China’s Indigenous Innovation Policy and U.S. Interests

Written Testimony of
Dr. Philip I. Levy
Resident Scholar
American Enterprise Institute
Washington, DC

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Chairman Royce, Ranking Member Sherman, and members of the committee, thank you for the opportunity to testify today on the “indigenous innovation” policies of the People’s Republic of China.

I will argue that these policies ought to be a real source of concern for the United States. They may well prove costly to American firms, but there are limits to how costly they can be. Indigenous innovation policies are unlikely to achieve their objective of vaulting China to the forefront of global innovation, a spot that the United States has traditionally enjoyed. The costs, instead, will be extracted from the gains that American firms would otherwise enjoy in the Chinese market. Contesting this policy should be a principal focus of U.S. commercial diplomacy with China.

China’s motivation

China’s indigenous innovation policies are part of a deep-seated effort by the Chinese leadership to advance the country from its status as a prolific, but low-end, producer of manufactures to a position of technological leadership.¹ In 2006, China released “The National Medium- and Long-Term Plan for the Development of Science and Technology (2006-2020)” which included the call for scientific advancement because “despite the size of our economy, our country is not an economic power, primarily because of weak innovative capacity.”²

This may seem baffling to an American audience. After decades of double-digit economic growth, a relatively smooth ride through the recent global financial crisis, and sitting astride a growing mountain of foreign exchange reserves, China often appears to be a paragon of economic accomplishment. Yet China faces enormous challenges. For all its advances, it remains a relatively poor country. According to the World Bank, China’s per capita income in 2009 was under $4,000, less than 1/10 that of the United States.³ One common description of the problem facing China is that it is racing to get rich before it gets old. The race is a daunting one because China is aging at an extraordinary rate.⁴ It

² McGregor 2010, p. 4.
³ World Bank, GNI Per Capita, Atlas Method (Current US$), http://data.worldbank.org/indicator/NY.GNP.PCAP.CD. China’s 2009 figure – the latest data available – was $3,650; the comparable United States figure was $46,360.
is careening toward a future in which a shrinking population of workers will have to support a growing population of dependents.

China’s recent dominance of the global manufacturing scene is neither as secure nor as lucrative as it may seem. Prices and wages are rising in China and the supply of young, pliable workers who streamed from the interior of the country to work in the coastal factories has begun to dry up. There are newcomers such as Vietnam and Bangladesh eager to take China’s place. Further, China’s impressive export statistics and participation in production of advanced products often concealed a much smaller role when carefully assessed.

One such recent, striking illustration of the source of China’s concern came in a U.S. study of Apple iPods. The researchers attempted to disentangle the value chain used to produce a 30GB Video iPod, with inspiration from Apple Computer in the United States, parts from suppliers around the world, and assembly in China. They found that for an iPod with $194 in “captured value” $80 went to Apple and $4 went to the manufacturers in China.5

Adam Segal of the Council on Foreign Relations provides a complementary example: “(F)or every Chinese-made DVD player sold, the Chinese manufacturer must pay a large royalty fee to the European or Japanese companies that patented various components of the unit, such as its optical reader. These foreign firms reap substantial profits, but the Chinese take is extremely small – and is shrinking further as energy, labor, and commodity prices rise.”6

These examples provide a telling illustration of the disconnect in perceptions between the United States and China. Each side points to a different facet of the economic relationship. U.S. political discourse can focus heavily on the bilateral trade imbalance with China, which is dominated by the gross figures that make up China’s high and growing level of exports to the United States. The Chinese, in contrast, focus on the much less impressive net figures, after one subtracts out the costs of imported inputs and payments for the use of other nations’ intellectual property.

The purpose of exploring the motivations behind China’s indigenous innovation policies is not to evoke sympathy for China’s plight but to understand the forces behind the drive to improve China’s status as an innovator. A policy such as this, based on fundamental Chinese concerns about the plight of their nation, will not be easily redirected. A diplomatic strategy to tackle these problematic policies will need to simultaneously address these Chinese concerns.

The evolution of indigenous innovation policies

The indigenous innovation policies themselves are an attempt to spur Chinese innovation by giving it privileged access to the Chinese government procurement market. Estimates of the size of that market vary from roughly $90 billion to substantially higher. The uncertainty over the size comes from questions about whether and how to include sub-federal procurement and purchases by China’s vast number of state-owned enterprises. To leverage this market and spur Chinese innovation, in November 2009, the relevant Chinese ministries announced that there would be a national catalogue of products that met the criteria of “indigenous innovation.” The criteria dealt with the source and status of the intellectual property contained in the product, such as whether it was registered and owned in China. The effect was to favor home-grown firms over foreign ones. The Shanghai version of the catalogue listed 258 products, for example, of which only two were from manufacturers with foreign investment.

A central and troubling feature of the policies is that they seem intent on extracting foreign technology as the price of access to the Chinese market. By prompting firms to reveal their technological secrets through either official disclosure or joint venture arrangements, foreign investors may lose valuable intellectual property advantages. Arguing for the centrality of this approach to the broader policy, McGregor cites the aforementioned Chinese Medium- and Long-Term Plan from 2006: “One should be clearly aware that the importation of technologies without emphasizing the assimilation, absorption and re-innovation is bound to weaken the nation’s indigenous research and development capacity.” The USITC notes the “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.”

There are two broader points worth noting about the indigenous innovation policies: 1. The policies are malleable and in a state of flux. 2. The catalogues and circulars describing government purchasing preferences are just one aspect of the broader push to stimulate Chinese innovation, largely at foreign expense.

The malleability of the policies suggests that this is an area in which diplomatic pressure could have an effect. The Chinese Ministry of Science and Technology requested comments on its initial and subsequent indigenous innovation regulations. In April 2010, the rules of 2009 were revised, partially responding to criticisms that had been lodged against the initial policy. Chinese leaders promised further revisions at the

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10 USITC, 2020, p. 5-5.
The December 2010 meeting of the U.S.-China Joint Commission on Commerce and Trade (JCCT). In January 2011, as an outcome of the summit meeting between Presidents Obama and Hu:

- The United States and China committed that 1) government procurement decisions will not be made based on where the goods’ or services’ intellectual property is developed or maintained, 2) that there will be no discrimination against innovative products made by foreign suppliers operating in China, and 3) China will delink its innovation policies from its government procurement preferences.

- China agreed to eliminate discriminatory “indigenous innovation” criteria used to select industrial equipment for an important government catalogue prepared by the Ministry of Industry and Information Technology, to ensure that it will not be used for import substitution, the provision of export subsidies, or to discriminate against American equipment manufacturers in Chinese government programs targeting these products.

If they were to be taken at face value, these commitments would sound enormously promising. But their true value will depend heavily on the way they are implemented. This highlights the importance of the second point – the interconnected set of Chinese policies that are directed at the broader goal of advancing Chinese innovation and disadvantaging foreign firms with leading-edge technology. Other related policies include weak enforcement of intellectual property rights protections for firms operating in China, biased standard-setting, support for Chinese state-owned enterprises to serve as “national champions,” and the potential interplay between China’s anti-monopoly law and the intellectual property regime. Thus, the implementation question concerns not only revisions to indigenous innovation catalogues but a much broader set of governance tools that can be used to achieve similar ends.

The impact on the United States

One implication of the rapid pace at which the policies are evolving is that the economic impact is particularly difficult to analyze.

“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

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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."\textsuperscript{15}

A first, important point to establish, however, is that the Chinese approach to indigenous innovation is unlikely to succeed. The vibrant and innovative U.S. technology industry has benefited from federal support for basic research, from independent and successful research universities, from a community of scholars and researchers drawn from around the world, from strong intellectual property protections, and from a competitive market environment that allows entrepreneurs to emerge and thrive. This is the antithesis of an approach that stifles the competitive environment, names national champions, and at least tacitly condones intellectual property theft. The environment that China is creating is unlikely to attract top research talent from around the world, for example, since such innovators generally value their intellectual freedom and independence. The weak protections for intellectual property will offer few incentives even for Chinese firms to invest heavily in risky new ventures.

One recent report described the fascination in China with Apple Computer and its new iPad. \textquoteleft\textquoteleft Some members of China\textquoteright s top legislative bodies have expressed worries as to whether China will be able to match companies like Apple, as the country – like the rest of the world – has been enthralled by the succession of innovative products from the California-based company.\textquoteright\textquoteright\textsuperscript{16} It is worth noting that a decade ago, on the eve of the introduction of the iPod, Apple hardly looked like a likely candidate to be a market leader. It was struggling. It produced a computer with an elegant operating system but a declining share of the personal computer market. Having apparently lost the desktop battle to Microsoft Windows, Apple was more often cited as a case study for how not to approach a technology market. And yet, through the introduction of the iPod, iPhone, and iPad, Apple revived its fortunes and prospered. Had one been looking for a technology champion to support in 2001, one would have looked elsewhere. In corresponding fashion, some of the technology giants of decades past have faded into obsolescence. There is a fundamental unpredictability about which firms are going to come up with new and market-leading technologies. This puts a centrally-planned approach at a distinct disadvantage.

There is little history to indicate that cutting-edge technology can emerge from a stultifying government-dominated approach. This would be true if China were already a market leader, trying to protect its advantage. It is even more true when China is a technological laggard trying to catch up. Appropriation of other countries\textquoteleft s technological advances can facilitate catch-up, but it is distinctly different from crafting a set of policies that will turn a country into a world leader.

\textsuperscript{15} USITC, 2010, p. 5-2.
\textsuperscript{16} Su, Andre, \textquoteleft Where is China\textapos;s Apple\textquoteright?\textquoteright \textit{Want China Times,}\textquoteright March 5, 2011. 
\url{http://www.wantchinatimes.com/news-subclass-cnt.aspx?cid=1101&MainCatID=11&id=20110305000083}
The inadvisability of China’s approach to the promotion of innovation provides an opening for diplomatic dialogue. An alternative approach that shunned intellectual property theft, protected innovators of all nationalities, and supported basic research would be beneficial for both China and the West. It also means that the economic impact on U.S. firms investing in China can be analyzed in a more conventional way. For such firms, China’s as-yet-ill-defined policies can be thought of as a means of extracting a higher price for participating in the Chinese market.

Imagine a firm that estimated the net present value of future profits in the Chinese market at $2 billion. Suppose China’s indigenous innovation policies effectively compelled that firm to turn over intellectual property worth $1 billion. This would leave the firm distinctly worse off than without the policies, but still distinctly better off than if it were to abandon the Chinese market. If the price of participation were a technology worth $3 billion, however, the firm would be better off leaving the Chinese market. This suggests that the present value of expected profits of U.S. high technology firms in the Chinese market provides an upper bound to the economic cost of Chinese policies. This could be very substantial, but it is much more modest than the costs of a world in which the United States hands over technological leadership to China.

There are a number of objections to this reasoning that can be grouped into ‘reasons that firms cannot walk away from China.’ They are described by the USITC report:

“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. 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.”

Taking each of these points in turn: First, the argument that China is a large market recalls the old joke about a businessman who acknowledged that he would lose money on each sale, but planned to make it up on the volume. It is profitability that matters. It is entirely possible to have a large, growing, competitive market that delivers little profit to participants.

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17 USITC, 2010, p. 5-23.
Second, if an industry has close competitors whose technology serves as a close substitute, then it matters little whether that technology is in the hands of China or the original competitors; the U.S. firm would not seem to have much of an edge.

Third, the argument that technology rapidly becomes obsolete simply implies that there are limits to the costs China can impose by compelling technology transfer. This argument, in fact, explains why firms would not need to walk away from China.

The final argument is an intriguing one. It suggests that technology firms will be myopic and overemphasize short-term gains relative to long-term costs. This is odd on at least two counts. Technology firms are generally in the business of balancing the short and the long term, since they must make large up-front investments (e.g. billions of dollars in developing a new semiconductor chip technology and fabrication plant) that will only pay off over time. If the firms are bad at such calculations, they have much deeper problems than China’s intellectual property environment. Further, what matters is the relative myopia of the private sector relative to governments. One way to interpret China’s pursuit of indigenous innovation is as a myopic mistake, an impatient effort to jump to the head of the world technology standings rather than developing an environment that is truly conducive to innovation and scientific development.

**Implications for U.S. policy**

The magnitude of the potential losses of U.S. firms operating in China, the pervasiveness of the policy challenge within China, and the potential flexibility of the Chinese government on the nature of indigenous innovation policies all argue for it to be a leading target of U.S. commercial diplomacy with China.

In attempting to reorient China toward a more constructive approach, the United States can and should take advantage of the similar plight faced by foreign investing firms in China from all technologically advanced countries. Multilateral pressure on China, e.g., through the World Trade Organization, has proven to be relatively effective and it avoids the problematic undertones of superpower competition that can plague bilateral efforts.

While WTO strictures governing Chinese intellectual property practices might be the ideal solution, there are some serious obstacles. While the Uruguay Round agreement creating the WTO include rules on intellectual property rights, there are limits to the extent to which they compel extraordinary enforcement efforts on the part of developing nations. Further, China’s indigenous innovation policies seek to leverage the economic power of China’s vast government procurement market. The WTO regulates such approaches not through its conventional restrictions on tariffs and quotas but through a separate Agreement on Government Procurement (GPA). Unlike much of the WTO, members faced a choice whether to join the GPA; China has yet to do so. It said it would as part of its 2001 WTO accession and tabled an offer in 2007 which was deemed

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unsatisfactory. One sticking point is the treatment of Chinese provincial and local governments. The January U.S.-China presidential summit yielded promises of progress on this front: “The United States welcomed China’s agreement to submit a robust, second revised offer to the WTO Government Procurement Committee before the Committee’s final meeting in 2011, which will include sub-central entities.”\(^{19}\) If China were to table a substantial offer for joining the WTO GPA, this would mark a significant step toward multilateral governance over objectionable procurement policies. It would not necessarily be a panacea, given the breadth of relevant policies and the depth of Chinese commitment to reducing dependence on foreign technology, but it would be a major achievement.

Although it is too soon to judge the value of the concessions on intellectual property that China made in the December 2010 JCCT meeting and at January’s presidential summit, they may reflect the fruits of a reorientation of U.S. diplomacy away from a fixation on China’s undervalued exchange rate toward a set of policies that are arguably both more amenable to negotiation and more important to U.S. economic interests. At such meetings, countries can only have a single “top” priority. There is an opportunity cost to pursuing one policy rather than another.

There are some commonalities between China’s currency policy and its indigenous innovation policy: each touches on core Chinese aspirations and each is a misguided attempt to achieve those aspirations. But from a diplomatic standpoint the difference is stark: China has made clear that it is unwilling to make its exchange rate the subject of negotiation with the United States while it has signaled openness to discussing and modifying its approach to intellectual property policy.

Through the existing array of policy dialogues and trade reviews, the Executive Branch has the tools it needs to maintain sustained pressure on the Chinese to remedy the objectionable aspects of indigenous innovation and the broad range of policies aimed at disadvantaging U.S. investors. What is needed is a sustained commitment to prioritize this issue above other less propitious ones.

**Conclusion**

China is approaching the issue of technological leadership from a position of weakness, not strength. It faces a broad range of concerns about its economic future and is concerned about the economic effects of being relegated to a position of eternal, cheap, low-end manufacture.

The United States and China share an interest in seeing China emerge as a prosperous technological innovator. This emergence should come about through creation of an environment that supports basic research and international collaboration, provides for intellectual freedom, and facilitates entrepreneurial competition. It should not come about through the expropriation of foreign technology. China’s indigenous innovation

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policies represent a serious misstep along this path. The policies do not threaten U.S. technological leadership in the long run, but they do threaten to impose substantial costs on U.S. businesses.

The willingness of China’s leaders to rethink some aspects of this policy is welcome, but it remains to be seen whether it represents a sufficiently thorough reorientation. Such a reorientation is likely to require a sustained and focused prioritization of the issue in U.S. commercial diplomacy.
United States House of Representatives
Committee on Foreign Affairs

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4. Have you received any Federal grants or contracts (including any subgrants and subcontracts) since October 1, 2008 related to the subject on which you have been invited to testify?
   - Yes
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