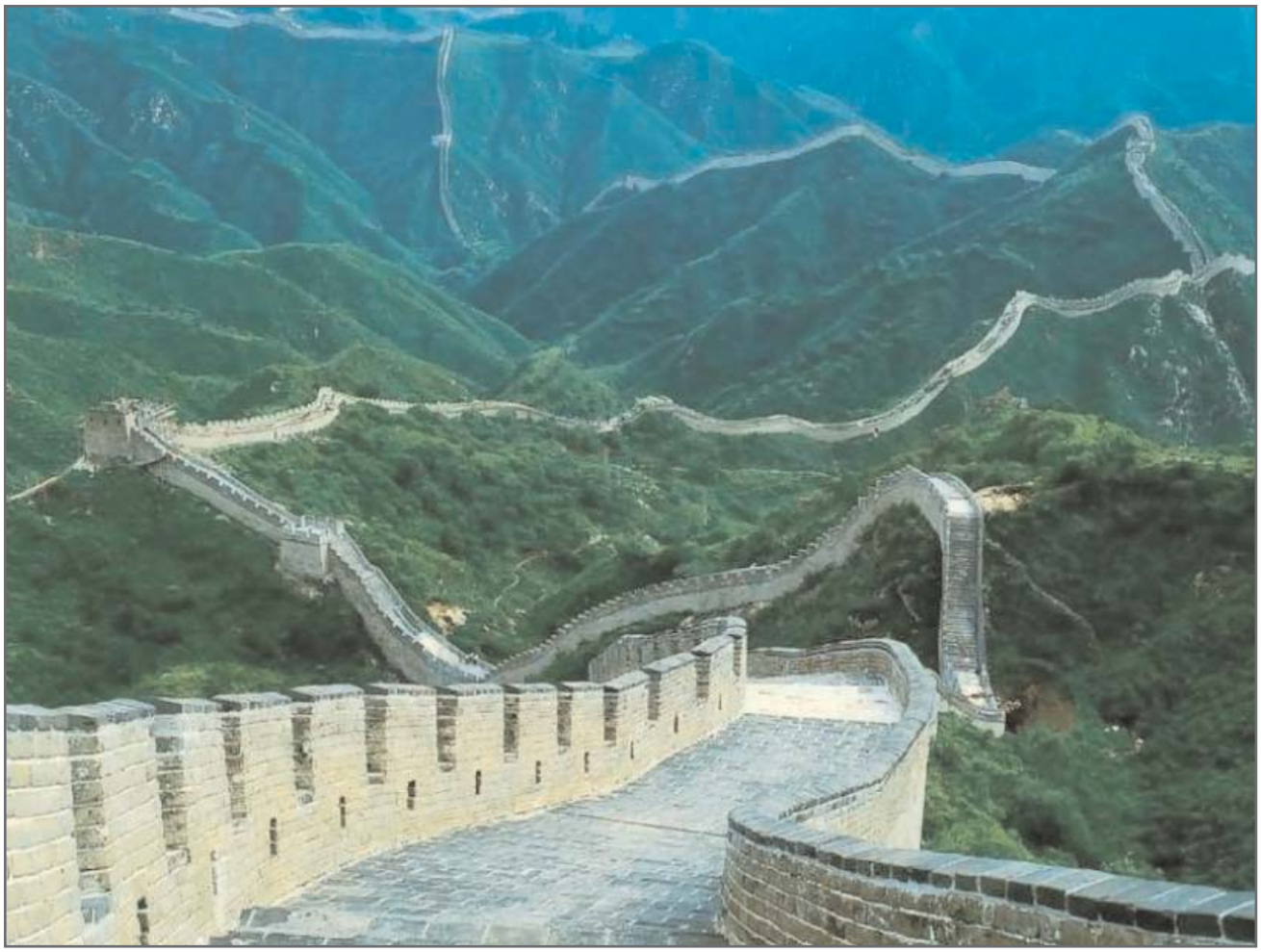
China: Awakening Giant



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W. Michael Cox and Jahyeong Koo
Federal Reserve Bank of Dallas

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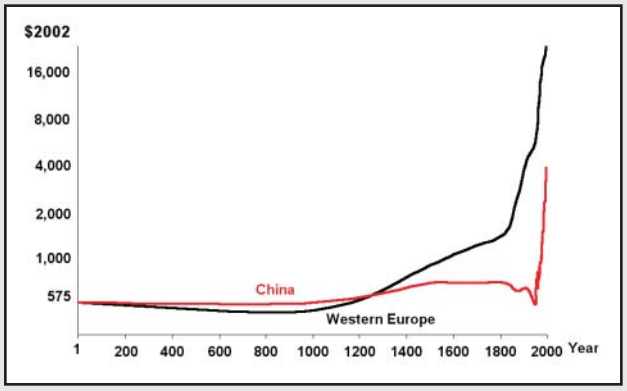
China: Awakening Giant

China has had four distinct periods in its 4,000-year history. As far back as there's data, and until the 16th century, China's economy performed on par with countries elsewhere in the world. **Figure 1** plots GDP per capita over the period from 1 to 1500 A.D. and shows that for over 1,000 years China's economy outperformed that of Western Europe. Toward the end of the Ming Dynasty, however, and throughout the Ching dynasty, China stagnated—its GDP per capita rising virtually nothing for over 300 years. Western Europe at this time enjoyed rapid economic development, riding the scientific revolution that began in the 11th century. Around the 19th century, growth in Western Europe skyrocketed, while China slipped into decline as it shunned progress and closed its doors to the outside world. China's isolationism led eventually to invasion from Western and Japanese forces, driving the nation's GDP per capita back down to levels seen 2,000 years earlier. Just a quarter century ago, China began to awaken from its 500-year sleep, and today it is rapidly catching up with the Western world.

Figure 1: GDP per Capita: China and Western Europe: 1-1998 A.D.

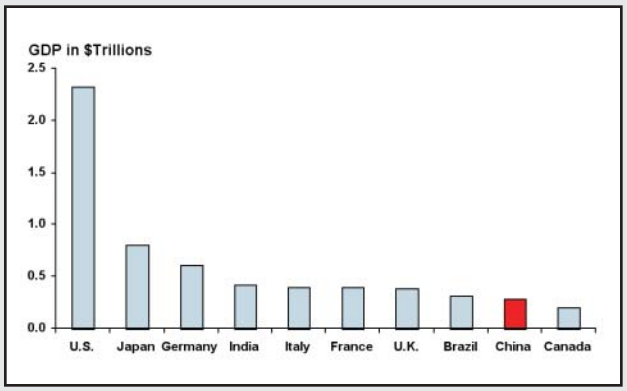


SOURCES: Maddison, Angus (2001), *The World Economy: A Millennial Perspective*, Organization for Economic Cooperation and Development, p. 42; authors' calculations.

The year 1978 marks a turning point in China's modern history, as Deng Xiaoping began to remake the economy around market principles. In 1978, China had the world's ninth largest economy, with a GDP just one-eighth that of the United States and a third that of Japan (**Figure 2**).

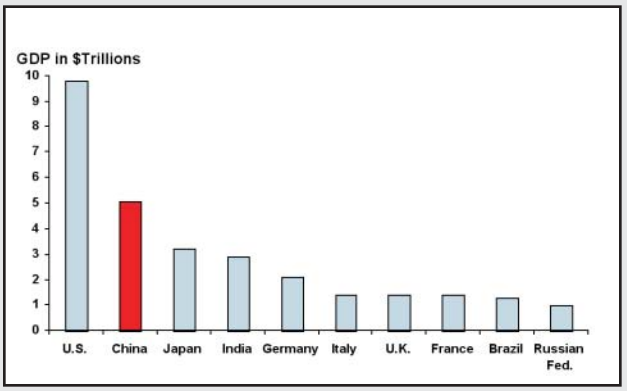
But by 2001, China had grown to the world's second largest economy, with a national output over half that of the United States and 60 percent larger than Japan's (**Figure 3**).

Figure 2: The World's Largest Economies: 1978



SOURCE: *World Development Indicators*, World Bank.

Figure 3: The World's Largest Economies: 2001



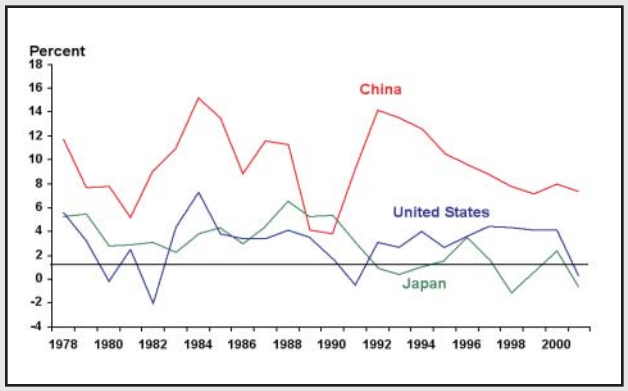
SOURCE: *World Development Indicators*, World Bank.

China's growth rate has slowed somewhat from its astonishing double-digit pace of the mid-1980s and early 1990s, but still its GDP is expanding at roughly 8 percent per year (**Figure 4**). At this rate, and assuming, say, a 3 percent average annual growth rate for the United States, China will ascend to the world's largest economy in just 12 more years (by 2015).

Whether or not China continues to grow at such a rapid pace remains to be seen, but with its population and labor force being so large, China's preeminence is inevitable if its modern development continues (**Figure 5**). At 1.3 billion, China's population is 4.5 times that of the United States. The labor force comparisons are astounding. The United States has roughly 130 million workers. China's has 760 million—six times that of the United States. It is truly a giant.

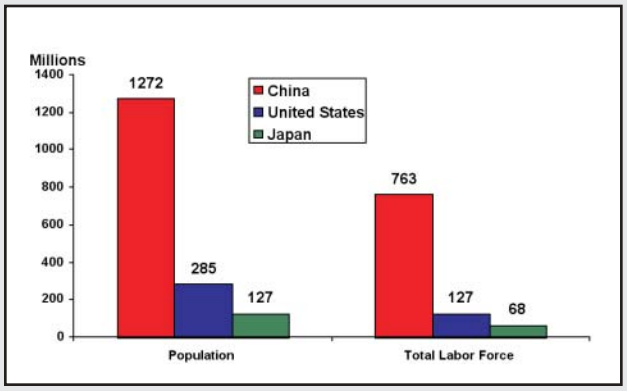
We look at the effects of China's awakening on the world economy—effects in five major areas: world production and trade, world capital flows, inflation, consumer demand and, finally, education and technology.

Figure 4: GDP Growth Rate



SOURCE: *International Financial Statistics*, International Monetary Fund.

Figure 5: Population and Total Labor Forces

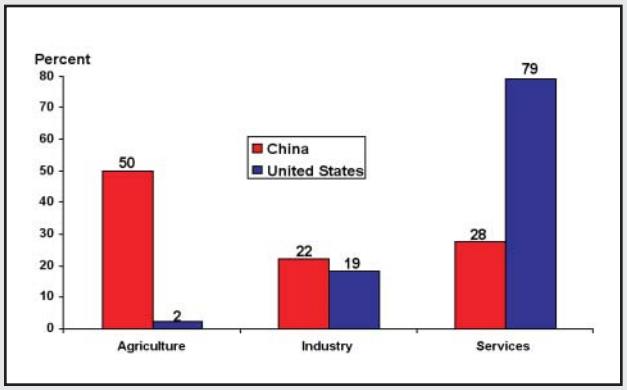


SOURCE: *World Development Indicators*, World Bank.

World Production and Trade

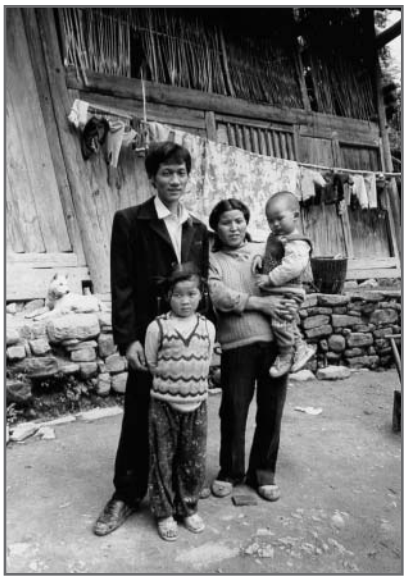
China is a nation in transition from an agricultural economy to an industrial one. **Figure 6** shows 50 percent of China's labor force still works in agriculture, as compared with just 2 percent in the United States. Roughly the same fraction in each nation works in industry—the combination of manufacturing, mining and construction. The industry figure is 22 percent in China and 19 percent in the United States. Just 28 percent of Chinese work in the services sector, whereas 79 percent do so in the United States. China surely will transition one day to a largely services economy and outgrow (so to speak) manufacturing, as did the United States in gaining its wealth, education and human capital. But right now China is following the footsteps of early 20th century America and mid-20th century Japan, that is, developing its industrial base.

Figure 6: Where China Works



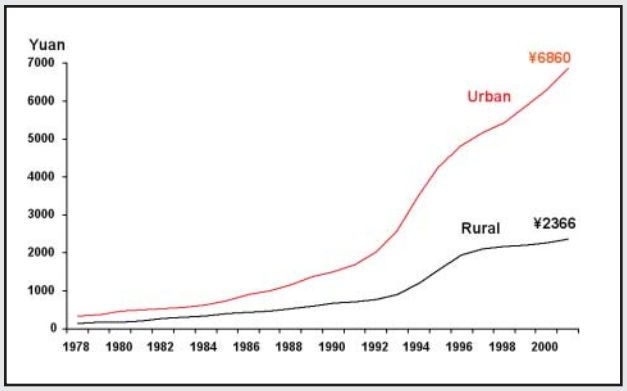
SOURCES: *China Statistical Yearbook,* National Bureau of Statistics; Bureau of Economic Analysis.

The picture below epitomizes the typical Chinese family in transition from farm to factory. The male works in a city factory, living in a company dormitory, returning to the country twice a year to visit his family. He works in the city because wages there are much higher than in the country. Urban workers in 2001 earned an average of 6,860 yuan, whereas rural workers made just 2,366 (**Figure 7**).



"China 21"/Ruby Yang 2001

Figure 7: Per Capital Income of Urban and Rural Workers



SOURCE: *China Statistical Yearbook,* National Bureau of Statistics.

Chinese factory workers earn more than those in agriculture for two (not unrelated) reasons. First, factory goods are readily traded in the world. China's top exports in 2001 were all industrial goods—textiles, fabric, footwear, furniture, electronics and so on (**Figure 8**). Second, factory workers are generally more productive than those in agriculture because they have more capital with which to work. This may not look like a lot of machinery and equipment for workers to use compared with what U.S. factory workers have. But it's a lot more than what's found in Chinese agriculture, where workers toil mainly with their hands and with little of the technology found on U.S. farms.

Figure 8: Top Ten China Exports: 2002

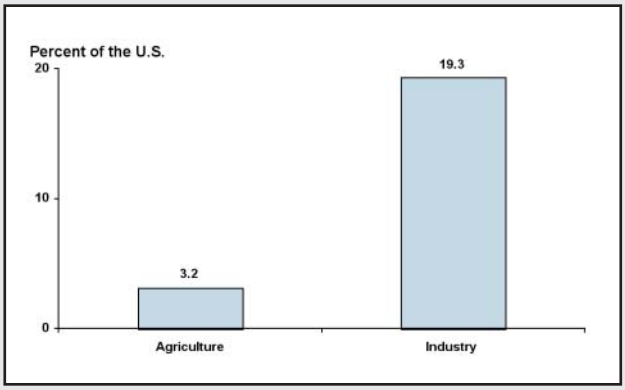
Rank	Export Items	Millions
1	Textile garments	$ 33,897
2	Automatic data processing machines and units	20,113
3	Footwear and parts thereof	11,092
4	Textile yarn, fabrics and make-up articles	9,056
5	Toys	5,576
6	Furniture	5,362
7	Radio telephone sets	5,289
8	Aquatic products	2,876
9	Electronic integrated circuits & microassemblies	2,651
10	Coal	2,533

SOURCE: *China Customs Statistics.*

Student Photo, Carleton College program

FAO photo by F. Botts

Figure 9: Productivity: China vs. United State



SOURCES: *China Statistical Yearbook*, National Bureau of Statistics; *World Development Indicators*, World Bank; Bureau of Economic Analysis.

Productivity in China's agricultural sector—measured as output per worker—averages just 3.2 percent of that on U.S. farms (**Figure 9**). One U.S. farm worker produces more than 31 Chinese farm workers; one U.S. factory worker produces more than five Chinese factory workers. Employment in China is shifting to manufacturing because productivity and wages there are higher than in agriculture.

But manufacturing jobs are also shifting to China from *other* parts of the world because China's labor is so much cheaper than most places (**Figure 10**). You might say there are four tiers of manufacturing wages in the world—high wages like those found in Japan, the United States and most of Europe; second-tier wages, such as those of other Asian economies; wages in less developed countries, such as Mexico and Brazil, which are substantially lower; and wages in China, which are lower still.

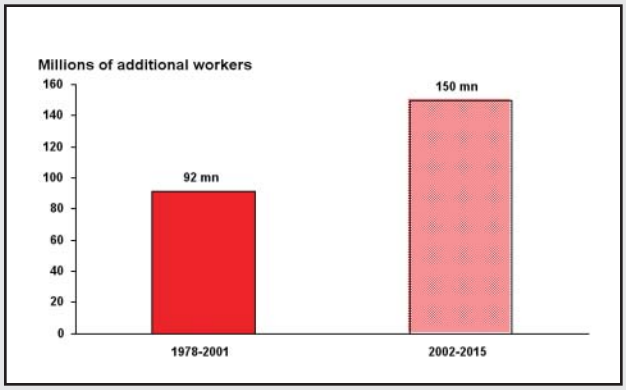
Economists estimate that over the next decade or so, China's industrial sector will have to create jobs for over 150 million workers, as it did for nearly 100 million workers during the 1978–2001 period (**Figure 11**).

Figure 10: Four Tiers of Wages: Hourly Pay in Manufacturing: 2001

Japan	$16.46
U.S.	16.14
Europe	14.13
Singapore	6.72
Korea	5.69
Taiwan	5.18
Mexico	2.08
Brazil	2.04
China	0.61

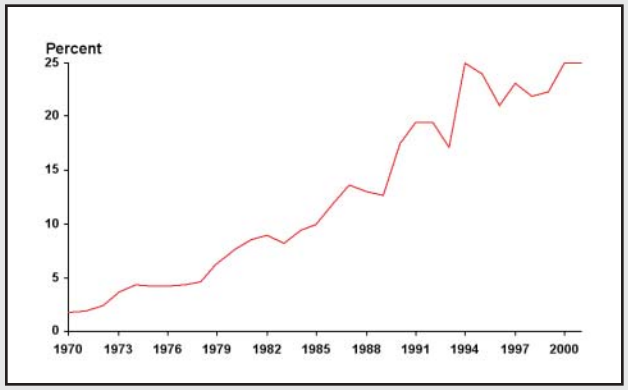
SOURCES: Bureau of Labor Statistics; *China Statistical Yearbook*, National Bureau of Statistics.

Figure 11: China's Growth in Industry Employment



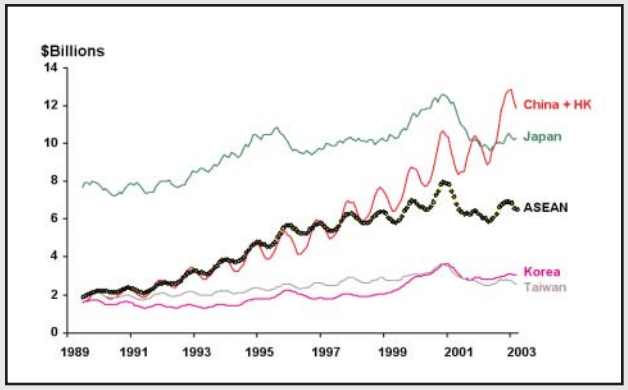
SOURCES: Dahlman, Carl J. and Jean-Eric Aubert (2001), *China and the Knowledge Economy: Seizing the 21st Century*, The World Bank, p. 16; Reutersward, Anders (2002), "Labour Market and Social Benefit Policies," in *China in the World Economy: The Domestic Policy Challenges*, Organization for Economic Cooperation and Development, p. 537.

Figure 12: China's Exports as a Share of GDP



SOURCE: *International Financial Statistics*, International Monetary Fund.

Figure 13: China: Leading Asian Exporter to the U.S.



SOURCE: *Direction of Trade Statistics*, International Monetary Fund.

China continues to ramp up to a largely manufacturing-for-export nation, putting 25 percent of its GDP out to the rest of the world in 2001, up from less than 5 percent in 1978 (**Figure 12**).

China has overtaken Japan as the leading Asian exporter to the United States. **Figure 13** shows U.S. monthly imports from China (in red), Japan (in green), and other Asian nations. You can see the huge seasonal pattern of toys and other festive items imported from China each Christmas, and you can clearly also see China methodically gaining U.S. import market share from Japan and all its other neighbors.

China's awakening is, of course, already affecting industry in other nations. Consider again, for example, Japan and add Mexico. From 1978 to 1999, both China and Mexico gained market share in clothing, textiles and related industries at the expense of other producers, such as Japan (**Figure 14**). We don't have more recent data than this at the specific industry level, but the overall export numbers indicate that even Mexico is having trouble now keeping up with China's export push. Over the period from 1980 to 1999, Mexico's exports rose by $121 billion, while China's rose by $177 billion. But in just the past three years, China's exports have shot up by $188 billion—more than the previous two decades—while Mexico's inched up by just $13 billion (**Figure 15**).

Figure 14: Share of World Exports in Clothing Textile & Like Goods

	1978	1999
China	2.4	15.4
Mexico	0.6	4.5
Japan	20.5	13.2

SOURCE: NAPES database, Australian National University.

Figure 15: Export Gain for China & Mexico

	Export Gains (Billions of US Dollars)	
	1980-99	1999-02
China	177	188
Mexico	121	13

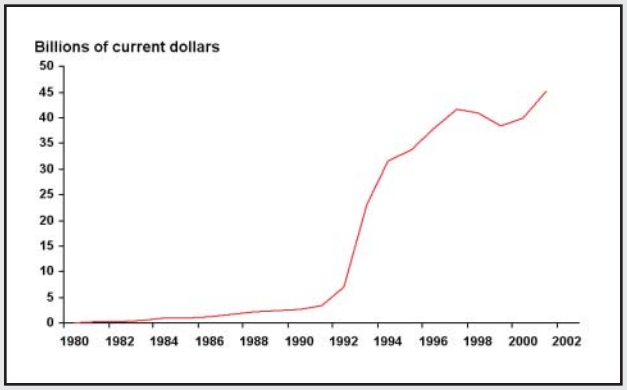
SOURCE: *Direction of Trade Statistics*, International Monetary Fund.

Capital Flows

A brief look into capital flows reinforces China's growing status in world markets. China is clearly getting a lot of investors' attention worldwide. As late as 1980, virtually no capital flowed into China from the rest of the world. Today, the figure is approaching $50 billion annually (**Figure 16**). Where is the money coming from, you might ask. From all over the globe, including from foreigners who might otherwise have invested in the United States (**Figure 17**).

Capital seeks labor with which to work. And China's massive shift from farm to factory will likely offer world capitalists the labor with which to earn good rates of return for decades.

Figure 16: Net Capital Inflows into China

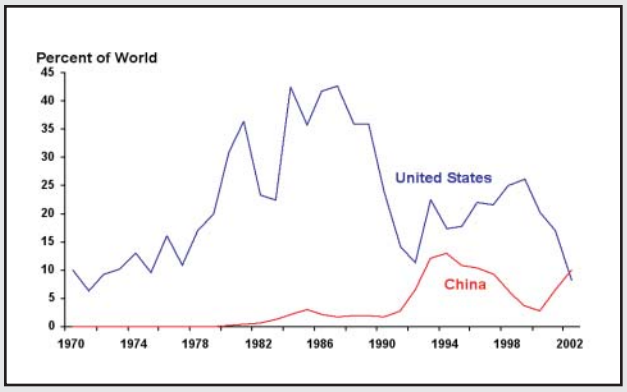


SOURCE: *World Investment Report,* United Nations Conference on Trade and Development.

Inflation

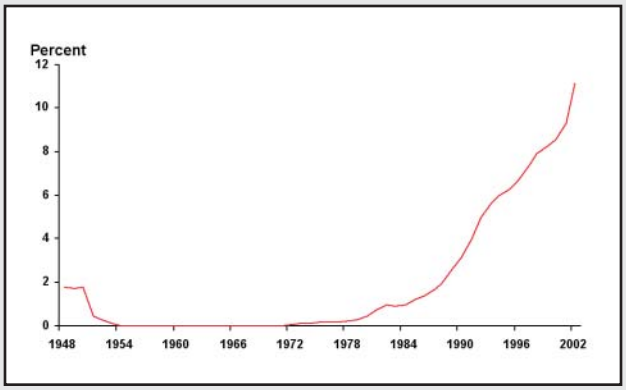
Our growing imports from China appear to be putting downward pressure on U.S. inflation. U.S. imports from China have grown from nil in the late 1970s to nearly 12 percent today, putting China equal to Mexico in terms of our imports from nonindustrialized nations (**Figure 18**). Roughly 23 percent of U.S. imports from nonindustrialized nations are from China and Hong Kong (**Figure 19**). This is China's peer group, so to speak, in terms of the products produced and the direct competition. But China's influence over its competitors' pricing power likely extends far beyond its 23 percent share as it competes increasingly with Korea, Taiwan and the Association of South East Asian Nations, as well as with Mexico.

Figure 17: Foreign Direct Investment as a Percentage of World Total



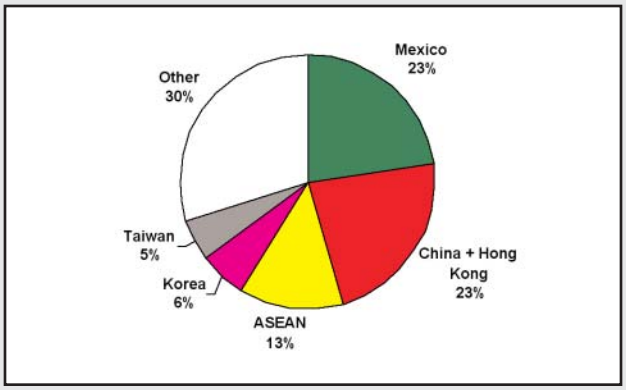
SOURCE: *World Investment Report*, United Nations Conference on Trade and Development.

Figure 18: U.S. Imports from China as a Percent of Total Imports



SOURCES: *Direction of Trade Statistics, International Financial Statistics,* International Monetary Fund.

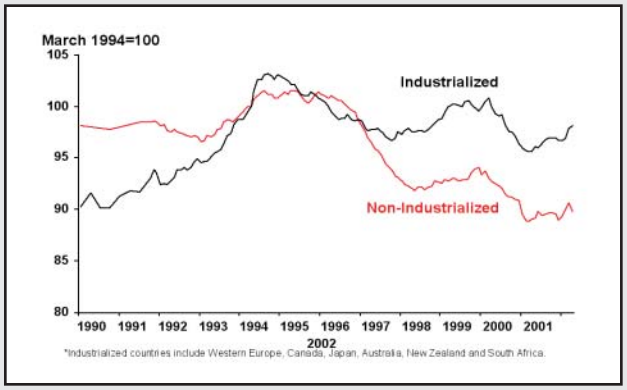
Figure 19: U.S. Imports from Non-Industrialized Countries



SOURCE: U.S. International Trade Commission Trade Dataweb.

This is important because roughly half of all U.S. imports today are from nonindustrialized nations, and the price index for manufactured goods from these nations has been falling for the past eight years (**Figure 20**). In short, China's growing industrial output has been restraining world and U.S. inflation.

Figure 20: U.S. Import Price Index for Manufacturing Goods



SOURCE: Bureau of Labor Statistics.

Consumer Markets

As China produces more and makes economic gains, it is consuming more as well. China still has a large poor population, living mainly in the countryside, and there's the very rich. Fact is, China's income distribution is about the same as America's, just centered at a much lower middle.

The pictures below show some of the goods you might see in a rural household (immediately below on left), and urban middle-income households. Notice the TV, a VCR, microwave and so on.

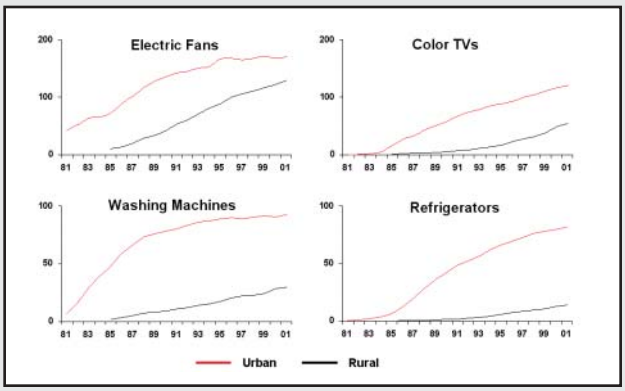
Longqi Lin

www.beijingvacationapartments.com

Rod Christian, Mesa College

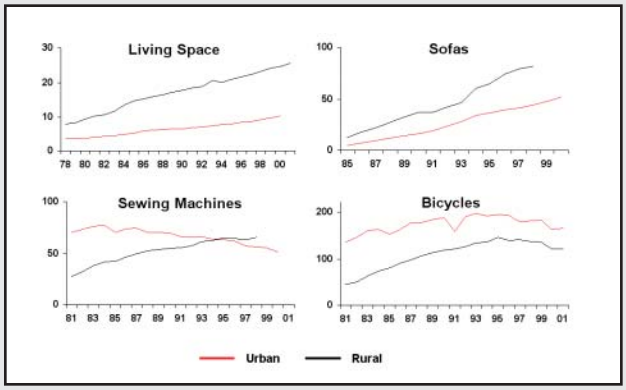
Marshall University, Teach in China program

Figure 21: Consumer Goods per 100 Households



SOURCE: *China Statistical Yearbook,* National Bureau of Statistics.

Figure 22: Consumer Goods per 100 Households



SOURCE: *China Statistical Yearbook,* National Bureau of Statistics.

Chinese households—both in the countryside (shown in black) and city (in red)—increasingly own electric fans, color TVs, washing machines and refrigerators (**Figure 21**). City dwellers tend to have more of most things. But with less living space than country folks, they tend to own a foldout bed rather than the standard couch. As China's population gains wealth, it is buying more of most things but less of others, such as sewing machines (bottom left) and bicycles (bottom right) (**Figure 22**).

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The bicycle has been the main means of transportation in China for over half a century. It's affordable and versatile, and nearly 100 people in China own bikes for every one who owns an automobile. One day, a lot of these bikes are going to be replaced with cars.

Rod Christian, Mesa College

Indeed, China is a burgeoning market for many consumer goods, as this U.S. comparison suggests (**Figure 23**). China has 583 bikes, 22 motorcycles and just six cars for every 1,000 people. The United States has not six but 475 cars per 1,000 people. Raising China's auto ownership rate to, say, just a fifth of U.S. levels would require producing 114 million more vehicles—nearly as many as are already operating in the United States. There's still a lot of room to go in selling such consumer staples as radios and TVs and the electricity to run them.

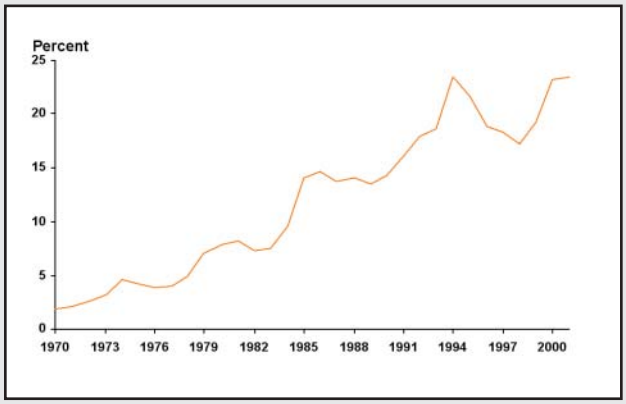
As China exports more of what it produces, it will import more of what it consumes, creating a huge market for foreign producers (**Figure 24**).

Figure 23: A Burgeoning Consumer Market

Per 1,000 people (unless noted)	China	U.S.
Bicycles	583	361
Motorcycles	22	15
Autos	14	759
Telephone mainlines	137	667
Mobile phones	110	451
Radios	339	2117
Televisions	304	835
Cable TV subscribers	69	257
Living space (sq. ft. per capita)	66	718
Electric power consumption (kwh per capita)	827	12,322

SOURCES: China: Bicycle, autos, living space, *China Statistical Yearbook*, National Bureau of Statistics. U.S.: Bicycle, www.bike link.com; living space, *Housing Characteristics, 1993*, U.S. Department of Energy, Energy Information Administration. All other data are from *World Development Indicators*, World Bank.

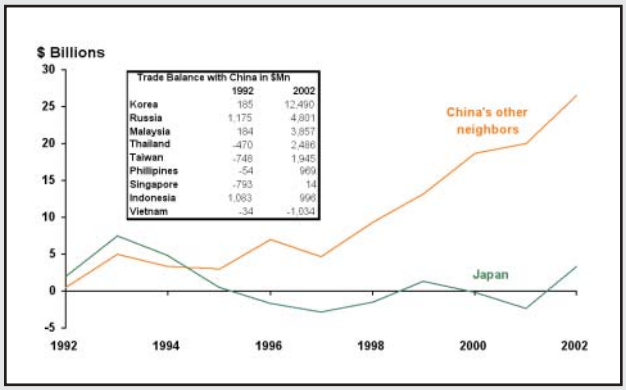
Figure 24: China's Imports as a Share of GDP



SOURCES: *International Financial Statistics, Direction of Trade Statistics,* International Monetary Fund.

Figure 25 shows the bilateral trade balance of China's neighbors over the 1992–2002 period. The green line shows Japan's trade balance with China, which is more or less going sideways—neither improving nor worsening substantially. The orange line shows China's other neighbors—Korea, Russia, Malaysia, Thailand, Taiwan, Philippines, Singapore, Indonesia and Vietnam—which have seen their balance improve from a combined surplus of $500 million to $26.5 billion. With the exception of Vietnam, every one of these nations now has a trade surplus with China.

Figure 25: A Growing Trade Surplus with China



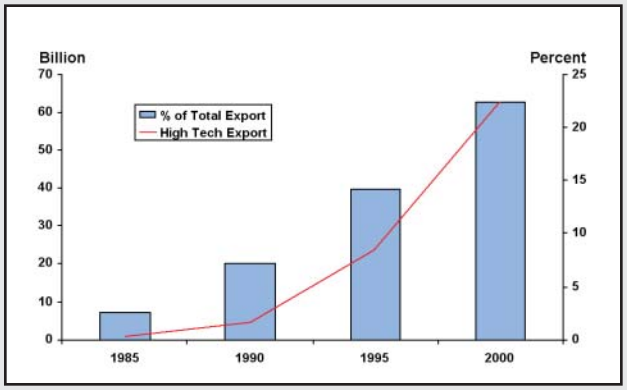
SOURCES: *Direction of Trade Statistics*, International Monetary Fund; Ministry of Finance, Republic of China (Taiwan).

Education and Technology

China now is a low-wage nation, abundant in unskilled labor. If China is to improve its living standard substantially, it will have to produce and export more knowledge-intensive products. Indeed, China is already doing so, as **Figure 26** suggests. High-tech is 23 percent of China's exports today, compared with less than 1 percent in 1985.

In its early years of industrialization, Japan mass-produced relatively unsophisticated electronics—such as transistor radios—and progressively upgraded production to more sophisticated, higher dollar exports, as typified by the Lexus automobile. That's a model most other modern wealthy nations—including the United States—have followed, and it's one that can work for China, too. But it requires building education and technology far above current levels.

Figure 26: Export of High Tech Products

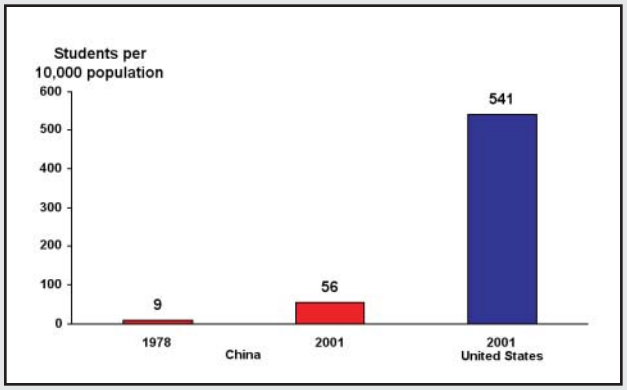


SOURCES: *World Investment Report* (2002), United Nations Conference on Trade and Development; *Direction of Trade Statistics*, International Monetary Fund.

lu@infomagic.net

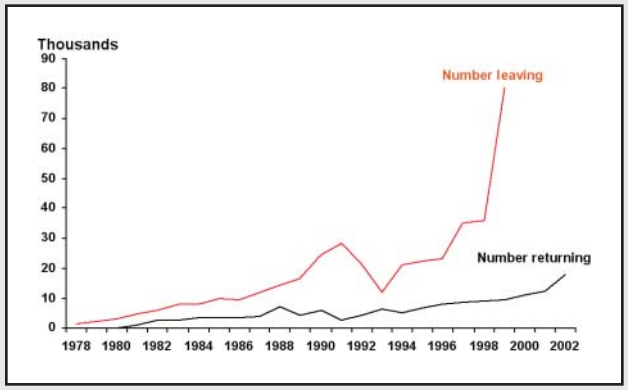
China today has six times the university population it did in 1978—56 students per 10,000 population, compared with just nine back then (**Figure 27**). But that's still just about a tenth of U.S. levels, not enough to sustain growth. So more Chinese students are leaving to get their college and advanced degrees in industrialized countries. 1999 is the latest year for which we have data on the number of Chinese students leaving the country to study abroad, but even back then the data showed a huge jump.

Figure 27: University Students



SOURCES: *China Statistical Yearbook,* National Bureau of Statistics; U.S. Bureau of the Census.

Figure 28: Number of Students Studying Abroad and Returning



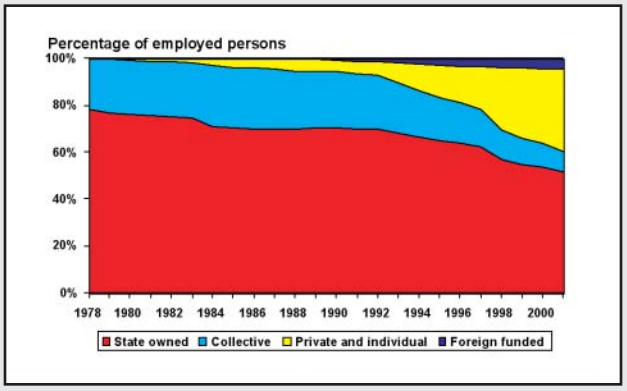
SOURCES: Zhang Guochu and Li Wenjun (2002), "International Mobility of China's Resources in Science and Technology and Its Impact," in *International Mobility of the Highly Skilled*, Organization for Economic Cooperation and Development; 2001 and 2002 returning students numbers, Ministry of Education, China.

Interestingly also—and exactly as one would expect—more Chinese students today are returning to China once they complete their education (**Figure 28**). This is probably just the beginning of a trend, where more and more students return home as China's economy develops and becomes more privatized.

Nearly 40 percent of China's workers today are employed in private or foreign-funded enterprises (shown in yellow and blue). That's up from zero in 1978, and it means they can now run a business for profit (**Figure 29**). Economic theory suggests that as market principles take greater and greater hold in China, it will inevitably offer its population a better rate of return on education, more folks will get educated, and more will stay home. As this happens, China will be able to transition to the next phase—a high-tech and services economy.

But China will also have to develop its information age infrastructure. The United States has 625 personal computers per 1,000 people; China has just 19. The United States spends $2,924 per capita on information and communications technology annually; China spends just $53. We have nine times the scientists and engineers engaged in research and development per million people. China has 184 secure Internet servers; the United States has 78,126. We have 20 times as many Internet users on a per capita basis (**Figure 30**).

Figure 29: Moving from State-Owned to Private Enterprise



SOURCE: *China Statistical Yearbook*, National Bureau of Statistics.

Figure 30: Education, Science and Technology

	China	U.S.
Literacy rate	85.8%	97.0%
High school graduates aged 25 ~ 65	18.0%	87.4%
College graduates ages 25 ~ 65	5.2%	27.8%
University students per 10,000 population	56	541
Personal computers (per 1,000 people)	19	625
Information and communication technology expenditure per capita (US$)	$53	$2,924
Scientists & engineers in R&D (per million people)	473	4,099
Scientific and technical journal articles	11,675	163,526
Secure internet servers	184	78,126
Internet users (per 1,000 people)	26	501

SOURCES: China: High school graduate, college graduate: National Bureau of Statistics; university students: *China Statistical Yearbook*, National Bureau of Statistics. U.S.: Literacy rate: *The World Factbook,* U.S. Central Intelligence Agency; high school graduate, college graduate, university students: U.S. Bureau of the Census. All other data are from *World Development Indicators*, World Bank.

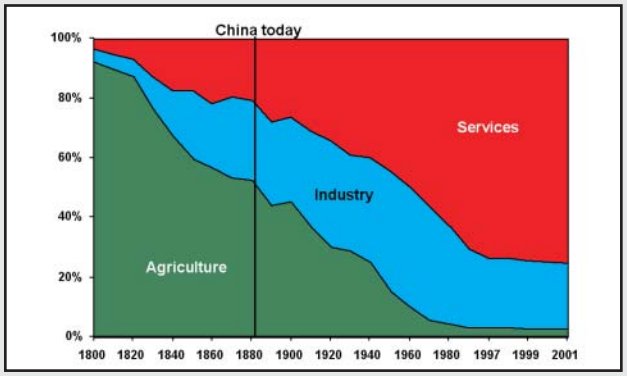
The Outlook for China

Right now, China's labor force is allocated between agriculture, industry and services roughly as America's was in 1882 (**Figure 31**). This does not mean, though, that it will take China 120 years to reach current U.S. living standards. Just as when going through a dense jungle, it's much easier to follow in the path others have already cut than to cut it yourself. Followers can always grow faster than leaders through technology transfer.

Currently, China's per capita GDP is roughly $4,800—about one-eighth that of current U.S. levels (**Figure 32**). That's an income roughly equal to 1901 America. But regardless of whether China's living standards ever fully catch up with ours, the massive change that's occurring in China will have profound effects on the world economy for decades. Certainly the development of Japan and Germany greatly affected other nations, even though Japan and Germany never fully converged to our living standards and even though the combined labor force of Japan and Germany is only 110 million—just one-seventh the size of China's. One would expect the magnitude of China's influence on the world to be much greater.

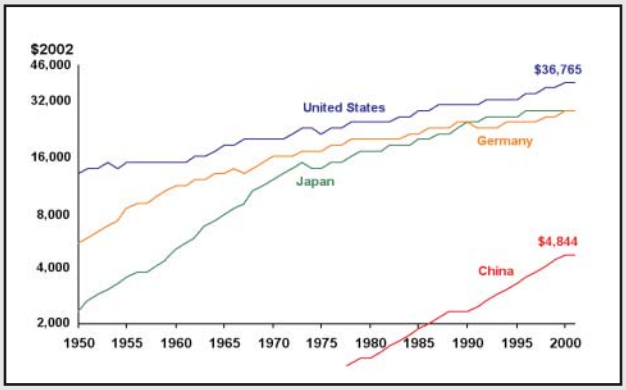
In closing, China today is at an intersection of yesterday and tomorrow. Just a quarter century ago, China was a largely agricultural nation—isolated, less educated and stagnant. But today, China is rapidly transforming itself into an industrial nation and thereby raising its population's living standards.

Figure 31: Where America Worked: 1800-2001



SOURCES: Susan Carter et al., eds. (2001), *Historical Statistics of the United States: Colonial Times to 1970; Historical Statistics of the United States: 1789–1945*, U.S. Bureau of the Census; *Employment and Earning*, U.S. Department of Labor.

Figure 32: Catch Us If You Can: Per Capita GDP: 1950-2001



SOURCES: Maddison, Angus (2001), *The World Economy: A Millennial Perspective*, Organization for Economic Cooperation and Development, Table C; *World Development Indicators*, World Bank.

Jonathan Kraft, www.strive4impact.com

To progress much further beyond this stage and toward the heights of modern nations, China must develop its knowledge and service base—which it is doing. China's full transformation can happen; it probably will happen; indeed, it already *is* happening in China's modern cities—Shanghai, Beijing, Qingdao, Guangzhou, Nanjing, Shenzhen and so on.

Guangzhou

billhocker.com

Qingdao

Ming Kou/www.qindaochina.net

Shanghai

Shanghai Municipal Information Office

And so the lifestyle China's youth will grow to enjoy should be far above what previous generations have ever known.

Rod Christian, Mesa College