



Rising to the Challenge

A Progressive U.S. Approach to China's Innovation
and Competitiveness Policies

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Introduction and summary

When Chinese president Hu Jintao alights in Washington, D.C. next week for a summit meeting with President Obama, he will learn firsthand that China is fast becoming the touchstone against which everything wrong with the U.S. economy is measured. In the run up to last year's midterm congressional elections, candidates across the country accused one another of "sending jobs to China" instead of creating jobs at home. Members of Congress on both sides of the aisle regularly promise to seek trade sanctions against China for undervaluing its currency. The United States recently accepted a United Steelworkers petition accusing China of unfairly subsidizing its exports and hoarding raw materials essential for clean energy technology development. And U.S. companies across a range of industries are increasingly voicing their complaints about China's theft of their intellectual property and the country's forced transfer of cutting-edge U.S. technology in exchange for access to the nation's vast and fast-growing domestic market.

The overarching message coming from the United States is this: If China would just stop cheating, the U.S. economy would rebound, helping both nations and the rest of the world recover more sustainably from the Great Recession and sparking broad-based economic growth on both sides of the Pacific. Equally forcibly (though in more diplomatic language), President Barack Obama is expected to deliver that same message.

What this view assumes is that if only China would stop cheating, the U.S. economy would do what it has done best for the last hundred years or so—lead the world based on our prowess at science, technology, and innovation. After all, our universities are the best in the world, our entrepreneurialism is world-renowned, and our ability to turn new ideas into new job-creating products and services is unsurpassed. But this interpretation is not entirely accurate.

China is now investing in many of the building blocks of innovation-driven economic growth that the United States has all but abandoned over the past several

decades. Pick your sector and you'll find China will soon rival the United States in public investments in basic science and education, research and development, or R&D, infrastructure development, and workforce training. What's more, China's leaders have crafted coherent policies and programs in support of domestic manufacturing and services for export abroad and to ensure Chinese companies have the prime positions in China's rapidly growing domestic economy.

China, in short, is actively and methodically building up the basic foundations for future economic growth while also ensuring a market for its current and future products and services at home and abroad. The country's leaders understand completely the message driven home by The World Economic Forum, in its monumental *Global Competitiveness Report 2010-2011*, which underscores the importance of innovation as the basis for long-term economic growth:

Although substantial gains can be obtained by improving institutions, building infrastructure, reducing macroeconomic instability, or improving human capital, all these factors eventually seem to run into diminishing returns. The same is true for the efficiency of the labor, financial, and goods markets. In the long run, standards of living can be enhanced only by technological innovation. Innovation is particularly important for economies as they approach the frontiers of knowledge and the possibility of integrating and adapting exogenous, [or imported,] technologies tends to disappear.¹

China and the United States have very different legal, political, and economic systems, but both are bound by the same reality that to be competitive in the 21st century global economy, they have to innovate. But unlike most political leaders in the United States, China's leaders recognize that innovation is not created in a vacuum. Across the globe, developed and developing countries are realizing what economists have known for years—that technological innovation, more than any other factor, fuels long-term economic competitiveness and growth, and that innovation in turn requires a robust and well-integrated foundation of education, research, and infrastructure.²

The widespread recognition of these principles has sparked a global race to the top in innovation, science, and technology policy. But judging from the state of our innovation policy, the United States seems to have missed the memo. Other nations see innovation and competitiveness as two sides of the same economic coin. And not surprisingly, as John Podesta, Sarah Wartell, and Jitinder Kohli

FIGURE 1
Losing ground

The United States is in a race it doesn't fully recognize



Source: Stephen J. Enzell and Robert D. Atkinson, "The Good, The Bad, and The Ugly (and the Self-Destructive) of Innovation Policy" (Washington: The Information Technology and Innovation Foundation, 2010), available at <http://www.itif.org/files/2010-good-bad-ugly.pdf>.

point out in CAP's recent report, "A Focus on Competitiveness," "... other countries organize their economic policy apparatus more explicitly around the question of how to effectively compete."³

China in particular does this very well. In this paper, we examine the challenges posed to current and future innovation-led economic growth in the United States by China's drive to boost innovation at home by any means available. As we will demonstrate, some of these challenges cut to the core of our nation's own global economic and scientific strengths—even though some of China's innovation policies and programs are plagued by inherent liabilities that are built into the country's approach to innovation.

Some Chinese R&D spending, for example, ends up fueling academic fraud, a huge problem in China, where local scientists often try to lay claim to new discoveries that are bogus. But the spending levels are still impressive, as is the fact that China has taken pains to invest across the entire innovation chain from basic science, to R&D, to market creation for new technologies, to production and deployment of these technologies. This is paying innovation dividends in hybrid electric vehicles, advanced batteries, high-speed rail, and solar power systems, to name a few.⁴

Indeed, one of China's other innovation "assets" is its growing direct investment in basic research and development. In 2008, China's gross national expenditure on research and development stood at roughly \$66 billion, or about 1.5 percent of China's gross domestic product.⁵ This is the highest investment level among

developing economies as a percent of their domestic economy and ranks China fourth in the world in overall R&D spending behind the United States, Japan, and Germany.⁶

Similarly, China's massive domestic investments in global market-scale industries such as clean technology products, transportation, mobile telecommunications and aerospace are now enabling Chinese companies in these sectors to compete for business abroad and dominate their home market. Again, there are liabilities built into this strategy: Economists can point to costly misplaced investments in some of the infrastructure needed to get these industries off the ground—misinvestments that saddle the Chinese state-owned banking system with an entire new raft of non-performing loans and resulting in way too many empty science parks and regional industrial zones that are no more than property speculation gone awry.⁷

This same strategy—key directed investments in science and innovation to spur rapid economic growth no matter the cost—is even evident in the Chinese government's planning processes. China's famous communist-era "five-year plans," which often bore little relation to reality, are now precise blueprints for strategic market-oriented, innovation-led economic growth to spur job creation at home and exports abroad. Then as now, however, local political and business leaders in China's provinces and cities, counties and townships continually go their own way in interpreting these plans and then spending the cash, often resulting in misleading statistical data flowing back to Beijing "proving" the metrics of the blueprint are being met while in fact the funds are being spent on a variety of other activities, including local property development and speculation.⁸

But these liabilities do not mean that U.S. policymakers can afford to be complacent. China's so called "import/assimilate/re-innovate" model of technology development, for example, actively drives foreign companies to share their technologies with Chinese joint venture partners in exchange for access to the cheap Chinese workforce and burgeoning domestic marketplace. This strategy poses a direct challenge to U.S. competitiveness because it enables Chinese (often state-owned) companies to gain access to cutting-edge technologies but also build upon them incrementally to create a Chinese innovation ecosystem. Never mind that economists recognize that the downside to this model of economic development is that it delivers diminishing returns without genuine domestic innovation delivering world-class breakthroughs.⁹

In the pages that follow we will examine China's innovation assets and liabilities as the country races to build a globally competitive innovation-led economy, and then consider how the United States should react to these challenges. We then offer our recommendations to U.S. policymakers on steps our own government can take to ensure our nation rises to meet the challenges posed by China. Briefly, though, we will argue that the U.S. government needs to give our nation's innovation engine a tuneup by:

- Modernizing our basic infrastructure to allow businesses to more effectively collaborate and compete in domestic and international markets
- Investing more in science and math education and workforce development to ensure we have workers able to participate in the technology-driven economy of the present and future
- Crafting finance policies to make more public and private capital available to innovators and bolster our culture of entrepreneurship by rewarding risk-taking and competitiveness
- Promoting international trade policies that ensure access to foreign markets, and the free flow of goods, services, knowledge, and capital across borders
- Honing our research and development policies so that we invest not just in basic research but also the full innovation lifecycle from invention, to development, to production and commercialization

These are progressive proposals that would boost our national competitiveness and jobs growth in the short run and ensure our once-dominant position in science and technology, innovation and entrepreneurship, and job creation is not eclipsed by China in the 21st century. On the eve of Chinese president Hu Jintao's visit to Washington, these are progressive proposals that Congress and the Obama administration dearly need to take to heart.

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