

CHINA BALANCE SHEET

TECHNOLOGY

The direction that China and U.S.-China relations take will define the world's future. For the United States, a rising China increasingly affects American prosperity and security, calling for some clear-eyed thinking and tough economic, political, and security choices. As the twenty-first century unfurls, the stakes have never been higher for getting U.S. policy toward China right. By untangling the complex, sometimes contradictory, strands of this vast and dynamic country, *China: The Balance Sheet* lays the foundation for informed and effective U.S. policy toward China, the world's emerging superpower.

BACKGROUND

- A decade or so ago, China was primarily a supplier of obviously low-tech goods, such as apparel, toys, footwear, and sporting goods.
- Today, China is the world's largest producer, and the largest U.S. supplier, of personal computers and other seemingly much more sophisticated products.
- **Some worry that China is well on its way to becoming an advanced technology superstate,** able to compete globally not just at the labor-intensive end of the product spectrum, but also at the capital- and technology-intensive end where the United States historically has been a leader.

CURRENT SITUATION

- **China awards four times more undergraduate engineering degrees than does the United States.** Many, however, are civil and electrical engineers, for which there is an enormous demand because of massive public infrastructure investment and a construction boom. China, for example, currently has about 70 to 80 major subway lines under construction, while the United States has none.
- While China's numbers of engineers are impressive, their average quality is less so. The McKinsey Global Institute estimates that only **one-tenth of China's engineering and IT graduates are capable of competing in the global outsourcing environment,** and that only 160,000 of China's engineers are qualified for employment in international or high-quality domestic firms—roughly the same number available in the United Kingdom.

For further information, see Chapter 4:

“China in the World Economy: Opportunity or Threat?”

China: The Balance Sheet: What the World Needs to Know Now about the Emerging Superpower

Authors: C. Fred Bergsten, Bates Gill, Nicholas R. Lardy and Derek Mitchell

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- Although China's R&D expenditures are rising rapidly, they are only about one-tenth the U.S. level. Indeed, the United States alone accounts for about 40 percent of global R&D expenditure and employs almost one-third of all science and engineering researchers worldwide.
- The U.S. Bureau of the Census reports that **the United States imported \$72.7 billion in "advanced technology products" from China in 2006, a more than eleven-fold increase since 1998.** But the most important of these products are notebook computers, display units, and CD and DVD players, which are imported in such huge quantities and at such a low unit cost that they are probably seen better as mass market commodities than as advanced technology products.

IMPLICATIONS

- Evaluating the extent to which China is becoming a technological superpower involves far more than simply identifying China as the location in which seemingly more sophisticated products are assembled. Yes, more advanced technologies and management techniques are diffusing into the local economy, allowing indigenous firms to move up the technology ladder and raising the local share of value added. But **this is a gradual process, not a leapfrogging that will make China a technological superpower overnight.**
- Remember Japan? Some 20 years ago, commentators argued that Japanese firms' competitive edge was so great and their export growth so unstoppable that Japan was likely to displace virtually all U.S. manufacturing. Yet, **in 2005, U.S. firms accounted for 24 percent of global manufacturing output, the same as in 1994.** Japan's share has fallen from 24 percent to 21 percent over the same period, the largest decline of any advanced industrial country.

Made by China vs. Made in China

- *Almost 90 percent of China's exports of electronic and information technology products are made by foreign firms. Typically these firms are wholly foreign-owned, which makes them much less inclined than joint ventures to share technology, and they are located in enclave-like settings where interaction with domestic firms appears somewhat limited. For example, they import parts and components rather than sourcing from domestic firms. China's contribution is limited to providing the labor to assemble the components.*
- *Eventually, indigenous firms will develop the capability to produce a growing share of the high value-added parts and components that are now imported and to organize large-scale production of information technology or other more advanced products. But this will take considerable time. Chinese firms have not developed strong domestic technology supply networks; their collaboration with universities is extremely limited; and their absorption and diffusion of imported technology is uneven.*
- *Moreover, China is at the early stages of developing private property rights, respect for intellectual property, and the venture capital financing that are important long-run contributors to converting scientific and technical innovations into successful commercial ventures.*

Does it make more sense for products imported in huge volumes and at relatively low cost per unit to be regarded as "leading edge technology" or as mass-market commodities?