

China: Is the World Really Prepared?

Critical Issues and Investment Implications

- *When, where and how will Chinese firms emerge on the world stage?*
- *Which will benefit more from China's rapid growth—Chinese or foreign firms?*
- *What are the sources of Chinese or foreign advantage?*
- *What kinds of non-Chinese companies are likely to benefit most from China's growth?*
- *What kinds of non-Chinese companies are likely to be disrupted by competition from China?*

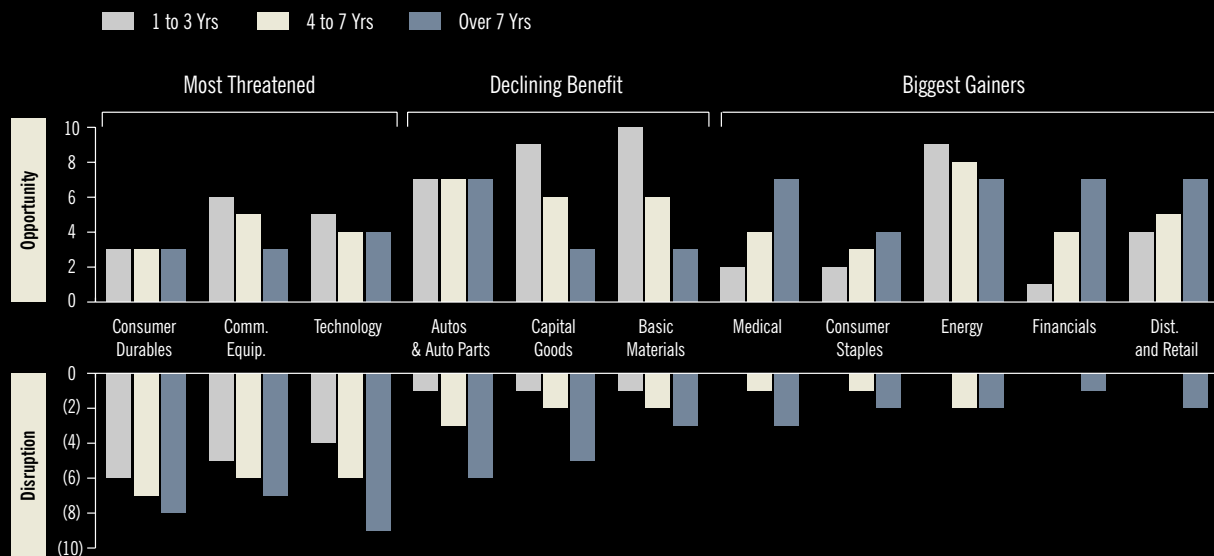
Executive Summary

- Foreign executives and investors widely view China as a cheap manufacturing platform and a huge and rapidly growing market for foreign products. However, Chinese growth is likely to foster world-class companies that will build their own brands and challenge foreign incumbents in China and around the world.
- Chinese firms will share in the riches created by the expansion of the Chinese economy and may in fact benefit more than foreigners.
- China's growth is creating a roster of new entrants in global industries that many investors have long as-

sumed to be stable and mature. We expect emerging Chinese companies to disrupt markets around the world, as Japanese companies began to do 30 years ago and Korean firms have begun to do more recently.

- For investors, the implication is clear: They must evaluate which industries and incumbents are likely to be helped or hurt as Chinese companies gradually make their entrances on the global stage. Many of the biggest winners in the short term are sectors that are likely to see the benefit decline sharply over time (*Display 1*). Meanwhile, investors are overlooking some of the biggest long-term gainers because the near-term benefits are limited.

Display 1
Opportunity and Potential Disruption for Incumbents by Global Sector



Source: Alliance Capital

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“China: Is the World Really Prepared?” is the second in a series of studies by Alliance Capital’s Research on Strategic Change group. Unlike most research, which covers particular industries and companies within them, the Research on Strategic Change group seeks to find investment ideas that stem from broad changes powerful enough to profoundly influence corporate performance across multiple sectors. China’s emergence as a global industrial power clearly constitutes one such transformative trend.

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China: Is the World Really Prepared?

By **Amy Raskin,** and **Brad Lindenbaum,**
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INTRODUCTION

For more than a century, China has conjured dreams of a seemingly endless market for Western goods. Recent rapid economic expansion has brought that dream closer to reality. Today, firms throughout the industrialized world are reaping the benefits of Chinese growth by selling products into China's surging markets and moving factories there to capitalize on the country's competitiveness as a manufacturing platform. Reflecting these trends, Chinese imports and exports each soared from approximately \$13 billion in 1980 to more than \$450 billion in 2003.¹ An astounding 55% of Chinese exports now originate from foreign-related enterprises.² With the exception of the upward pressure it has exerted on input costs for raw materials, the rise of China has been overwhelmingly positive for foreign firms thus far.

From an investment perspective, however, the current benefits of Chinese growth veil the disruptive longer-term consequences of Chinese industrial expansion. Foreign firms may continue to shift production to China and increasingly look to Chinese markets for growth. However, they will not go unchallenged in their pursuit of Chinese customers. Most of the goods sold in China will be made by Chinese companies. These companies will mature rapidly along with the Chinese economy, grow more sophisticated and eventually venture beyond China's borders. Fixated on the age-old panacea of the billion-strong Chinese

market, few investors have considered the corollary of Chinese growth: China will produce world-class companies, these firms will build their own brands, and they will challenge incumbents in China and around the world.

This report analyzes the debut of Chinese competitors on global markets. Our findings are based on meetings with over 70 Chinese and foreign companies. We assess the resources, skills and strengths of Chinese and foreign firms and dispel common misperceptions about the competitive advantages of each. We then explore the strategies that leading-edge Chinese firms are employing to gain advanced technology, obtain recognized brands and access foreign distribution.

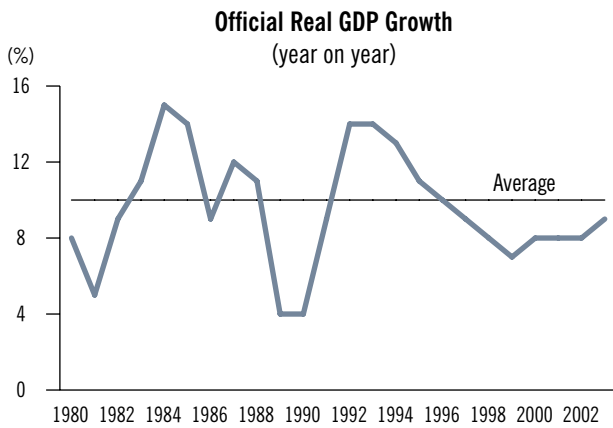
For some foreign companies, the outlook is bleak. In many of these cases, Chinese competitors have already depressed pricing and increased input costs. For others, such as basic-material suppliers and auto manufacturers, the initial benefits are likely to subside over the next several years as supply and demand revert to a long-term equilibrium and Chinese competitors garner the expertise needed to produce world-class products. Perhaps surprisingly, some of the clearest long-term beneficiaries operate in areas like healthcare and finance, where sophisticated and complex markets create high barriers to entry for Chinese companies. ■

THE GROWING SIGNIFICANCE OF CHINA

A Macroeconomic Power

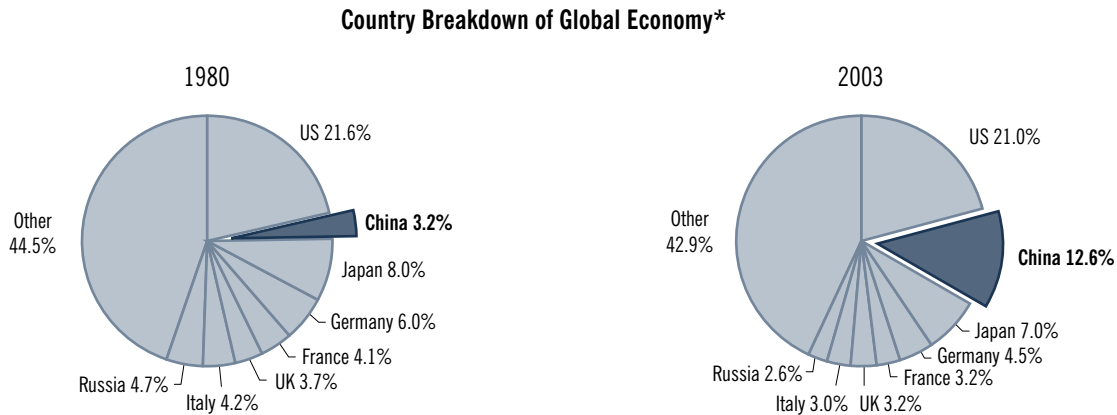
Chinese firms enjoy a number of competitive advantages, the most important of which may be the size and vitality of their domestic market. China's economy has grown impressively since Deng Xiaoping initiated reforms in the late 1970s (*Display 2*). From 1980 to 2003, China's real gross domestic product (GDP) rose on average 9.5% a year, according to official Chinese statistics.³ Many economists believe the official data understate the growth; they estimate that China's economy grew more than 10% per year over this period.

Display 2
China's Economic Growth Has Been Rapid, If Highly Variable



Source: CEIC Data

Display 3
Adjusted for Price Differences, China Is Now Second Only to the US in Share of the Global Economy



*At purchasing power parity
 Source: International Monetary Fund

As a result of its rapid growth, China more than quadrupled its proportion of global output in nominal dollars between 1980 and 2003; its economy is now the world's seventh-largest.⁴ In terms of purchasing power, the leap in China's relative importance has been even more dramatic. Factoring in real purchasing power within China increases the effective size of the economy more than fourfold.⁵ At purchasing power parity, Chinese GDP grew from 3.2% of global output in 1980 to an astounding 12.6% in 2003 (*Display 3*). By this measure, China has surpassed Japan, Germany, France, the UK, Italy and Russia to become the second-largest economy in the world.⁶

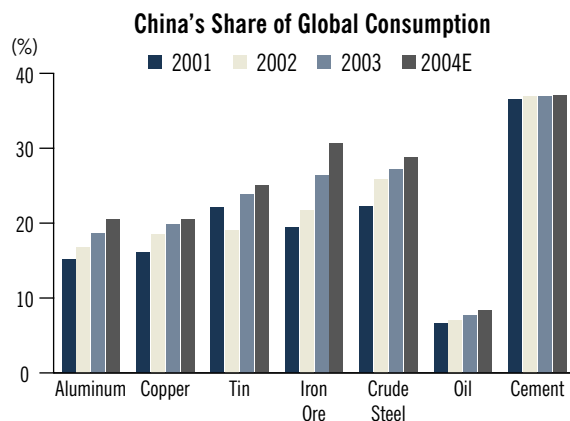
Once an interesting but peripheral player, China is now a critical factor in global markets. In 2003, China became the fifth-most-active trading nation in the world, ahead of the UK, Italy, Canada and Korea, and behind only the US, Germany, Japan and France.⁷ In the same year, China surpassed the US to become the world's largest recipient of foreign direct investment (FDI),* bringing its accumulated total to \$501 billion since 1980.⁸ China is now widely hailed as a preeminent manufacturing base. Entire industries are relocating there to exploit its low production costs and vast pool of cheap and efficient labor.

*More precisely, China's 2003 FDI trailed Luxembourg's, but Luxembourg is widely considered to be a center for holding companies and special-purpose vehicles.

China's newfound economic weight has exerted tremendous pressure on global demand for natural resources. From 1990 to 2003, Chinese electricity consumption more than doubled.⁹ China is currently installing 150 gigawatts of electric-generating capacity—more than twice the total capacity of the UK.¹⁰ In 2003, Chinese demand for raw materials helped boost worldwide prices for aluminum, copper and tin by 19%, 48% and 53%, respectively.¹¹ Chinese consumption accounted for nearly 20% of global demand for each material (*Display 4*). In steel, China spurred 79% of the growth in global consumption in 2003.¹² In that year, China consumed 37% of the world's cement,¹³ 27% of its crude steel¹⁴ and 8% of its oil, making it the second-largest user of petroleum in the world behind the US.¹⁵

Display 4

China Is Now the Leading Consumer of Many Raw Materials



Source: International Energy Agency (IEA), BP and broker estimates

The growth in Chinese raw-material consumption has reverberated around the world and has already affected the earnings of many companies in developed economies. While suppliers of natural resources and basic materials have enjoyed unprecedented demand, this demand has generally contributed to higher input costs that have hurt many global manufacturers. Caterpillar, the world's largest construction- and mining-equipment manufacturer, recently reported brisk sales growth, thanks in part to increased final demand from China, but it also suffered from higher expenses for steel and other materials. Other firms have seen their margins squeezed as Chinese demand has helped drive up raw-material costs while new competition from Chinese

suppliers has helped to drive down average selling prices. Maytag, a white-goods manufacturer, recently reported losses stemming partly from higher steel costs, while its Hoover vacuum business has endured the relentless assault of lower-priced Chinese alternatives.

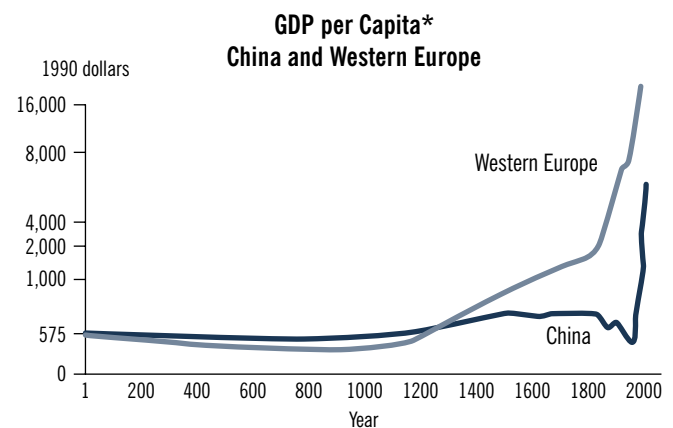
China is already laying the foundation for future growth. Chinese companies are making significant capital investments, beginning to employ new technology and management techniques and increasingly focusing on market-based investment objectives. The Chinese middle class is becoming larger and wealthier, accelerating consumption and reinforcing demand for further industrial growth. In this virtuous cycle of rising demand and increasing supply, China appears to have found the combination of ingredients needed to extend its economic expansion far into the future.

The Chinese Consumer: A New Force in Global Markets

Perhaps no group has benefited from China's economic success more than Chinese consumers. Ordinary Chinese have more disposable income than at any time in history, and the ranks of the middle class are expanding rapidly. Adjusted to reflect purchasing power, Chinese per-capita GDP increased from \$411 in 1980 to \$4,900 in 2003,¹⁶ propelling middle-class Chinese into the world economy on a scale not seen since the industrialization of Western Europe, the US and Japan (*Display 5*).

Display 5

Chinese Consumer Spending Power Has Shot Up Dramatically



*At purchasing power parity

Source: Angus Maddison, "The World Economy: A Millennial Perspective," Organisation for Economic Co-operation and Development (OECD), 2002

Even without adjusting for purchasing power parity, the growth of China's middle class is impressive. From 1980 to 2003, per-capita income increased more than sixfold in local currency terms,¹⁷ reaching \$1,087 in 2003.¹⁸ While this may seem paltry compared to developed-country incomes, the size of China's population and its vast pool of poor rural residents masks the presence of concentrated wealth.

Display 6
China's Share of Many Global Consumer Markets Is Soaring

Product	Chinese Consumption as a Percent of Global Total (units)			
	1990	1995	2003	2010F
Air conditioners	2%	16%	33%	39%
TVs	12	14	18	22
DVD players	NA	NA	15	18
Refrigerators	NA	12	14	15
Mobile phones	NA	2	13	14
Personal computers	1	3	9	12
Passenger cars	1	2	5	11
Passenger air travel*	4	6	7	9

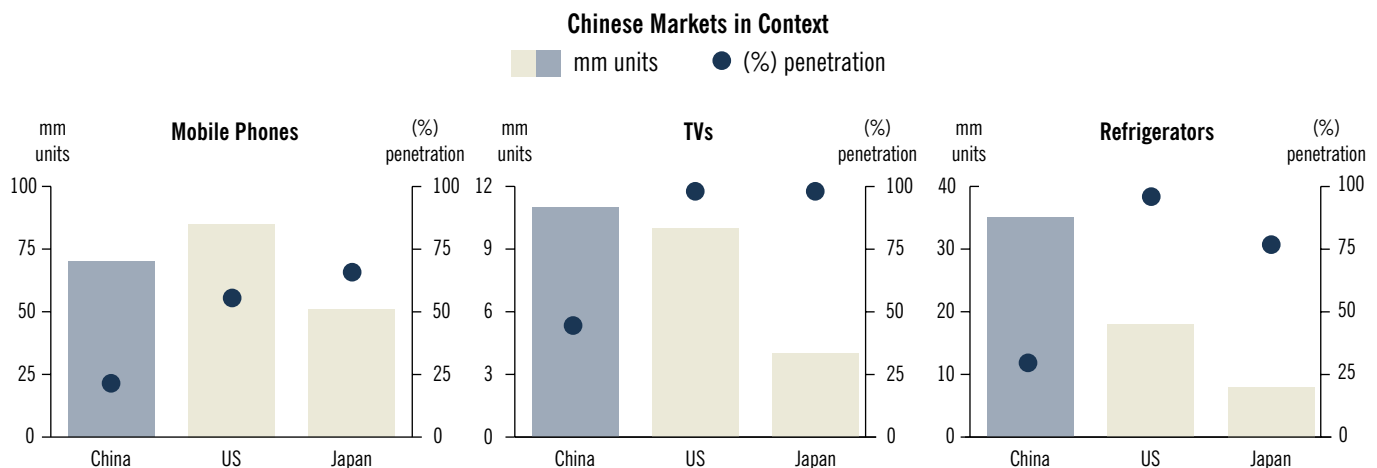
*Measured in revenue passenger kilometers
 Source: Automotive Resources Asia, BDACHina, Boeing, Gartner, iSuppli, Japan Refrigeration & Air Conditioning Industry Association, Guangdong Kelon, Haier, Sichuan Changhong, Skyworth, SVA, Volkswagen, Zoran, broker estimates and Alliance Capital estimates

Anecdotal sources support this belief. Geely Automobile Group, one of the largest Chinese car manufacturers, estimates that 50 million Chinese earn more than \$6,000 per year.¹⁹ GE China places this figure at closer to 90 million.²⁰ Several management teams, some of which oversaw large numbers of workers, reported average annual employee compensation in excess of \$7,000 in wealthier cities.²¹ At the top of the income spectrum, China is estimated to have 236,000 millionaires, more than Canada's 200,000.²² The World Bank calculates that the top 10% of Chinese society, or approximately 130 million people, earn an average per-capita income over \$3,100,²³ or almost \$14,000 per year in purchasing-power-parity terms. To put this in context, 130 million Chinese with purchasing power of \$14,000 per year gives China a middle class that is larger in number than the entire population of Japan or the combined population of France and the UK.²⁴

From Consumption to Market Power

China's tremendous size will make it one of the most important markets—and, in many cases, the predominant market—for a variety of goods. China already buys a critical amount of telecommunications equipment, industrial machinery and commercial vehicles; it is increasingly the final destination for consumer products (*Display 6*). China's consumers bought more than 70

Display 7
Low Penetration Rates Leave Room for Even More Growth



Penetration data for 2002, except US TVs for 2001.
 Source: *Appliance Magazine*, Federal Statistical Office of Germany, International Telecommunications Union, iSuppli, Matsushita Electric, World Bank estimates and Alliance Capital

million mobile phones in 2003,²⁵ making China the second-largest mobile-handset market in the world. Chinese now buy 16% of the world's refrigerators and 33% of its air conditioners.

As startling as China's newfound market presence is the speed with which it has assumed this role and the growth potential still ahead. From DVD players to TVs, construction equipment and passenger cars, China has arisen as a significant market in just a decade; in some cases, in just a few years.

The sudden, dramatic importance of Chinese markets should not be underestimated. In unit terms, China is now the largest market in the world for many consumer products (*Display 7*). Low penetration rates mean this trend is only likely to become more pronounced.

In many commercial markets, too, Chinese consumption has surpassed, or is likely to surpass, the unit volumes seen in developed markets (*Display 8*). Thus, it is set to usurp the advantage that the large size of their domestic markets has long conferred on US, European and Japanese companies.

The sheer scale and spectacular growth of China's markets has attracted hordes of foreign firms. Since 1980, China has amassed over \$501 billion of FDI, giving it the fourth-largest stock in the world.²⁶ Whereas much of the initial FDI was directed toward using China as a platform for exports, more recent investors have targeted China's booming internal markets.²⁷ Foreign auto firms have committed over \$12 billion to China in the last year alone,²⁸ and scores of others are investing heavily, with a keen eye on China's consumer and commercial customers.

Display 8

China's Share of Many Global Commercial Markets Is Soaring

Product	Chinese Consumption as a Percent of Global Total (units)			
	1990	1995	2003	2010F
Heavy trucks	NA	4%	32%	35%
Elevators	NA	15	24	31
Excavators	2%	3	31	28

Source: ACT Research, J.D. Power and Associates, Liugong, Manfredi & Associates, Off-Highway Research, Sany, United Technologies, Volvo, Xugong, broker estimates and Alliance Capital estimates

Despite foreign firms' enthusiasm and investment, China's domestic markets may not be a utopia for them. Chinese firms will share in the riches created by the expansion of the Chinese economy; they may in fact benefit more than foreigners. Chinese will consume Chinese goods as well as foreign ones. As the presence of foreign goods has made Chinese consumers increasingly discerning, Chinese firms have improved the quality of their products. The coexistence of world-class foreign competition and booming domestic markets has compelled Chinese companies to develop technology, branding and marketing expertise. Ultimately, China's increasingly mature markets will create strong Chinese firms that will compete aggressively with incumbents around the world. ■

CAPTURING CHINA'S POTENTIAL: LOCALS VS. FOREIGNERS

Foreigners have long dreamt of the massive Chinese market. Over the past 20 years, surging Chinese demand has allowed them to begin to realize this dream. But the very growth that has made China a boon for many foreign firms has also introduced a new factor to global industries. China's rapid growth is not only creating new consumers, it is fostering new companies as well. These firms are maturing with the Chinese economy; many are now poised to make an entrance onto the world stage. The current focus on the short-term implications of Chinese growth masks a critical long-term question: Who will benefit more from China's rapid growth, Chinese or foreign corporations?

Our research suggests that Chinese firms will reap a disproportionate share of the benefits from the domestic market, but that the foreign firms that have invested huge sums in China will benefit, too. The Chinese and foreign firms each bring different skills and resources to the contest (*Display 9*). For the Chinese, low fixed-investment costs, local knowledge and government patronage are commonly cited; nearly all observers mention inexpensive labor. Foreign multinationals, on the other hand, have massive financial resources, superior technology

and sophisticated brand-management know-how. Given the strategic importance of Chinese markets, it is important to differentiate between real and perceived sources of Chinese and foreign competitive advantage.

SOFTER SKILLS AND LOCAL FAMILIARITY

Foreign firms typically come to China with superiority in the "softer" skills of capitalism, namely marketing, advertising and brand management. This is not surprising, given the comparatively short time Chinese firms have had to develop these skills and the semi-privatized, semi-marketized domestic economy they have operated in since the launch of reforms in the late 1970s. By contrast, many foreign firms have evolved for decades in highly efficient and competitive economies.

But these superior soft skills have not always translated into competitive advantage for foreign firms in China, for several reasons. In retail markets, for example, it is natural to conclude that foreign firms have the advantage of owning brands that have been impressed upon consumers for years or even generations. However, the value of these brands lies primarily in developed countries. Chinese consumers were shielded from foreign brands from the rise of the Communists in 1949 until the beginning of market reforms in 1979. Even since then, Chinese recognition of foreign brands has been slow and uneven. Indeed, Chinese brands often enjoy greater consumer awareness than their more mature foreign counterparts, and the Chinese government is strongly supporting the development of domestic brands.²⁹

In addition to building local brand awareness, foreign firms must adapt their products to local tastes. To foreign firms, Chinese are an entirely new set of customers, and even within China tastes often vary by region. Having grown up in this environment, local firms are usually more familiar with regional diversity and local tastes and have often tailored their products accordingly.

Display 9

Who Has the Competitive Advantage?



Source: Alliance Capital

ESTABLISHED DISTRIBUTION NETWORKS



Chinese firms also often have an easier time getting their products to customers. Leading Chinese consumer-product companies such as TCL, Lenovo, Mengniu Dairy and Haier typically have Byzantine distribution networks consisting of thousands of individual outlets in various provinces and second- and third-tier cities. It has been difficult for foreign firms to replicate these networks, and there are currently few national distributors to speak of. Furthermore, as newcomers to Chinese markets, most foreign firms must contend with often-strong existing relationships among established companies.

Distribution has been a double-edged sword for Chinese firms. While entrenched networks have provided some protection from an onslaught of foreign competition, they have also hindered the rationalization of some industries by retarding the creation of fully integrated national markets. All too often, lack of access to local distribution and provincial protectionism have prevented even Chinese firms from entering regional markets. Conversations with Chinese and foreign companies in multiple industries suggest that current trends undoubtedly favor the expansion of nationwide distribution networks, but the speed of development will vary by sector and region.

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GOVERNMENT POLICY



The Chinese government has overseen the ascent of the economy with great satisfaction. In a number of industries, government policies have encouraged foreign firms to move manufacturing to China and in many cases transfer know-how to Chinese counterparts. In some industries, such as autos, policymakers have explicitly blocked foreign firms from operating in the Chinese market unless they set up joint ventures with local partners. Provincial and municipal governments also frequently go to great lengths to nurture local firms, often with the objective of protecting local employment or maintaining control over tax revenues.

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Government intervention has been particularly acute in industries that require advanced technology or that are deemed strategic. Officials often use the lure of China's growth to extract technology concessions from foreign aspirants, and many have obliged because its immense market is too tantalizing to ignore. While this approach may help Chinese firms by limiting outright competition and improving their access to certain expertise, many foreign firms have guarded their most advanced technology by not employing it in China at all or, more often, by importing key components from more trusted locations.

The Chinese government has also used traditional trade barriers such as tariffs to aid domestic companies. Imported auto parts, for example, are subject to graduated tariffs depending on the degree of local production. But in general, import tariffs are fading as China meets the terms of joining the World Trade Organization (WTO).

The Chinese government has been replacing tariffs with other tools for achieving many of the same goals, including hidden subsidies and unequal tax treatment. In the semiconductor industry, for example, China until recently refunded 14% of the value-added tax to the extent a chip used "qualified" Chinese content, whereas it levied the full 17% value-added tax on the foreign content of chips. After this practice was brought to the WTO, the government agreed to phase it out. By then, the policy had succeeded in attracting several large semiconductor plants to China.

Unique technology standards are another new tool used to favor domestic companies, and they may prove to be among the most formidable in the government's arsenal. As China consumes a greater share of key consumer and business products, the tremendous volumes sold in China may mean that Chinese standards become the de facto arbiter in world markets, just as US and European standards have been for the past 50 years. At the very least, Chinese policymakers and companies will have a greater voice when standards are established by international organizations.

The Chinese government or consortia of Chinese firms have introduced homegrown technology standards ranging from wireless networking (Wi-Fi) security protocols to next-generation DVD formats and third-generation mobile-phone technology (*Display 10*).

Display 10

A New Tool for Favoring Chinese Competitors: Unique Technology Standards

Description	Chinese Standard	Status
Digital Audio-Visual Interface	Audio Video Coding Standard	• Coalition awaiting MII* approval as national standard
Digital Home Networking	Intelligent Grouping and Resource Sharing	• Chinese standard under development
High-Definition TV Transmission	Digital Terrestrial Transmission Standard	• Originally targeted for Dec. 03; postponed to Dec. 04
High-Definition Video Discs	Enhanced Video Disc	• Products in production • Coalition awaiting MII approval as national standard
Mobile Multimedia	Mobile Multimedia Standards	• Alliance formed in Oct. 04 • Affiliated with MII
PC Security Chips	PC Security Chips	• Drafting
Radio Frequency Identification	RFID	• Chinese standard under development
Third-Generation Mobile Phone Transmission	TD-SCDMA	• Targeted for June 05
Wireless Networking Security	WAPI	• Originally scheduled to take effect on May 04; indefinitely postponed due to foreign objection

*China's Ministry Information Industry
Source: Alliance Capital


These unique standards serve a number of purposes. They attempt to level the playing field by neutralizing the superior experience of foreign firms. The enhanced video disc (EVD) format, for example, has not been used outside China, so foreign incumbents have no head-start with the technology and must climb the same learning curve as Chinese companies. The EVD format also strives to reduce the payments Chinese companies must make to foreign intellectual property rights holders. At the moment, royalty fees to foreigners account for as much as 13% of the price that wholesalers pay for a typical DVD player.³⁰ In other instances, such as Wi-Fi wireless networking security, the measures have been a thinly veiled attempt to force foreign firms to pass sensitive technology to domestic rivals.

In the widely followed case of TD-SCDMA, a third-generation mobile-telephony technology not currently used outside China, the government hopes to develop a domestic alternative to existing standards (WCDMA and CDMA-2000). The rationale is likely twofold. First, by using a new proprietary standard, China hopes to reduce and possibly eliminate the royalty fees associated with deploying CDMA technology. This strategy will succeed only if Chinese companies can prove TD-SCDMA does not use the existing CDMA-based patents, an assertion which they increasingly seem unable to support. Second,

and perhaps more important, the government hopes the homegrown TD-SCDMA standard will not only level the playing field for Chinese network-equipment and handset manufacturers, it will provide them with a first-mover advantage in China and even, perhaps, overseas. The same first-mover dynamic aided European manufacturers during the advent of the second-generation GSM standard and Korean handset firms during the rise of CDMA-2000.

Overall, China's policies have helped domestic firms, particularly when it comes to dealing with foreign competitors. In certain industries, such as autos, turbines and aerospace, joint-venture rules and import tariffs have succeeded in encouraging technology transfer and local production. Occasionally, the central government has had problems enforcing its policies. Foreign firms tend to be wary of circumventing Chinese rules and thus typically comply with government programs more carefully than some domestic firms.

LOW-COST LABOR

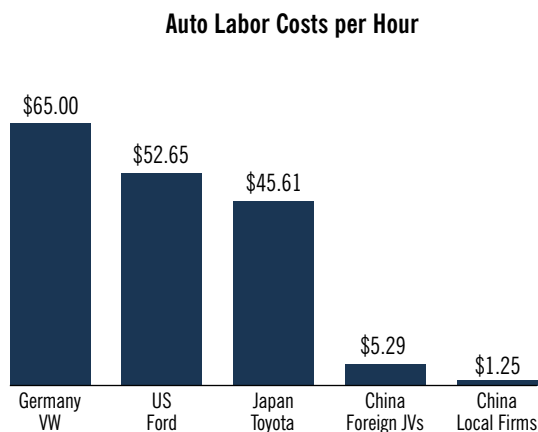


When it comes to competitive advantage, perhaps the most widespread perception is that Chinese firms benefit from cheap labor. About 250 million people worked in Chinese cities in 2002. An additional 490 mil-

lion people toiled as peasants in the countryside.³¹ Even though the middle class is growing quickly, the average city dweller in 2002 earned just over \$1,200 per year,³² or approximately \$0.60 an hour. Peasants made about one-third of that, or about \$0.20 an hour,³³ and are flooding into the cities. To put this in perspective, Chinese auto workers' total compensation costs approximately \$5 per hour at foreign joint ventures,* compared to approximately \$65 per hour in Germany, \$53 per hour in the US and \$46 per hour in Japan³⁴ (Display 11).

Display 11

Chinese Autoworkers Earn a Small Fraction of What Autoworkers Earn in Major Markets



Source: Broker estimates, company data and Alliance Capital estimates

Wages are even lower elsewhere in the developing world, such as in Vietnam, Cambodia and parts of Latin America, but China offers an attractive mix of low wages, high productivity and a relatively advanced supply-chain infrastructure.

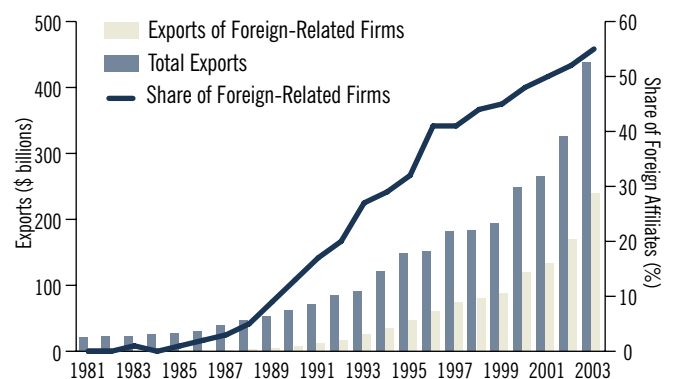
Chinese unemployment is officially 4.3%,³⁵ although private estimates place the rate of unemployment and underemployment at approximately 21%.³⁶ This equates to 160 million people, more than the entire US work force. China must create a staggering 12 million new jobs in each of the next 10 years just to absorb entrants to its labor market.³⁷ The size of China's population clearly ensures its status as a source of low-cost labor for years to come. In fact, many of China's most effective companies have replaced capital with labor, reversing the historical trend in developed countries.

*Average of Alliance Capital estimates for Volkswagen and GM plants. Local autoworkers pay less.

While cheap labor may benefit China as a *country*, it does not necessarily translate into a competitive advantage for Chinese companies. The reason is that foreign firms, too, can locate manufacturing and even nonmanufacturing facilities in China to exploit labor-rate arbitrage opportunities. This factor has been a key reason for the \$500 billion in FDI in China between 1980 and 2003 and for the steeply rising share of total Chinese exports produced by foreign-related firms (Display 12).

Display 12

Foreign-Related Firms Produce over Half of Chinese Exports



Source: United Nations Conference on Trade and Development (UNCTAD) (based on data provided by Ministry of Foreign Trade and Economic Cooperation (MOFTEC)) and CEIC Data

Indeed, Display 11 may underestimate the extent to which foreign firms benefit from cheap Chinese labor, since the data exclude contract manufacturing by Chinese companies on behalf of foreign firms. Although the Chinese government has required foreign firms in certain industries to partner with local companies, effectively exacting a price for access to China's cheap labor, in most cases, the ease with which foreign firms can operate in China means that foreign and Chinese firms alike benefit from China's tremendous labor pool.

On a similar note, much has been made of the potential for Chinese companies to use less expensive Chinese engineers to their advantage. This, too, is not a sustainable source of superiority because foreign firms can hire Chinese engineers as easily as Chinese firms can, if the foreign firms set up shop in China.

RESEARCH, DEVELOPMENT AND TECHNOLOGY

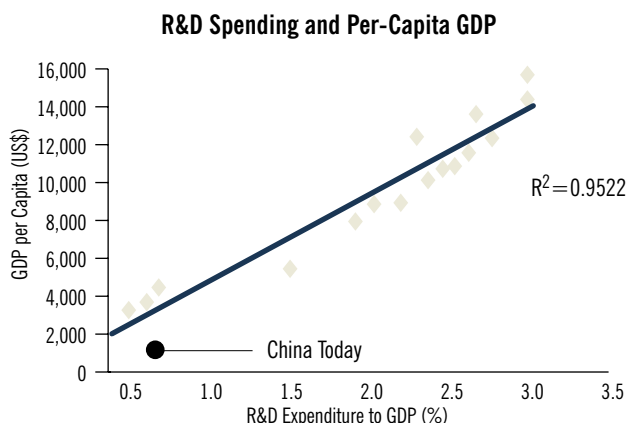
At 0.6%, Chinese investment in research and development (R&D) as a percentage of GDP in 2002 was significantly lower than that of Japan (3.1%), Korea (2.6%), the US (2.6%), Germany (2.5%) and the UK (1.9%).³⁸ Chinese investment in research as a percent of revenue has also been lower than in advanced OECD countries. Some observers interpret this to mean that Chinese firms underinvest in R&D, placing themselves at a disadvantage to foreign competitors.³⁹ A bit of historical context is needed here. Chinese companies are just beginning to shed the heritage of central planning. Before reforms, nearly all enterprises were owned by the state, and they operated without meaningful competition and with few

Display 13
Korean R&D Grew with the Economy...



Source: Korean Ministry of Science & Technology and World Bank

Display 14
...And with Per-Capita Income



Source: Korean Ministry of Science & Technology and World Bank

market-based price mechanisms. As a result, they had little incentive to innovate and little knowledge of how much demand existed for next-generation technology. The marketization of the economy has fundamentally changed this situation.

Furthermore, China is still in the early stages of industrialization. Korea is now widely viewed as a technological leader, but Korean R&D investment in 1970 was at a level comparable to China's today. Since then, it has grown with the Korean economy (*Display 13*) and in direct proportion to per-capita income (*Display 14*).

Given China's low per-capita income, we should not be surprised by its low R&D intensity. Like many firms around the world trying to enter new markets or apply a new technology, Chinese companies currently tend to buy or copy slightly outmoded foreign technology. For more advanced components, they rely on foreign technology merchants (see "De-Integration and the Rise of Technology Merchants" on page 14). This pattern of behavior makes sense from a cost-benefit perspective.

But Chinese companies are likely to dedicate more resources to original research over time, as their Korean counterparts have. Many have already done so. Chinese firms such as Huawei Technologies and ZTE are racing their foreign counterparts for next-generation proprietary technology. From 1991 to 2002, China increased R&D investment more than fourfold to \$12.9 billion in 2002,⁴⁰ or \$53.5 billion when converted at purchasing power parity. Add to this China's one million researchers,⁴¹ and it would seem unwise to rule Chinese companies out of the long-run race for technological advantage.

SCALE

Scale is often important in determining the competitiveness of national industries. US industry flourished after World War II, when the US accounted for 27% of gross global product.⁴² The massive size of the domestic market was a global competitive advantage for US companies. Faced with large-scale US and European competition, Japan and Korea protected many domestic markets to help local firms achieve scale. With foreign firms kept at bay, so-called Japanese and Korean national champions rose by dominating their domestic

markets. They subsequently invested in research, development, distribution and advertising, and then ventured overseas.

In contrast to Korea and Japan, China has kept its domestic markets relatively open. This policy partly reflects new exigencies in international trade and partly reflects the fact that China's domestic market is much larger than those of its Asian predecessors. Whereas companies from smaller developing markets often struggle to compete against larger foreigners, Chinese firms operating in only a portion of their domestic market are often able to match the scale of foreign firms.

The relatively open nature of Chinese markets lets foreign firms gain from China's massive markets. But even foreign firms that have been quick to enter China have had to build brands, navigate elaborate and forbidding distribution networks, skirt local trade barriers, and overcome entrenched supplier relationships. These factors have delayed the penetration of foreign firms and given Chinese firms breathing room to grow internally.

China's growth is creating a roster of new entrants in global industries that many investors have long assumed to be stable and mature. Such assumptions will prove increasingly dangerous as emerging Chinese companies disrupt markets around the world. ■

FROM FRAGMENTATION TO SCALE

Many Chinese industries suffer from fragmentation (*Display 15*). Under the planned economy, many industries were replicated in parallel in each province and even within provinces. The result was a large number of subscale enterprises. Market forces have had only 20 years since the advent of reforms to remedy the problem. Even with economic reforms, China's inefficient banking system has often gotten in the way. Driven by politics and local relationships, the banking system has frequently kept unprofitable firms afloat and even financed new ventures in certain sectors despite excess capacity.

Nonetheless, some Chinese industries are beginning to consolidate. It is from these industries that we may see the first Chinese firms make an entrance on the world stage. The reason is simple. Consolidation allows firms to gain economies of scale and generate sufficient returns to build a global infrastructure. Consolidators can rationalize costs and dedicate more resources to value-added research and development. Thus, the survivors in consolidating industries can more efficiently reap the benefits of China's vast domestic market.

But consolidation is by no means a prerequisite for overseas expansion. China's markets are often large enough to support world-class scale with even a small domestic market share. Moreover, a Chinese firm could

Display 15

Too Many Domestic Competitors

Number of Chinese Manufacturers by Industry	
Air conditioners	300
Apparel*	9,000
Commercial trucks**	25
Construction equipment†	85
Mobile phones	37
Passenger cars	30
Pharmaceuticals	3,000
Steel	1,000
Televisions††	78

Estimates for December 31, 2003, unless otherwise noted

*Larger enterprises only; 2002 data

**Excludes mini-buses

†Wheeled loaders

††2000 data

Source: Haier, *China Statistical Yearbook*, SAIC, Off-Highway Research, United Cell Biotechnology, Baosteel, MII and broker estimates

focus on global markets before becoming successful in China, perhaps seeking refuge from excess competition at home. Until now, most built their foundations at home, but how or where a company builds its business is not important. What is important is achieving economic scale and subsequently investing in technology, marketing, distribution and branding. ■

VENTURING BEYOND CHINA

The Limits of Domestic Experience

Despite their relative inexperience with the softer skills of capitalism, leading-edge Chinese firms are beginning to explore foreign markets, blazing a trail for others to follow. To overcome the limits of their domestic experience and obtain the skills needed to succeed abroad, Chinese firms are following one of three paths: They are building their own capabilities internally, allying themselves with international partners or taking a hybrid approach.

Note that contract manufacturing, as such, is not a way to expand overseas or compete with foreign incumbents. While it may give a firm world-class scale or skill in manufacturing to exacting global standards, contract manufacturing requires no immediate overseas presence, and it typically relegates the firm to the commoditized portion of the value-creation process. Thus, even if a Chinese firm achieves scale as a contract manufacturer, it must still decide whether to build its own capabilities or partner to obtain the marketing, branding and distribution skills critical to competing in developed markets.

Build Your Own

Haier Group, a Chinese manufacturer of white goods and consumer electronics, typifies the build-your-own approach. One of the largest companies in China, Haier has 26% of the domestic market for refrigerators, 17% for air conditioners, 37% for freezers and 30% for washing machines. The company sold more than five million refrigerators,⁴³ accounting for over 7% of global demand in 2003.⁴⁴ This made it the fifth-largest white-goods company in the world. To put this in perspective, the entire US refrigerator market totaled about 10 million units in 2003, and the largest manufacturer, GE, sold about 3.5 million units.⁴⁵

Haier management believes that firms that design their own products, own their brands and control their distribution will dominate the most profitable parts of the value chain. Based on this philosophy, Haier has minimized its contract manufacturing business and focused on research, development, marketing and branding.

In its domestic market, Haier's strategy is similar to that of most Chinese firms. It uses its own designs, its own

brand and its own distribution network. What differentiates Haier is that it is pursuing the same strategy overseas. In foreign markets, Haier is teaching itself the softer skills. Like others that have chosen this approach, Haier initially turned to emerging markets, where its brand competed on value for price-sensitive customers. When Haier fixed its sights on developed markets in North America, Europe and Japan, it hired local staff to learn customer preferences, tailor products and cultivate distribution networks. It also bought a landmark building in New York to serve as a North American headquarters. At first, Haier pursued niche markets to gain a foothold with retailers and introduce its brand. It is now seeking to expand its product line.

The fate of Haier's strategy has broad implications for how Chinese firms may disrupt global markets. Haier is filling its deficit of soft skills by learning on its own one step at a time. If Haier is successful, others may follow its lead. Indeed, our discussions with Chinese firms reveal that many are paying close attention to Haier's fortunes. Launch Technologies, a maker of automotive tools, is already mimicking its approach. In consumer markets, these firms will likely offer low-cost products to large mainstream retailers as a Trojan horse to acquire shelf space and eventual customer recognition. Firms such as Best Buy, Carrefour, Circuit City, Tesco and Wal-Mart offer wide geographic coverage and have an incentive to use new Chinese firms as leverage in negotiations with the incumbent producers.

Find a Partner

Few Chinese firms have the stomach for competing in foreign markets with incumbents with strong brand recognition, deep knowledge of consumer preferences and long-standing relationships with wholesalers and retailers. Instead, many Chinese firms are allying with incumbent foreign firms through joint ventures or outright purchase of key assets. These alliances combine entities with complementary strengths. The Chinese firms fill critical holes in their capabilities, while their foreign partners typically gain low-cost manufacturing and access to China's domestic market. Without the partnerships, both parties would have a much harder time achieving their objectives.




TCL, a conglomerate in the TV, mobile-phone handset, computer and white-goods industries, has pursued an aggressive alliance strategy. Like Haier, TCL is one of China's largest firms. In 2003, TCL sold 7.8 million TVs in China,⁴⁶ which gave it a 20% domestic market share. In the same year, it exported 3.8 million TVs.⁴⁷ Approximately 30% of its export TVs carried a TCL brand and 70% were manufactured on a contract basis for foreign firms such as Philips and Panasonic.⁴⁸ As a contract manufacturer, TCL learned how to keep costs low and meet demanding international quality standards. Yet its position as a contract manufacturer also confined it to the commoditized part of the value chain.

TCL's problems and aspirations were similar to Haier's. It lacked the technical expertise required to sell in developed markets, and it needed a distribution network and a brand recognized and trusted by foreign consumers. To meet these challenges, TCL entered a series of partnerships and joint ventures in its various lines of business. For its TV operations, it formed a joint venture with Thomson of France. The owner of the Thomson and RCA TV brands, Thomson has extensive long-standing distribution relationships in Europe and North America. Under the terms of the deal, Thomson contributed most of its TV assets, including brands, marketing, distribution and key operating professionals. TCL put in its manufacturing facilities and Chinese TV operations. TCL will own 67% of the new company and Thomson the remaining 33%. Thomson has the right to get out of the joint venture by exchanging its stake for common stock in TCL International.

The transaction instantly transformed TCL into the world's largest TV manufacturer. In one fell swoop, TCL gained access to US and European markets, powerful brand names and established distribution networks (*Display 16*). In exchange, Thomson broadened its exposure to the Chinese market and reinvigorated its lackluster TV business.

Display 16

Marrying Complementary Regional Strengths

TCL and Thomson Television Market Share by Region				
Market	Brand	TCL	Thomson	Combined
US		NM*	11%	11%
Europe		NM*	8%	8%
China		20%	NM*	20%
World		4%	9%	13%

*Not material

Source: Company data

TCL pursued a similar strategy in the mobile-phone handset industry. In this case, TCL entered into a partnership with Alcatel, a leading French telecom-equipment manufacturer. Alcatel enjoys strong relationships with European mobile carriers and wanted to either exit its handset business or return it to profitability. TCL sought to expand its presence in Europe and increase its scale and technological capabilities in handsets. With the transaction, Alcatel earned a chance to salvage value from a stale business, while TCL gained the use of Alcatel's brand with European consumers and its contacts with European carriers. On a pro forma basis, the combined unit accounted for 17.5 million handsets in 2003, or more than 3% of global sales. TCL recently spun out its handset business but retained a controlling stake in the entity.

Other Chinese firms are following TCL's lead in striking deals with US and European firms. In mobile phones, Ningbo Bird, China's largest handset manufacturer, and Siemens recently announced an alliance. Bird will distribute high-end Siemens phones in its 30,000 Chinese outlets, while Siemens will help Bird expand overseas. Bird and Siemens will also begin to jointly develop new phones to be sold under the Bird brand using components and designs from Siemens. Not to be left out, UTStarcom acquired the mobile-phone assets of Audiovox, a second-tier brand in North America. For UTStarcom, the transaction yields a recognized consumer brand, relationships with North and South American mobile carriers, and a distribution network.

The TCL-Thomson agreement and the three handset alliances highlight the attractiveness of combining China's newfound manufacturing might with established customer relationships in developed markets. The joint entities can draw on third-party merchant silicon chip producers and original design manufacturers and may in the future use their increased scale to expand their own research, development, branding and distribution capabilities. As Chinese firms grow, the end-market share of independent technology merchants may rise, since Chinese firms tend to depend more on third-party suppliers than do more integrated incumbents such as Nokia and Samsung.

Other second-tier brands in developed markets may also benefit from the emergence of Chinese firms. The Alcatel brand is not as recognized in the handset business as Nokia, Motorola and Samsung, but it is far more familiar to European consumers than TCL. If left in Alcatel's hands, the handset business would probably have continued to fade because of insufficient scale. Nonetheless, it was a tempting target for a firm like TCL. The

logic was similar for the Bird-Siemens and UTStarcom-Audiovox deals.

We expect to see more of these transactions. In developed markets around the world, second-tier brands may become merger-and-acquisition targets of Chinese firms seeking to quickly garner brand recognition, distribution networks, after-sales support infrastructure and other relevant skills.

The transactions also offer a one-time opportunity to revive tired brands. If the owners of these brands do not join forces with Chinese entrants, they may find themselves confronted by increased competition from Chinese entrants, without the strong defense that a higher-end brand provides.

Of course, partnerships, too, have their drawbacks. The partners must agree on how to staff the ventures and how to overcome operational challenges. In attempting to satisfy the objectives of two or more parties, they sometimes suffer strategic drift and often outlive their

DE-INTEGRATION AND THE RISE OF TECHNOLOGY MERCHANTS

The proliferation of high-quality technology merchants provides an advantage for Chinese firms that did not exist when Japanese and Korean companies were at a comparable stage of development. Firms like Matsushita, Sony and Samsung came of age when the value-creation process for their products was relatively integrated. When Sony made a stereo, it designed its own transistors, tuners, tape mechanisms, speakers, circuitry and casings. It manufactured many of these components and assembled them in its own factories.

Today, in many technology-related industries, there are third-party providers for each aspect of production, including merchant semiconductor firms that design circuitry for the most advanced components. As a result, the barriers to entry are lower for some Chinese firms than they were for their Japanese and Korean predecessors. In effect, Chinese firms can out-

source critical aspects of R&D and quickly compete in higher-end product categories.

Chinese firms are in an excellent position to take advantage of the vertical de-integration of the technology industry that is occurring parallel to the growth of the Chinese economy. While these changes are coincidental, the rise of third-party technology merchants may accelerate the ascendance of world-class Chinese companies. One consequence is that competition is likely to intensify in many industries previously considered sheltered by technological barriers. Technology merchants will give Chinese firms access to sophisticated technology, and China's sudden scale will provide the brawn to invest in distribution, branding and, eventually, proprietary technology. Sophisticated technology merchants are likely to lower barriers to entry and make technological advantages increasingly ephemeral for incumbent firms. ■

original rationale. Ultimately, discord between the partners often leads to a buy-out or mutual exit.

The Hybrid Approach

Recognizing the strengths and weaknesses of building and allying, some Chinese firms have selectively pursued a hybrid of the strategies. Huawei Technologies, China's largest telecom-equipment manufacturer, has benefited from tremendous growth at home and expanded aggressively overseas, focusing on price-sensitive emerging markets while attempting to make inroads in mature markets. In its core telecom-equipment business, Huawei has chosen to build its own brand, distribution and after-sales support network. It has successfully sold high-profile third-generation wireless infrastructure networks to carriers in Hong Kong and the United Arab Emirates, and even won voice-over-Internet and videoconferencing contracts with British Telecom.

In addition to fighting for high-end sales, Huawei has used a Trojan horse strategy similar to that of the Chinese consumer-goods manufacturers. It has sold lower-end, less mission-critical gear (such as digital-subscriber-line access products) to telecom carriers to establish relationships and build mutual comfort, gradually working toward more sophisticated products. In data-networking, a business with a much broader customer base, Huawei has joined forces with US-based 3Com. As with similar arrangements in the TV and handset industries, the alliance gives it access to 3Com's brand and established distribution networks in North America and Europe. At the same time, 3Com gains access to Huawei's advanced switching and routing products and exposure to the booming Chinese market. Since many Chinese companies operate in numerous business lines, we can expect the hybrid approach to be increasingly popular. ■

WHEN WILL CHINESE COMPETITORS EMERGE?

We have so far looked at industries that have already largely met the preconditions for overseas expansion. In the TV, mobile-handset, white-goods and telecommunication-equipment markets, Chinese companies serving massive local markets have already attained the scale necessary to compete in global markets or are consolidating to do so. As a result, Chinese companies have been able to invest in research, development and distribution, and some have even begun to build brands.

Many other Chinese industries have not yet reached this point and may not do so for several years. Nevertheless, Chinese firms in other industries will eventually meet the preconditions for global expansion, and when they do, they are likely to become formidable competitors abroad. As we have seen, they cannot be identified merely on the basis of their technological sophistication or capital intensity. Chinese firms will have other, unexpected competitive advantages that spring from China's tremendous scale and are often bolstered by government assistance. But scale and favorable government policy on their own are not sufficient to predict when these companies will become global competitors. We expect several factors to influence the timing of when Chinese companies take their place on the global stage.

Product Characteristics

Often, the barriers to entry to a market are a function of the product's inherent characteristics. The markets for products with short useful lives, segmentation, lack of brand loyalty and limited after-market support tend to be easiest to enter. In the near term, upstarts are likely to be more successful in such markets, which also tend to have lower margins.

- **Short Useful Lives.** Products with rapid replacement cycles and short useful lives (such as mobile phones) offer more opportunities for disruption than those with long useful lives (such as construction equipment). Since a mobile phone is replaced about every two years, a new entrant gets five chances to sell a phone to a given customer in a 10-year period. Construction equipment, by contrast, lasts five to 10 years and sometimes longer, so a new entrant has at most two chances in 10 years to sell a machine. From

the perspective of disruptive potential, rapid replacement cycles give new entrants more opportunities to break the relationship between the customer and the incumbent. Rapid turnover also lets customers learn more quickly about the quality and functionality of a new product.

- **Segmentation.** Markets segmented by quality give Chinese entrants a chance to challenge incumbents in the low and middle ranges where customers might be more willing to compromise on quality or brand name. This tactic forces incumbents to compete on price (where Chinese firms often have the advantage) or to concede a portion of the market to newcomers. If the latter occurs, a newcomer may effectively establish a basis for a long-term relationship with a customer. Chinese firms could then move up the value chain over time as, for example, the Japanese and Korean auto and consumer-electronics companies have done.
- **Lack of Brand Loyalty.** Chinese firms usually have poor brand recognition outside China, so they are at less of a disadvantage with customers who ignore brand and concentrate on technical specifications. Industrial and commercial firms often focus less on brand names than retail customers. Corporate customers tend to conduct more due diligence on product attributes, performance and after-sales support, whereas retail consumers tend to rely on branding as an indicator of quality.
- **Little After-Sales Support.** After-sales customer support requires sophisticated logistics and often an extensive physical network, which Chinese firms typically lack. Thus, Chinese firms that make products requiring little after-sales support, such as consumer electronics, are more likely to succeed abroad in the near term. In industries where the initial sale is routinely followed up with after-sales support (such as network infrastructure and construction equipment), Chinese firms will be disadvantaged and may, therefore, opt to enter into joint ventures or buy established networks.

Domestic and Foreign Margins

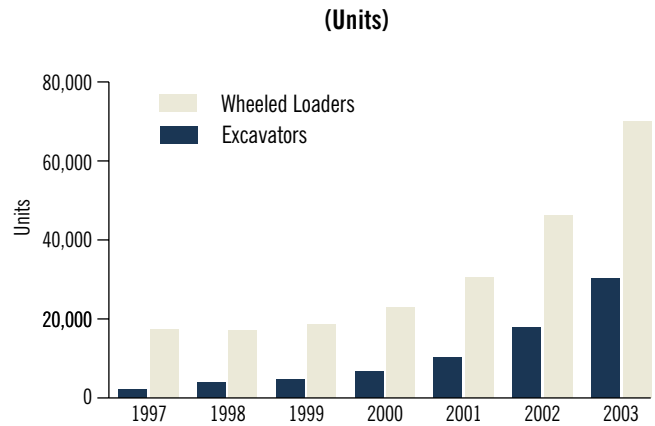
The gap between domestic and foreign margins in a particular industry helps to determine whether a Chinese firm has an incentive to pursue overseas markets. It is thus likely to influence the timing of its global expansion. If domestic margins are robust, Chinese firms will probably focus on serving their rapidly growing home market. If excessive competition drives down prices and margins, Chinese managers are more likely to feel compelled to look abroad.

The Chinese construction-equipment industry exemplifies this phenomenon. With Chinese construction activity booming, Chinese consumption of wheeled loaders and excavators has soared (*Display 17*). China now accounts for over 40% of global demand for wheeled loaders and 31% for excavators.⁴⁹

The construction-equipment industry, like many industries in China, became massive quickly and is now large enough to support economies of scale and significant investment in research, development, marketing and distribution. But certain segments remain highly fragmented. There are, for example, approximately 85 manufacturers of wheeled loaders in China.⁵⁰ Nonetheless, strong demand has made the industry so profitable that less efficient firms have not been forced out of business. Gross margins exceed 35% for some machines. At this level, even inefficient firms survive and feel little pressure to consolidate—or to pursue less lucrative markets abroad.

Display 17

Chinese Consumption of Construction Equipment Has Soared



Source: Manfredi & Associates and Off-Highway Research

Yet China's construction-equipment industry represents a latent threat to incumbents overseas. It is certainly large enough to create companies with world-class scale. When local margins fall, probably in the next cyclical downturn, the domestic market is likely to consolidate; subsequently, the survivors may shift their focus overseas. ■

Investment Implications

Display 18

Potential for Disruption and Gain

Net Score	Years		
	1 to 3	4 to 7	Over 7
Most Threatened			
Consumer Durables	(3)	(4)	(5)
Communications Equipment	1	(1)	(4)
Technology	1	(2)	(5)
Declining Benefit			
Autos & Auto Parts	6	4	1
Capital Goods	8	4	(2)
Basic Materials	9	4	0
Biggest Gainers			
Medical	2	3	4
Consumer Staples	2	2	2
Energy	9	6	5
Financials	1	4	6
Distribution and Retailing	4	5	5
Not Material			
Telecom and Utilities	0	(1)	(2)

Source: Alliance Capital

For investors in emerging markets, identifying which Chinese firms are likely to become the next Sony, Toyota Motors, Posco or Samsung Electronics is a central concern. But for most investors, the key investment question posed by the emergence of Chinese competitors will be their impact on the incumbents around the world. GM, Ford and Volkswagen's massive market-share losses to Toyota, Honda and Nissan over the last 25 years taught investors that understanding Japanese competitors is often crucial to profitable investing in North American and European firms. With Chinese companies standing at the thresholds of many global industries, investors would be well advised to apply that lesson more broadly. Chinese companies' skills, ambitions, strengths and deficiencies will create rich opportunities for some foreign companies and introduce disruptive risks to others.

In this section, we discuss our conclusions about many industries' exposure to disruption from Chinese competition as well as their potential to gain by selling to Chinese consumers or firms. Since Chinese competitors are likely to expand abroad in stages, our investment horizon considers both imminent and distant events: The short term is defined as one to three years, the medium term as four to seven years and the long term as beyond seven years.

Due to time and space constraints, we cover some industries in more detail than others. Note that the timing and magnitude of change will vary by sector and by industry. As a result, investors should examine the competitive environment surrounding individual stocks. *Display 18* summarizes our conclusions for each industry, rating the short-, medium- and long-term implications on a scale of (10), most disruptive, to 10, most beneficial. In the discussions of each industry, we break down the net scores in *Display 18* into the potential to gain from new opportunities in China and the potential for disruption from Chinese competitors.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	(1)	(3)	(6)
Potential to Gain	7	7	7
Net Score	6	4	1

Autos and Auto Parts

Foreign auto and auto-parts suppliers should benefit greatly from Chinese growth in the short and medium terms, but over the long term the disruptive potential should all but neutralize the potential gain. This reflects several realities.

In China, passenger-car distribution networks are in their infancy. Even the most successful foreign brands have limited distribution outside the main cities. Smaller Chinese firms have thus been able to establish networks in a way that would be extremely difficult to replicate in developed markets. Furthermore, roughly 80% of Chinese consumers are first-time car buyers,⁵¹ so Chinese manufacturers have had an opportunity to claim part of the domestic market before foreign firms could solidify brand recognition and market share.

For the most part, Chinese automakers are challenging foreign firms in the low end of the Chinese market by offering extremely inexpensive, utilitarian vehicles. In the near term, the opportunity for foreign automakers lies in the middle and upper ranges of the Chinese market, where Chinese automakers cannot compete effectively. Longer term, the Chinese companies are unlikely to remain content with the low end of the market and may try to move up the value chain, particularly as their initial customers become wealthier and seek to purchase mid-range vehicles. Some Chinese manufacturers may even attempt to differentiate their products by specializing in environmentally friendly or fuel-efficient vehicles.

Given enough time and perhaps support from the Chinese government, a Chinese manufacturer may refine its practices enough to enter the fiercely competitive global passenger-car market. Until then, foreign firms can expect healthy profits in China as the near-term benefits of Chinese consumption outweigh any potential long-term threat to their markets overseas.

In the commercial vehicle market, Chinese manufacturers control over 90% of the domestic market. Rapidly becoming a major component of global demand, the Chinese market grew from a mere 4% of global volume of heavy trucks in 1995 to 32% in 2003.⁵² Chinese vehicles lack the technological sophistication of their foreign counterparts, which may prevent Chinese manufacturers from encroaching upon developed markets in the short term. Nevertheless, First Auto Works and Dongfeng Motors, two leading Chinese heavy-truck manufacturers, are already the third- and fourth-largest in the world,⁵³ and Chinese vehicles may prove to be attractive alternatives in developing markets. Given proper incentives, the Chinese companies may threaten developed markets further down the road.

Foreign auto-parts suppliers face discrete opportunities and challenges, depending on their business. Foreign firms making low-end products are likely to meet strong competition from Chinese companies, particularly in goods that can be transported easily. Companies that supply products that could be replicated in China may have to match a Chinese competitor's price, even when the Chi-

nese competitor has little developed-market share. Foreign suppliers of technologically advanced automotive components and systems, however, may benefit from demand from Chinese automakers, much as foreign merchant semiconductor companies have gained from the growth of Chinese mobile-phone manufacturers. Auto suppliers that offer sophisticated, differentiated products may prosper as Chinese firms expand in China and potentially overseas. Indeed, because Chinese companies are likely to depend more on third-party suppliers for complex components, they may turn out to be better customers than foreign automakers.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	(1)	(2)	(3)
Potential to Gain	10	6	3
Net Score	9	4	0

Basic Materials

China's rapid economic growth has created a tremendous appetite for raw materials. In the short and medium terms, foreign raw-material providers are likely to continue to benefit immensely. Over the longer term, however, supply and demand are likely to return to equilibrium, reducing the pricing benefit to suppliers. Moreover, the Chinese government wants to ensure stable supplies of raw materials for decades to come and, therefore, has encouraged Chinese firms to invest in resources overseas. Chinese firms have already entered joint ventures in Brazil and Chile, and we can expect to see continued outward expansion in the future. As they bid for scarce resources, Chinese entrants will create more competition for non-Chinese suppliers that plan to grow through global acquisitions.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	(1)	(2)	(5)
Potential to Gain	9	6	3
Net Score	8	4	(2)

Capital Goods

In the near term, foreign capital-goods providers will continue to enjoy tremendous growth opportunities in China. Near-term disruption potential is low, because capital goods tend to have long product lives. Foreign companies should not, however, become complacent. Many Chinese capital-goods manufacturers have already attained world-class scale and may in the medium and long terms seek to exploit higher-margin opportunities overseas. In this respect, a number of Chinese capital-goods companies should be seen as sleeping giants that may be awakened when they face slower growth and slimmer margins at home.

In the construction-equipment segment, foreign incumbents are unlikely to be significantly affected by Chinese entrants within the next three years. The Chinese industry has scale, but many subsectors have not yet consolidated. Furthermore, margins are so high at home that most Chinese firms are currently not seriously considering exporting to developed markets.

While not an imminent threat to foreign incumbents, the Chinese construction-equipment firms are not likely to remain satisfied with their current lot. In the next few years, Chinese firms are likely to seek advanced hydraulic and engine technology. In hydraulics, Chinese firms currently lack the technology needed for sophisticated excavator equipment, a large and rapidly growing market in China. They may decide to form joint ventures with or acquire second-tier construction-equipment companies outside China to gain this technology. Similarly, Chinese engine suppliers still lag their foreign counterparts. As a result, Chinese construction-equipment firms or their suppliers

are likely to buy from or consult with foreign engine specialists, presenting an opportunity for foreign suppliers in the short and medium terms.

In the longer run, Chinese firms may pose a significant threat to the equilibrium of the global construction-equipment industry. It is only a matter of time before the domestic market becomes less profitable and margins compress, providing Chinese firms with an incentive to consolidate and expand overseas. Chinese manufacturers already enjoy low costs; consolidation can provide scale. However, they lack internationally recognized brands, overseas distribution and—most important—after-sales support networks. To overcome these shortcomings, they may establish joint ventures with or acquire second-tier equipment vendors in developed markets. This may be more difficult than in other industries because the industry outside China is already highly consolidated and second-tier brands are scarce.

In the aerospace segment, China poses little immediate threat. China's passenger air traffic represents only 7% of world demand today,⁵⁴ and two-thirds of the traffic is on short- and medium-range routes.⁵⁵ The relatively small domestic market, along with the high barriers to entry and a duopolistic global market, has discouraged Chinese aerospace companies from attacking the jumbo-jet sector. But they may become significant manufacturers of regional jets, a market that Boeing predicts will account for 17% of global unit demand over the next 20 years.⁵⁶ Two Chinese aerospace companies, AVIC 1 and AVIC 2, have set their sights on this market. AVIC 1 has its own plane, purportedly based on the DC-9 and designed after the termination of its ill-fated joint venture with McDonnell Douglas; it is already seeking customers overseas. AVIC 2 has partnered with Embraer of Brazil on its ERJ 135/140/145 family of aircraft.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	(5)	(6)	(7)
Potential to Gain	6	5	3
Net Score	1	(1)	(4)

Communications Equipment

In the near term, the Chinese communications-equipment market will grow quickly and represents a significant opportunity for foreign manufacturers. As the market matures, its growth will inevitably subside, and foreign firms will have to compete globally with Chinese equipment manufacturers that took root in the domestic market. These firms are already consolidated enough to enjoy world-class scale, and they have clearly stated their desire to use this advantage to expand overseas. To achieve this goal, Chinese companies have already entered other developing countries; they are using these markets as proving grounds for larger contracts in developed markets. Chinese competitors in this industry should have less difficulty with brand recognition than their counterparts in consumer durables because telecom-service carriers tend to make purchase decisions based on extensive product testing, and there are a limited number of global vendors to educate about their products. Chinese firms may, however, have a difficult time matching the after-sales support provided by incumbents. This critical requirement may compel them to continue to pursue foreign alliances and perhaps mergers and acquisitions.

In the mobile-handset market, foreign incumbents have rapidly lost market share in China since Chinese firms entered the market in the late 1990s. Foreign firms recently improved their distribution networks and have recouped some of their losses, and they still hold a strong position in the upper end of the market, where they have built strong brands among high-end consumers. Foreign incumbents stand to benefit as disposable income continues to grow and more Chinese consumers buy these models. But penetration levels are already high in the wealthier first- and second-tier east-coast cities. More future growth is likely to come from third-tier cities and rural markets that tend to buy low- and mid-range products—segments the Chinese firms currently dominate.

Outside China, foreign mobile-phone companies are likely to face new competition from Chinese suppliers over the next few years. Chinese firms already enjoy global scale because of their position in the domestic market. Competition in China is intense but will likely lead to consolidation, and it gives Chinese firms a strong incentive to seek higher margins overseas. TCL, Bird and UTStarcom have already taken steps to secure foreign distribution networks and brands, as well as access to foreign carriers. Other Chinese manufacturers may follow suit, potentially increasing merger-and-acquisition activity for second-tier foreign firms. In this respect, second-tier foreign firms that ally themselves with Chinese companies may be the only mobile-phone incumbents to gain from their rise. Second-tier firms that fail to enter into such partnerships may face heightened competition, compounding their weak market position.

As low-cost producers in a highly segmented marketplace, the Chinese mobile-handset firms are likely to attack first on price. Industry margins may be compressed across all product ranges, but particularly in the lower and middle segments. Incumbents that straddle all price points may be forced to either accept narrower margins in low- and middle-range phones or migrate to a high-end niche. Even at the high end, Chinese firms may be able to use merchant semiconductor technology to compete sooner than many incumbents might expect.

Regardless of the incumbent response, Chinese firms will become new competitors in the global handset industry. Mobile carriers will have more viable suppliers to choose from and may be able to convert this into leverage when negotiating supply agreements for their networks.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	(6)	(7)	(8)
Potential to Gain	3	3	3
Net Score	(3)	(4)	(5)

Consumer Durables

In consumer durables, the potential for disruption outweighs the opportunity in all time frames. The Chinese consumer-appliance market is extremely competitive, and Chinese companies have a strong incentive to pursue higher-margin opportunities overseas. In white goods, Haier has already made inroads in the US with its own brand. The relatively long product cycle for most white goods, however, gives new entrants fewer opportunities to disrupt the bond between a customer and incumbent provider. As a result, it is likely that Chinese firms will also ally or establish joint ventures with foreign competitors, or acquire established brands and distribution networks. Second-tier competitors that have not

fully rationalized their manufacturing base by relocating production to low-cost emerging markets are their most likely allies and acquisition targets.

Chinese companies have already established themselves as major contract manufacturers of TVs, DVD players and other basic consumer electronics. TCL's recent acquisition of the Thomson and RCA brands reflects the desire of many Chinese firms to become leading global players. The rapid replacement rates and extensive customer segments of consumer electronics make it possible for them to succeed. A number of firms are likely to follow TCL's example by buying or allying with strategic partners in North America, Europe and Japan to obtain recognized brands, product support, high-end technology and distribution networks. In fact, distributors and retailers may become important facilitators as they use Chinese entrants to gain leverage over incumbent manufacturers.

Given their scale and cost advantages, Chinese consumer-electronics manufacturers are likely to first compete in developed markets based on price. By offering equivalent features at low prices, Chinese firms may force incumbents offering products across all price points to accept thinner margins or refocus on higher-end products.

To enter higher-end markets, Chinese consumer-electronics firms must close the quality and functionality gap by employing more advanced technology. They are thus likely to continue and perhaps even increase their use of merchant technology. To the extent that Chinese firms succeed in capturing market share, merchant technology firms are likely to benefit as well. Chinese firms may also acquire high-end technology firms, potentially creating an acquisition premium for specialized technology companies.

Working with technology merchants, Chinese firms are likely to quickly match—and at times surpass—the features offered by larger, more sophisticated incumbents. By providing greater competition more quickly, Chinese companies may effectively further compress consumer-electronics product cycles and accelerate commoditization.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	0	(1)	(2)
Potential to Gain	2	3	4
Net Score	2	2	2

Consumer Staples

The potential for disruption and gain for foreign consumer-staples companies is limited. Food, beverages and personal products are quickly consumed, but they are subject to strong brand loyalty and require extensive distribution networks. Even within China, there are few truly national consumer-staples brands, and most of those have emerged recently. That's the result of fragmented distribution networks and limited national advertising, although weak copyright enforcement has also had an impact. As national retailers gradually penetrate the hinterlands and China's WTO obligations open the country to foreign mass retailers, domestic and foreign brands are likely to gain national scope and take root across the country. This will likely take years, and Chinese consumer-staples companies are not likely to learn world-class brand management skills until then.

In the short and medium terms, the opportunity for foreign companies to profit within China is limited by Chinese consumers' tendency to be extremely price-sensitive and the lack of efficient national distribution networks. As a result, the Chinese market will not help these industries redress their global problem with low margins. In the long run, opportunities for foreign firms may brighten as Chinese distribution networks improve and wealthier Chinese seek higher-margin products. Yet by this point, Chinese consumer-staples companies are likely to be more competent.

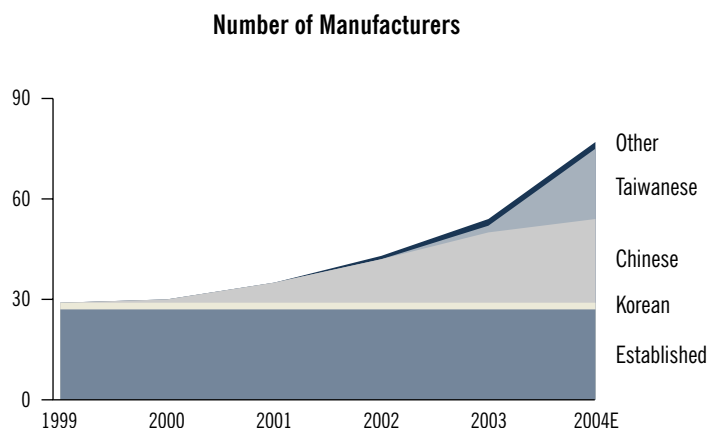
	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	0	0	(2)
Potential to Gain	4	5	7
Net Score	4	5	5

Distribution and Retailing

The potential gain for distribution and retail companies is sizable. China's distribution and retail markets remain highly fragmented. While a few Chinese retailers have begun to operate regionally or in tier-one cities, there are few national distributors or retailers to speak of and none that currently appear to be candidates for expansion overseas. Foreign competitors, such as Carrefour, Metro and Wal-Mart, have opened stores in the larger coastal cities. Like their Chinese counterparts, the foreign firms should benefit from the elimination of national and provincial barriers to entry set for 2005 under the terms of China's accession to the WTO.

The emergence of Chinese competitors in other segments is likely to benefit foreign retailers in developed markets. Distributors and retailers in developed markets play an important role for Chinese manufacturers. In sectors as diverse as consumer electronics, white goods and automotive replacement parts, retailers are importing Chinese products, thereby giving Chinese companies access to foreign customers. For their part, the retailers gain more supplier options and enhance their bargaining power if the Chinese manufacturers offer credible alternatives to incumbent products. Philips estimates that the number of significant consumer-electronics suppliers worldwide increased from approximately 29 in 1999 to 54 in 2003.⁵⁷ Most of the new entrants are in China or Taiwan (*Display 19*).

Display 19
Chinese and Taiwanese Firms Alter Landscape in Consumer Electronics



Source: Royal Philips Electronics

In product categories that are highly segmented or are prone to commoditization, such as electronics and after-market automotive parts, the shift in the balance of power between manufacturing and distribution is likely to be pronounced.

In the long term, a Chinese consumer-products retailer such as Gome or a healthcare or industrial-products wholesaler may venture abroad in pursuit of growth. This is not likely to be a significant trend for years to come.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	0	(2)	(2)
Potential to Gain	9	8	7
Net Score	9	6	5

Energy

Foreign energy companies, too, are likely to gain tremendously from China's growth. China has proven to be a profitable new customer, and Chinese demand is likely to increase global demand for energy as its industrialization continues. In upstream industries, suppliers may not be able to find additional capacity fast enough to bring prices down substantially, since petroleum reserves may have peaked in the wake of diminishing new discoveries. As a result, companies with upstream assets are likely to benefit in the short, medium and long terms.

Perhaps the only negative for upstream companies is that Chinese firms are a new source of competition as they seek to expand their reserves and secure long-term access to stable energy supplies. Chinese oil and gas companies are already expanding abroad, and they are likely to become more sophisticated.

Downstream firms are generally able to adapt more quickly to changes in demand. As a result, refining capacity is likely to increase and Chinese companies are likely to take part in the process. In the medium and long terms, downstream supply and demand are eventually likely to return to a balance, and margins in this segment are likely to revert to their long-term levels.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	0	0	(1)
Potential to Gain	1	4	7
Net Score	1	4	6

Financial Services

Over the long term, China offers significant potential gain and little threat to foreign incumbents in the financial-services industry. Highly regulated in China and around the world, financial-services firms are less subject to the economic forces that govern the emergence of Chinese competitors in other industries. Chinese banks operate under the influence of central and local political authorities, have poor risk-management procedures and suffer from extremely high levels of nonperforming loans. In the short and medium terms, they are likely to remain focused on internal problems and not likely to grow overseas, organically or through mergers and acquisitions. Even if they seek customers outside China, few Chinese financial institutions have the transparency and solid balance sheets needed to inspire trust among foreign clientele. They also generally lack the advanced procedures and sophistication required to enter foreign markets; lack of these skills may weaken their defenses against foreign firms trying to take market share in China. However, the Chinese government understands the importance of improving performance in the financial sector and may eventually implement the reforms needed to make Chinese financial institutions more efficient in the long term. If this occurs, Chinese banks may follow other Chinese industries and venture abroad.

At the moment, there is limited leeway for foreign financial institutions to operate in China. For historical reasons, a small group of foreign firms are allowed to sell certain products in China without a joint-venture partner, but the banking and insurance industries have generally been tightly protected by the central government. WTO-mandated reforms are set to gradually liberalize foreign access to the sector, eventually covering more products and regions of the country. In the meantime, the greatest opportunity for foreign firms may lie in serving as intermediaries for Chinese companies seeking to raise capital overseas and increase their mergers-and-acquisitions activity. When China’s financial markets finally open, Chinese firms will have a difficult time fending off more sophisticated foreign rivals; the opportunity will then be substantial.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	0	(1)	(3)
Potential to Gain	2	4	7
Net Score	2	3	4

Medical

The Chinese pharmaceutical market is large and growing rapidly as the population ages and becomes wealthier. Chinese currently spend about \$12 per capita on pharmaceuticals, compared to \$340 per capita in the US.⁵⁸ The Chinese drug market is projected to more than double from approximately \$7 billion in 2000 to \$15 billion in 2005.⁵⁹ But even with this tremendous growth, only an estimated 20% of the population will have access to advanced medications.⁶⁰

The Chinese pharmaceutical industry is poorly positioned to reap the advantages of this growth, because it is highly fragmented and few domestic companies have the scale to fund world-class research. The Chinese government is seeking to promote consolidation and reform the sector, but the importance of drug sales to hospital profits is likely to slow the pace of reform. In the short and medium terms, foreign incumbents will have an opportunity to penetrate the Chinese market with relatively minimal domestic competition, particularly in higher-end products.

Chinese firms do have competitive advantages in certain parts of the drug creation value chain. Preclinical testing and clinical trials in China cost a fraction of what they do in developed countries, and the time from drug discovery to marketing is often half that in Europe and the US. If Chinese firms can satisfy US Food and Drug Administration conditions (as Indian firms have recently) and develop the sophistication to manage the complex regulatory process, Chinese pharmaceutical and biotechnology firms may perform drug manufacturing and both preclinical and clinical trials for global firms on an outsourced basis; eventually, they may conduct research for global firms as well. Alternatively, Chinese companies may opt to buy chemicals developed and patented overseas and focus on commercializing the technology in China. In some cases, Chinese companies may begin by focusing on niche opportunities that might be considered too small for larger foreign firms and subsequently work their way up to more mainstream products. However, given the long product cycles typical in drug discovery, Chinese firms are not likely to have a significant impact on global markets in the next five to seven years.

The Chinese healthcare-equipment market is quickly becoming big enough to support world-scale research, but few firms in this fragmented market have

achieved significant scale. In the long run, Chinese firms may consolidate and seek to expand abroad. If this occurs, they will need to obtain access to international distribution channels and foreign brands. Until then, Chinese firms are likely to influence foreign markets only as contract manufacturers for low value-added products.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	(4)	(6)	(9)
Potential to Gain	5	4	4
Net Score	1	(2)	(5)

Technology

Foreign technology firms may reap a net benefit from China's growth in the near term, but over the long term, we expect the pain to far outweigh the gain. The Chinese computer market is the second-largest in the world and is growing rapidly. Penetration for some products has reached 50% in the wealthier cities; much of the future growth is expected to take place in the urban replacement market and in the countryside, where penetration is estimated to be just 5%.⁶¹ Thus, Chinese manufacturers are largely focusing on selling affordable, low-cost PCs to first-time buyers outside the tier-one markets. Foreign semiconductor manufacturers are aiding Chinese original-equipment manufacturers by designing affordable processors.

Intense competition in urban markets is compelling some Chinese PC firms to consider expansion overseas. Although Chinese entrants lack brand recognition outside China, certain attributes of PCs expose incumbents to disruption. PCs have relatively short product lives; there is little technological differentiation between brands; and there are many mass retailers in developed markets that could provide quick, low-cost distribution. The need for after-sales support, however, remains a significant barrier to entry, particularly with regard to business customers; it is less important in consumer markets. To compensate for this deficiency, Chinese firms may seek to buy or partner with a second-tier incumbent.

Software is a natural complement to PC growth, but rampant piracy has made it difficult for foreign or domestic firms to earn a reasonable profit in China. As a result, domestic firms have not been able to achieve global scale. It will likely take the Chinese government years, if not decades, to reverse current attitudes toward intellectual property rights. In the meantime, Chinese software firms are likely to have to settle for providing outsourcing services or focus on niche markets, such as online gaming, which are relatively immune to copyright infringement.

In the semiconductor industry, Chinese designers are likely to suffer from the same problems as in software. The Chinese government has selected design as a strategic industry and may strengthen piracy enforcement to help nurture the industry, but it would likely take years to implement effective enforcement policies throughout the country. In the meantime, Chinese design firms will likely concentrate first on low-end applications and then gradually move up the value chain. The government also wants to develop a semiconductor-fabrication industry and has already implemented measures to induce investment in world-class plants. This support is likely to continue, albeit in a less explicit fashion, and Chinese fabricators may eventually threaten the position of dominant players elsewhere in Asia.

	Implications for Foreign Incumbents		
	Years		
	1 to 3	4 to 7	Over 7
Exposure to Disruption	0	(1)	(2)
Potential to Gain	0	0	0
Net Score	0	(1)	(2)

Telecom Services and Utilities

Foreign telecom-services firms have been banned from owning Chinese assets and thus have virtually no potential for gain in China. Foreign utilities may own Chinese electric-generation plants, but they may not own distribution capabilities.

If opportunity in China is limited for foreign telecom firms, so is the disruption potential. To date, China's telecom-service and electric companies have focused on building enough capacity to meet the rapidly growing needs of their customer base, while navigating the shifting tides of China's regulatory environment. Even today, wireless and wire-line carriers are preoccupied with the potential restructuring of their industries in the prelude to the issuance of 3G licenses. As a result, regulatory reform and internal affairs will likely occupy their attention over the next three years. Once the domestic telecom industry becomes more settled, Chinese carriers will be among the largest in the world and may seek to extend their reach into foreign markets.

Chinese utility companies have little incentive to look overseas for foreign production capacity, because most of the growth in global generating capacity over the next 20 years will take place in China and there are no advantages to an international production network. Like Chinese energy companies, utilities may seek to secure access to foreign raw-material supplies.

Conclusion

China's increasingly affluent population will consume increasingly vast amounts of goods and services. While many foreign firms have focused on the prospect of selling products to these customers, few have paid enough attention to the fact that many of the products Chinese consume will continue to be made by indigenous Chinese companies. Fewer still have recognized that this consumption will provide fertile ground for these Chinese companies to grow and expand overseas.

As the examples in this report show, China's domestic sales will nurture world-class competitors, and these firms will eventually disrupt the status quo in a number of global industries. Consumers everywhere will undoubtedly benefit from this trend, gaining greater choice and probably lower prices. Foreign companies, however, face mixed fortunes: Some may gain as rising Chinese companies and consumers demand their goods, while others may encounter intense competition from new Chinese entrants. For investors, the mandate is clear: They must keep in mind which incumbents will be helped and which hurt as Chinese companies gradually take their places on the global stage. ■

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