

Investment in Innovation: Lessons Learned from China

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PRESIDENT OBAMA WAS RIGHT TO FOCUS on innovation and job creation in his January 2011 State of the Union speech. There is a need to create and fill new jobs in an increasingly competitive global marketplace, and investments in innovation will enable businesses using virtual reality and other healthcare technology to be part of a new, much-needed job creation engine.

If U.S. government funding for innovation and education does not increase, China may eclipse the United States in research and development funding within the next 20 years.¹ By August 2010, China's economy had surpassed that of Japan, positioning it as the second-largest economy behind the United States. Some predict that China's economy will surpass that of the United States as early as 2017.²

The United States has enjoyed dominance in innovation for the past 40 years, but that landscape is changing quickly with the globalization of R&D. Not just China but Korea, India, Russia, and Brazil are all investing in R&D at higher rates than the United States, Germany, and Japan.¹ Relatively high labor costs in the European Union presage low R&D investments over the next decade, with southern EU states such as Greece, Italy, and Spain investing at a lower rate than their northern counterparts.

Another result of R&D globalization is a reversal of the flow of funds, now flowing from some less developed to more developed countries. For example, China has made investments outside the country in telecommunications, as has India in pharmaceuticals.¹

China's leaders understand the importance of R&D. "Eight of the nine members of China's Standing Committee of the Political Bureau, including China's current President Hu Jintao, have engineering degrees. Of the 15 U.S. cabinet members, only one, Secretary of Energy Steven Chu, has a technical degree—a doctorate in physics."³ Consequently, the Chinese government has an innovation policy designed to encourage Chinese companies to create and own technologies. The policy also encourages technology transfer from abroad and establishment of Chinese R&D facilities in exchange for foreign company access to China's high-volume markets. As a result, a number of multinational technology and pharmaceutical companies have taken advantage of this policy, some transferring facilities from India.

The Chinese government owns all top-ranked academies, including universities, and has tripled its investment in education in the past 12 years.³ Of the five million students graduating per year, about one million are research students.

Furthermore, China's academicians file more patent applications than those in any other country—16% compared to 4% in the United States.

In addition, the Chinese government plays a direct role in investing in 150 companies, providing 27% of their funding in 2007, the latest year for which data are available.³ Universities partner with industry, and about the half the universities' R&D funding, primary in technology transfer, comes from industry.

In the United States, a recent survey shows that venture capitalists expect their industry to decline over the next 5 years.⁴ VCs in France, Israel, and the UK also predict a drop, while those in China, Brazil, and India expect growth. What is most discouraging for U.S. business is that most U.S. VCs expect the available amount of venture capital to decrease by at least 30%.

In the United States, small companies—those most in need of venture capital—perform 19% of the nation's R&D.⁵ Over the past 25 years, the most dramatic growth in U.S. federal R&D spending has been in health, which accounted for 52% of nondefense R&D in FY2008.

Given the data cited in this editorial, it should come as no surprise that China, India, and Brazil may surpass the United States in innovative healthcare delivery over the next decade.⁶ The United States has the patient populations necessary for research, but the rate of growth in financial support and education of researchers has not kept pace with that of developing countries.

President Obama has declared "innovation in healthcare" one of three national priorities for FY2012. With Congress unlikely to approve any initiative that adds to the federal budget deficit, can he deliver on his promises of increased funds for innovation and education?

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