat exchange of tariffs or trade restrictions with us under those circumstances.”

The goal, said Mr. Gorton, would be to force countries to enforce their intellectual property protection laws so that U.S. companies would gain market access for legitimate products. Once their enforcement improved sufficiently, the tariff could be rescinded.<sup>307</sup>

**Implications for the United States**

China’s indigenous innovation policy is intended to restrict foreign access to the government procurement market or to require the transfer of critical technology to Chinese companies as the price of even limited market access. The result has been job loss in the United States and the transfer of technology to Chinese competitors. Many foreign firms, including those with affiliates in China, will be excluded from a large part of China’s market.

Indigenous innovation needs to be viewed in the larger context of China’s trade policies, which continue to violate the basic principles of the World Trade Organization: national treatment and free and fair market access. The U.S. Chamber of Commerce has said that China’s innovation policy:

*restricts the ability of American companies to access the market and compete in China and around the world by creating advantages for China’s state-owned enterprises and state-influenced champions, [and has] the potential to undermine significantly the innovative capacity of the American economy in key sectors [and] harm the competitiveness and livelihood of American business and the workers that they employ.*<sup>308</sup>

By most accounts, the Chinese government tolerates a very high level of intellectual property theft. In particular, China’s purchases of licensed computer software lag far behind its rapidly rising purchases of computer hardware. Chinese businesses and even government offices typically purchase unlicensed software or fail to obtain licenses for multiple copies of software. The result is a large loss of revenue and jobs in one of America’s most competitive industries.<sup>309</sup>

Longstanding rules of international commerce, including WTO standards, require countries to enforce internationally recognized standards of intellectual property. Nevertheless, the piracy of business software in China continues despite many promises to crack down on violations. This failure in China results from lax enforcement rather than the absence of regulations and laws prohibiting

intellectual property theft. The damage to the U.S. economy is measured in lost sales and lost jobs, not only in the software industry in the United States but also those U.S. domestic industries that use licensed software and compete against Chinese industries.

### Conclusions

- China's indigenous innovation policy is an outgrowth of the government's broad industrial policy and has been openly developed and documented through public plans and pronouncements, particularly the *National Medium- and Long-Term Plan for the Development of Science and Technology (2006–2020)*. The indigenous innovation policy seeks to nurture certain high-wage, high value-added industries designated by the government. Chinese firms are to be favored over foreign firms or China-based foreign affiliates in government procurement contracts. State-owned enterprises and municipal and provincial governments are also to show favoritism to Chinese domestic industries and businesses.
- Chinese officials, including President Hu, have pledged to modify China's indigenous innovation policy in response to protests from U.S. business leaders and top officials. Those promises have not been implemented at the local and provincial levels, however. China has a history of making promises and delivering little, particularly when doing as little as possible benefits the Chinese economy, as has been the case with China's promises to bring its intellectual property protections up to international standards and to cease requiring technology transfers from foreign firms.
- Foreign-invested enterprises seeking to be considered for government procurement contracts or public works projects are expected to file for patents and copyrights within China in order to qualify for preferential treatment in government contracting. Foreign affiliates risk the unintended transfer of their technology to Chinese firms if they do so, because of the nature of the Chinese intellectual property system and the lax enforcement of intellectual property laws and regulations in China.
- Although China agreed in 2001 to stop explicitly requiring foreign companies to surrender their technology to China in return for market access and investment opportunities, the government in Beijing still employs several tactics to coerce foreign firms to share trade secrets with Chinese competitors. China's industrial policy in general and its indigenous innovation policy in particular seek to circumvent accepted intellectual property protections and to extort technology from U.S. companies.
- In addition, the long effort by the central government to foster indigenous innovation is a message that will likely outlive any product catalogues. Restricting market access to domestic firms and requiring technology transfer as a cost for foreigners attempting to do business in China demonstrated the government's view that Chinese companies and governments are better off substituting domestic goods for imports.