

The Impact of China's WTO Accession on Its Mobile Communications Market

Winter Nie, Thunderbird - American Graduate School of International Management
Hongjian Zeng, China United Telecommunications Corporation

For any global telecommunications company, the Chinese mobile communications sector is dynamic and vibrant. As the world's largest mobile communications market, China had a total of 136 million mobile phone subscribers by October 2001. In November 1999, China reached an agreement with the U.S. about China's accession to the World Trade Organization (WTO). This agreement was widely viewed as presenting a tremendously rich set of opportunities for foreign investors. It also poses a serious threat to domestic telecommunications companies that have, until recently, been protected by government policies and shielded from direct foreign competition. This paper offers an in-depth account of the history of this important sector of the Chinese economy and analyzes its potential trajectory under the WTO rules. It intends to provide a picture of how the China mobile communication industry evolves, who are the major players, and how the WTO accession might impact these players. Specifically, this descriptive study attempts to address the following questions:

1. *How will the Chinese government restructure the telecommunications authority to facilitate the transition to the WTO era?*
2. *What are the new opportunities and threats for domestic players and foreign organizations that operate in China or consider entering the market?*
3. *What is the outlook for China's mobile communications market?*

INTRODUCTION

For any global telecommunications company, the Chinese mobile communications sector is dynamic and vibrant. As the world's largest mobile communications market, China has a total of 136 million mobile phone subscribers by October 2001 (see www.mii.gov.cn). According to projections contained in the ambitious development plan of the Ministry of Information Industry (MII), the number of mobile phone users will exceed 300 million in 2005 (Liu, 2000).

In November 1999, China reached an agreement with the U.S. about China's accession to the World Trade Organization (WTO). In the agreement, China committed itself to carrying out a number of dramatic changes in trade-related policies according to the WTO's general trade principles. This agreement was widely viewed as presenting a tremendously rich set of opportunities for foreign investors. It also poses a serious threat to domestic telecommunications companies that have, until recently, been protected by government policies and shielded from direct foreign competition.

In November 2001, China was formally admitted into the WTO. Some of the major changes as a result of China's accession to WTO are as follows:

- *Lower tariffs for importing IT products:* The current customs duties of 13% on average will be reduced to zero for most IT products by 2003, and all customs duties of IT products will be eliminated by 2005 (Zhang, 2000).
- *Elimination of Non-Tariff Barriers:* Foreign companies will be granted domestic treatment, and products from foreign companies will be treated no worse than domestic products. The current requirements of technology transfer, local R&D facilities, import quota, and export balance imposed on foreign companies will be removed, and the government subsidies for domestic products will be prohibited. The government will be neutral on the technologies chosen by companies; however, it will still retain the right to formulate national standards (Chen, 1999; Deng, 2000; Lai, 2000; Liang & Meng, 2000; Wu, 2000).
- *The opening-up of the service sector:* Mobile phone services will be open to foreign competition within 3 years of WTO accession, and foreign interests will be permitted to constitute up to 49% of the equity. It is expected that competition will enlarge the market capacity and create a need for more equipment (Chen, 1999; Lai, 2000; Liang & Meng, 2000).

Table 1 summarizes the major changes that are expected in the next five years.

TABLE 1
Policies Changes and Time Frame

Current Policy	Changes	Time-frame
13% Tariffs for IT products	Eliminated	2003--2005
Quota for import	Eliminated	2005
Coordinated purchase of domestic products	Ceased	Not specified
No foreign investment allowed in mobile service sector	Up to 49% equity holding by foreign investors	EU: 3 yrs. After accession US: 5 yrs. After accession

There is no doubt that these changes will have a significant impact on China's mobile communications market. In this paper, we offer an in-depth account of the history of this important sector of the Chinese economy and analyze its potential trajectory under the WTO rules. With government still playing a significant role as a regulator and sometimes as an active participant, we devote a fair amount of discussion in this regard. The paper is written to provide deeper insights into the inner workings of China's mobile communications industry at the macro level. Specifically, the following questions are addressed in this paper:

1. How does the Chinese government restructure the telecommunications authority to facilitate the transition to the WTO era?

2. What are the new opportunities and threats for domestic players and foreign organizations that operate in China or consider entering the market?
3. What is the outlook for China's mobile communications market?

The paper is organized as follows. First, we review the relevant literature on China's telecommunication industry and outline our research methodologies. Then we provide a historic overview of China's mobile communications market. Next we identify the role of the government and changes it has made in preparation for China's entry into WTO. Subsequently, we discuss the impact of China's WTO accession on its foreign and domestic players as well as consumers in the mobile communications industry. The paper ends with a discussion of the future of China's mobile communications market.

METHODOLOGY

To study the mobile communications market, it is imperative that we look at the bigger picture—the significant role that the government plays, the interplay of technology with economic, social, political factors, and the interaction among other key players in this arena (equipment suppliers, service providers, consumers).

The path that China is taking to develop its mobile communication market is not at all dissimilar to the course that other developing countries have adopted. For many countries, telecommunications are appropriately viewed as part of the national economic security networks and part of the drive towards national economic modernization (Ure, 1997). Argument for not privatizing the mobile communication market is based on the philosophy that telecommunications is a public service that should be available to all citizens and monopolies are held to be the best mechanism for providing universal service, acceptable pricing, and long range planning (Frieden, 1996).

In recent decades, the pressure to liberalize the telecommunications markets has come from a number of quarters, among which poor service performance due to lack of competition and inefficiency are often cited. Facing economic crisis during the 1980s and 1990s, many governments viewed liberalization as a key to economic recovery since advanced telecommunications supports modern economic activity and makes the country more attractive to foreign investment. Typically a developing country does not have adequate domestic capital and modern know-how to be able to afford to exclude foreign direct competition. Many governments have initial structural reform including the introduction of competition and the encouragement of both foreign and domestic new operators. As the government policies have liberalized, this industry shifts from a state-run utility towards a multi-entity competitive market structure. Most telecommunications markets are oligopolistic (Mody & Tsui, 1995). The theoretical justification for relying on market signals to promote entrepreneurship and capital accumulation fades in such noncompetitive settings; state regulation becomes necessary (Jussawalla, 1995). Therefore, the study of the role the government plays in telecommunications market and its regulations is critical in any research into the telecommunications industry. Many studies have been devoted to investigation of government policy, planning, liberalization of the telecommunications industry. Although some degree of market competition exists in China, the government's role is often more

pronounced than in other Asian countries. Thus, our analysis focuses on the government's presence in China's mobile market and how its impact is expected to shape the course of development of this industry.

A country's decision to invest in a particular manufacturer's network or adopt a certain national standard carries with it immense political and financial implications. While a technical perspective requires that we place emphasis on switching and transmission speed, in reality many other considerations enter the process of decision making: the ability of developing countries to pay for their equipment and technology, the issue of matching technology choices with available resources, and other political considerations can all have some bearing on the final choice of technological standards.

A related factor is the role of equipment manufacturers and service providers. Asian telecommunications carriers are shopping around and sourcing equipment from different suppliers. Singapore is buying switching systems from Alcatel after being dependent on Fujitsu for decades and Thailand has widened its market from two to five switch suppliers (Ingelbrecht, 1997). From a purely economic perspective, procurement from multiple sources is far superior to single sourcing. However, the presence of multiple technological platforms also introduces problems such as in the interfacing of the different networks. In this paper, we describe in some detail the new set of opportunities and challenges that foreign and domestic equipment manufactures and service providers will likely be confronted with.

Academic research in this field is predominantly qualitative in nature and relies heavily on official statistical data. Many papers focus on the role of government in shaping its telecommunications industry and market liberalization policy and its impact on various players. The technology standard issue and the role of equipment and service providers are commonly analyzed. Following literature in this field, our approach is also of a qualitative nature. While much of the extant literature tends to rely on government statistics and other second-hand data sources, we are able to augment official data with proprietary field data (one of the authors is a market strategist for China Unicom). We provide historical perspectives as to how China's communications industry has evolved. Rich information about the development of China's mobile communications market up to November of 2001 is incorporated to effect an in-depth analysis of how the WTO shapes the industry as a whole and how it impacts each player in the field. Given the rapidly changing landscape in the telecommunications industry, it is virtually impossible for any article to be "up to date" for long. However, we attempted to bring the most recent data and projections to our analysis.

A HISTORICAL OVERVIEW OF CHINA'S MOBILE TELECOMMUNICATIONS MARKET

China's mobile communications market mainly consists of cell phone and radio paging services. Within the cell phone market the analog and digital technologies coexist, although with the introduction of digital cell network the analog market is shrinking rapidly.

In 1987, analog mobile phone service was first introduced in Guangzhou and Shanghai, marking the beginning of mobile communications in China. Due to the considerable market potential, the mobile subscriber pool underwent soaring growth. By July 1997, China's mobile

subscribers totaled 10 million, making China's mobile communications network the 3rd largest in the world, just behind that of the U.S. and Japan (MII, 1998). By August 1998, the number of subscribers in China reached 20 million, turning the national Global System of Mobile communications (GSM) network into the biggest one in the world (MII, 1999). At the same time, the technical level and communications capability of the Public Cellular Mobile Communications Network was also rapidly improving. The total capacity of mobile switches grew from 453 thousand lines in 1992 to 25,857 thousand lines in 1997. Of these, the total capacity of GSM switches reached 14,010 thousand lines, and the number of base stations and channels hit 19 thousand and 724 thousand respectively (MII, 1998). After the construction of the GSM network, development of the analog network has become less of a priority. By October 2001, the number of fixed line subscribers reached 174 million, and the number of cell phone users stands at 136 million.

TABLE 2
Development of Mobile Telephone Network in 1987-2000
(Subscribers in 2000)

Year	Total Users	Growth Rate	China Telecom	China Unicom
1987	0.7		0.7	
1988	3.227	361%	3.227	
1989	9.805	204%	9.805	
1990	18	84%	18	
1991	48	167%	48	
1992	177	269%	177	
1993	638	261%	638	
1994	1568	146%	1568	
1995	3657	133%	3629	28
1996	6945	90%	6853	92
1997	13656	97%	13230	426
1998	24980	83%	23550	1430
1999	43000	72%	37770	5230
2000	85260	98%	66520	18740

Source: Statistics from the Ministry of Posts and Telecommunications (MPT), MII, China Telecom, China Unicom

In 1994, the digital mobile phone network was introduced to the Chinese mobile communications market, which it soon took over. By the end of 1998, the GSM network covered 1965 cities and counties, accounting for 91.8% of the total number of cities/counties in China (China Telecom Annual Report, 1999). Meanwhile, international roaming service with 60 operators in 38 countries/regions was opened. Coverage in mega-metropolitan cities, provincial capitals and developed coastal cities, indoor and outdoor environments of priority districts, main highways, railroads, airports and special areas has also been substantially improved.

The introduction of CDMA technology began in 1996, when China Telecom set up 4 trial networks in Beijing, Shanghai, Guangzhou, and Xi'an. With the rapid expansion of GSM network, China Telecom did not initially give CDMA serious consideration. In 2000, as a result of the favorable policy granted by the Chinese government, China Unicom was issued a license to build a national CDMA network and provide cell phone service based on CDMA. By the end of October 2001, China Unicom has established a CDMA network with 15.15 million capacity and covering about 300 cities nationwide. According to the company's marketing plan, the target market of the CDMA service is high-end and medium-end cell phone users when the company begins to offer the service at the beginning of 2001. In 2002, China Unicom will expand its CDMA network to a capacity of 30 million subscribers. By the end of 2003, the capacity will reach 50 million and constitute the world's largest CDMA network. (See www.chinaunicom.com.cn).

Another part of the mobile communications market is the radio-paging service. In 1984, the radio paging service was first launched in Shanghai. In 1993, domestic competition was introduced in some non-basic telecommunications services including radio paging and 450MHz group mobile communication. Currently, there are about 5,000 paging stations of various sizes in the country, some of which are large corporations providing national coverage, such as China Unicom's 191/192 Station and Runxun Paging. However, the paging network owned by China Telecom that accounts for 65% of China's radio paging market boasts the widest coverage, the largest subscriber pool, and the most advanced technology. By the end of 1997, China Telecom's radio paging subscribers totaled 34.19 million (MII, 1998).

In 1999, in an effort to restructure the Chinese telecommunications industry, the Chinese government split off the radio-paging sector from China Telecom and set up a new company independent from China Telecom named Guoxin Paging. Later, Guoxin Paging was taken over by China Unicom, making China Unicom the No.1 carrier of paging service with a market share of about 80% (China Unicom, 2000). With the development of cell phone service and the declining of tariff, some paging subscribers are switching to the cell phones, making the growth rate of paging users a negative number. China Unicom currently still holds about 60% of the 40 million paging users.

THE ROLE OF GOVERNMENT IN CHINA'S MOBILE COMMUNICATIONS INDUSTRY

The telecommunications industry is considered one of the four pillar industries in China. The government has not allowed any form of direct foreign investment in mobile communication services, although China's telecommunication equipment procurement has been open to foreign companies for years. Since well before the WTO accession, companies such as Motorola, Lucent, Ericsson, and Nokia have supplied the Lion's share of telecommunications equipment in China. However, no foreign service providers can operate in China's telecommunications market in the form of joint venture or as foreign subsidiaries. The government essentially insulated this service sector from foreign competitions.

During 1949 to 1994, the functions of government and enterprises were combined in China's telecommunications industry. The former Ministry of Posts and Telecommunications (MPT) controlled the whole industry by issuing administrative commands. The MPT is responsible

for making policies, setting up networks, providing services, developing technical standards, conducting research, and manufacturing equipment. All enterprises are affiliates under MPT's administration. MPT made the strategies, and the enterprises executed MPT's administrative orders.

The need for separating MPT's governmental functions from its businesses became urgent in 1994, when China Unicom was established with support from the State Council. After studying the experience of deregulation in developed countries, the State Council concluded that competition was an effective method to achieve sustainable growth in the telecommunications industry. China Unicom was founded to challenge MPT's monopoly, and competition was introduced to China's telecommunications industry for the first time. To make sure there was to be fair competition, China Telecom was formed by the spinning off of the service provision sector from MPT.

Four years later, the decision to introduce competition to China's telecommunications market proved to be a move with considerable foresight. With China Unicom's operation in the mobile communications market, the number of subscribers soared and the price for using mobile phone was slashed tremendously. China had only 3.63 million mobile phone users in 1994, and the number grew to 24.98 million in 1998. One-time network access charge for a mobile phone user, which is equivalent to the installation fee for fixed phone users, was between 3000 – 5000RMB (roughly equivalent to US\$375 – 625) in 1994 and declined to 1000-3000RMB in 1998 (roughly equivalent to US\$125 – 375) (Cheng, 2000).

But the playing field was not entirely even. China Telecom, although registered as a state-owned company, still had virtual relations with MPT. For example, China Telecom had to wait for MPT's approval before making any strategic decisions. It also had to turn in all its revenues to MPT and let MPT distribute the cash flows among different provinces. In addition, its management team was selected and assigned by MPT. Within this context, it is understandable that MPT, taking advantage of its position as a regulator, lent its support to China Unicom. China Unicom had a hard time competing with China Telecom. By the end of 1998, China Unicom had only 1.42 million mobile phone subscribers, representing a market share of less than 6% (MII, 1999).

In order to ensure a fair and open environment and promote competition in the information technology sector, the Ministry of Information Industry (MII) was formed in 1998. This new ministry combined the functions of the former Ministry of Posts and Telecommunications, Ministry of Electronic Industry, State Radio Regulatory Office, State Informatization Office, and Bureau of Special Electronic Installations. As stated in the structural reform plan of the State Council and the Circular on the Organizational Set-up of the State Council approved by the First Session of the 9th National People's Congress of China, "The MII is a regulatory body in charge of the manufacture of electronic and IT products, communications and the software industry, as well as the promotion of informatization of the national economy and social services in the country." The MII has 13 departments/bureaus; each has its own authorities and responsibilities. Figure 1 shows the organizational chart of the MII (MII, 1999).

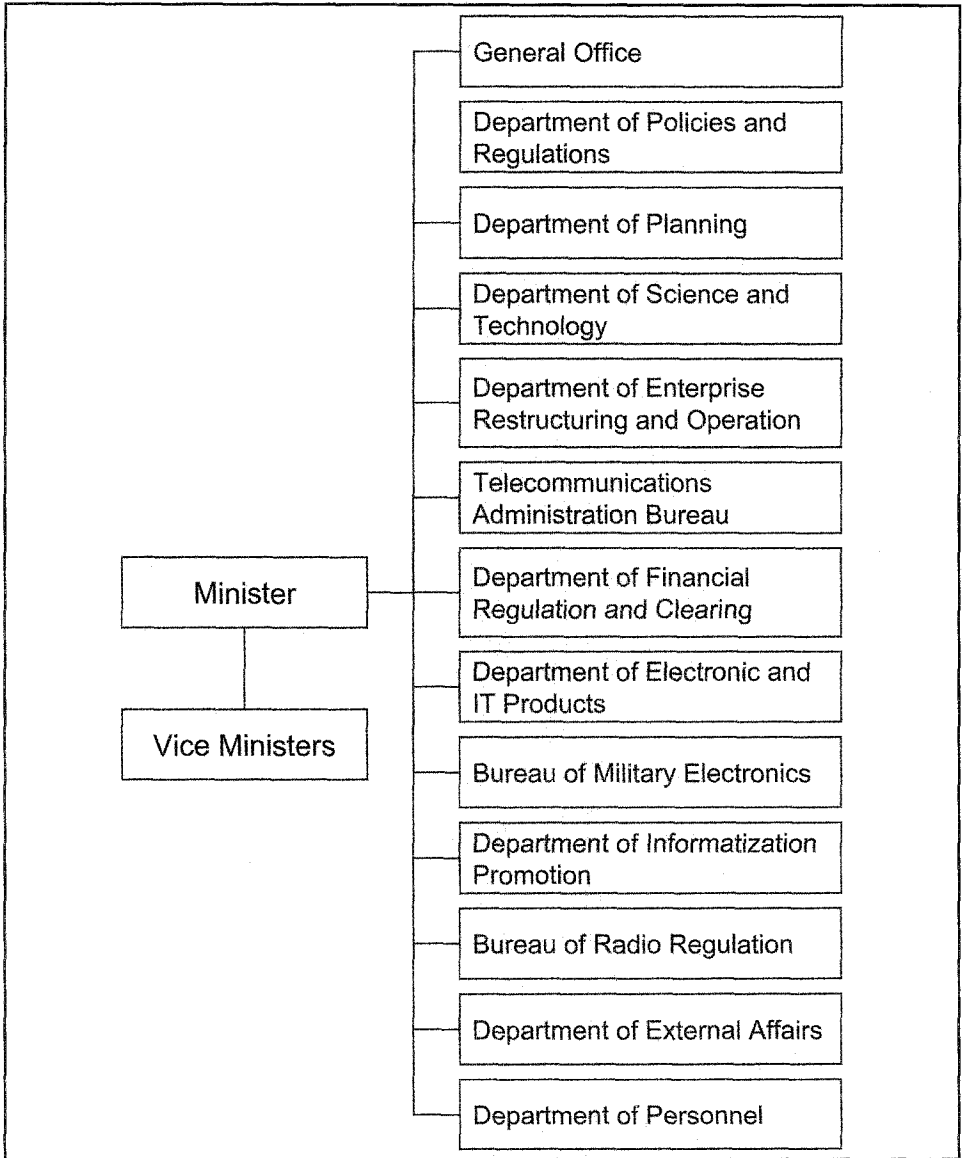


Figure 1. An Organizational Chart of MII

After the new MII was set up, the business functions formerly controlled by the MPT and MEI were gradually separated from the governmental functions and reassigned to related companies. For example, under the old regulatory system, China Telecom had to wait for MPT's approval before it could make an investment decision. The new system gives China Telecom the authority to manage its own decisions about capital budgeting, service provision, financial management, network construction, and human resources management. But the company still needs to report to the State Planning and Development Committee for its investment decisions and price adjustments.

The most significant impact of the new regulatory structure is that it has changed the business environment in the telecommunications industry. The MPT had been the superpower in the telecommunications industry, because it was a government entity as well as a corporation with a large number of subsidiaries. Any foreign company that wanted to do business in China would have to maintain a close relationship with the MPT, which often dominated such relationships by setting requirements such as technology transfer and local R&D centers. Things will be different after the WTO accession. If a foreign company wants to find a local partner, it might as well focus its effort on the Chinese enterprises, not the government. Compared with the government bureaucracy, the enterprises have a much sharper business focus and are more willing to cooperate.

Before the founding of the MII, the State Council began to consider possible approaches to splitting China Telecom. This consideration encountered strong objections from the former MPT. It was obvious that China Telecom's dominant position was in MPT's best interest when the government function was combined with the enterprise's management. In 1998, however, when the MII was finally formed and the new regulatory structure established, the fate of China Telecom was decided. There were several reasons for splitting China Telecom.

The first was to make the telecommunications giant smaller so other companies could have a chance to compete with it. Since the founding of the People's Republic of China in 1949, China Telecom has been a monopolist in the telecommunications service market. After fast growth in the past decade, the company possessed considerable resources in terms of capital, personnel, and technology. It enjoyed vast advantages over its competitors in network coverage, network capacity, service network, operational expertise, service development, and customer relations. In addition, China Telecom was able to provide all forms of telecommunication services. By subsidizing certain services with profits from other services, the company could easily beat out a competitor that can only provide a limited number of services. Without government intervention, there was virtually no way for other competitors to succeed in a head-to-head competition with China Telecom.

The second reason for a split was to improve operational efficiency. Though China Telecom had the world's largest GSM network and the second largest fixed-line telephone network, its operational efficiency was relatively low when compared with similar players in developed countries. In 1998, China Telecom reported revenue of 190 billion RMB, which is equivalent to \$20 billion (China Telecom, 1999). The same year AT&T's revenue was \$53 billion (AT&T, 1999).

The third reason was to push the state-owned companies into a more competitive environment. The government believed that competition would help the state-owned companies improve their service, reduce cost, be more sensitive to market demand, and have better financial performance. It is hoped that after several years of experience in the domestic market, those companies will be ready to face the fierce competition when China finally opens its telecommunications market to the outside world under WTO rules.

The basic idea of the reform was to restructure the China Telecom Group, and to divide the company into four parts according to service provision. According to the reform plan approved by the State Council, the former China Telecom Group will be divided into four companies:

China Telecom, China Mobile, Guo Xin Paging Ltd., and China Satellite Communication Ltd. China Telecom will retain the licenses on local telephone services, domestic long-distance telephone service, international long-distance service, Internet service, data communication, IP telephony, and value-added services. China Mobile will be dedicated to mobile communications and currently it has the licenses for providing mobile voice services, mobile data services, and IP telephony. China Satellite Communication Ltd. will provide satellite communications services, satellite mobile communications services, and VISAT services. Guo Xin Paging Ltd.'s main business is in radio-paging services. Under the State Council's decision to further support China Unicom, Guo Xin Paging Ltd. was taken over by China Unicom in June 1999, shortly after the company was split from China Telecom. Figure 2 shows the result of the split off of China Telecom Group.

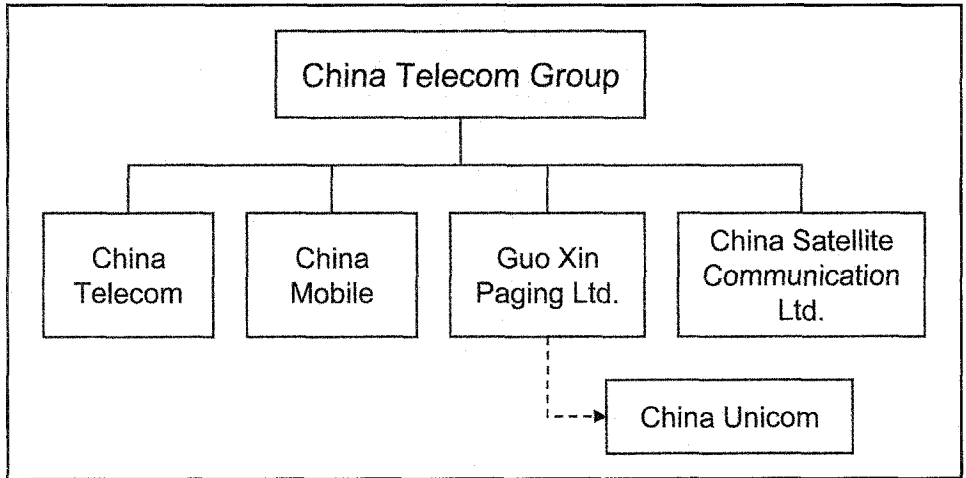


Figure 2. The Spin-off of China Telecom Group

After the spin-off, China Mobile consolidated the mobile communications business formerly operated by China Telecom and became China's biggest mobile phone operator. By the end of June 2000, China Mobile had 45 million contracted subscribers, representing an 82% market share. Its GSM network now covers all the county level cities and townships, making it the No. 1 GSM network in the world. In addition to the basic voice communications service, China Mobile launched WAP service and online bank service in 2000, and plans to develop more value-added services in the near future. On May 17, 2000, China Mobile announced its goal for the year 2000 to add 20 million subscribers to the GSM network, to make its roaming service available in 65 countries, and to realize revenue of 180 billion RMB (Washeng Daily, May 2000).

WTO SHAPES THE LANDSCAPE OF THE CHINESE MOBILE COMMUNICATIONS INDUSTRY

In November 1999, China reached an agreement with the U.S. about China's accession to the World Trade Organization (WTO). In the agreement, China committed that it will conduct several dramatic changes of its trade policy according to the WTO general trade principles, which are expected to have significant impact on the Chinese mobile communications industry.

In this section, we discuss the impacts of China’s WTO entry on foreign mobile communications equipment manufacturers, foreign telecom service providers, foreign investors, domestic telecommunications companies, and consumers. Figure 3 identifies the major foreign and domestic players in China’s mobile communications market—equipment

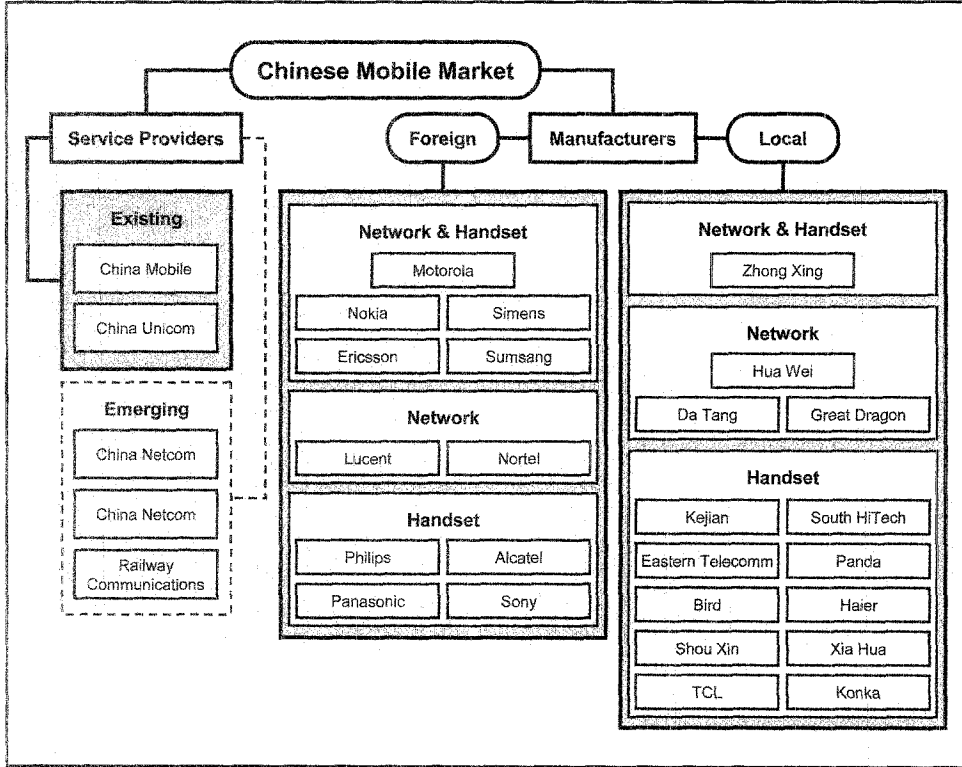


Figure 3. The Major Players in the Chinese Mobile Market

manufacturers and service providers.

The Impact of China’s WTO Accession on Foreign Equipment Manufacturers

The impact of WTO entry on foreign manufacturers is mainly from the elimination of non-tariff barriers and the substantial reductions of tariff barriers. The opening of telecommunication services implies new opportunities for foreign equipment suppliers.

The Chinese telecommunications market is an emerging market with unique characteristics. All providers of basic telecommunication services and mobile telephone are state-owned enterprises. Furthermore, the market is subject to heavy government regulations and the government has effective control over all the companies in this industry. Those features contribute to the existing non-tariff barriers against foreign players, such as the requirement of technology transfer, local R&D activities, and the policy of preferential treatment for domestic companies.

With the implementation of WTO principles, China is obligated to give foreign companies National Treatment, which means that products from foreign companies should be treated no worse than domestic products. In addition, all non-tariff barriers should be eliminated gradually. The implications for the telecommunications industry include less reliance on government power to support domestic companies, loosening of the mandatory technology transfer requirements for foreign manufacturers, abolishment of the strict restrictions on balancing export and import requirements, and the elimination of quotas for imported products (Yu, 1999).

As one of the changes brought about by the WTO, the Convention for Coordinating Purchase of Domestic Telecommunication Equipment, annually called by the Ministry of Information Industry, will come to an end. At those conventions, the telecommunication service providers were required by the government to sign certain amounts of contracts with domestic manufacturers. In so doing, the government used its influence to support domestic companies. After China enters WTO, this kind of government support will be reduced, if not eliminated. All contractors will be chosen through auctions in the open market, and foreign companies will have the same opportunities as domestic ones. It should be noted that the government's favoritism toward domestic companies is not likely to terminate in the short-run, because it can still choose to support the domestic manufacturers in implicit ways.

For example, technology transfer will no longer be mandatory. China used to employ a policy called "exchange technology for market share," which required foreign companies to set up local joint ventures and transfer technology to their local partners if the companies wanted to enlarge their market presence. Although not stated explicitly in the form of legal documents, this policy is implemented earnestly in many industries. In the telecommunications industry, this requirement was also made mandatory by the former MPT. Any company that failed to satisfy this requirement often found that their orders from the telecommunications service providers became fewer. The intention behind this policy is to improve the technology capability of the domestic manufacturers so as to gain competence in the telecommunications market. Because this policy is inconsistent with WTO's general principles, which state that the government should treat local companies and foreign companies equally, it will be eliminated after China enters WTO. The decision of whether to set up a joint venture locally will be left to the foreign companies.

Another result is that the trade-balancing requirement will be suspended. To protect its foreign exchange reserves, China formerly imposed strict restrictions on foreign trade. Under the trade-balancing requirement, a foreign company's purchase or use of imported products was limited to an amount related to the volume or value of local products that it exports. If the foreign company cannot increase its sales outside China, its production in China cannot be enlarged, because such an enlargement would call for more imports. In the telecommunications industry, however, this requirement is not a serious problem because this industry, as a priority of economic development, enjoys preferential policies and has better access to the government's foreign exchange reserve, foreign companies are still encouraged to increase their exports. When China suspends its requirement of trade balancing after the WTO accession, foreign companies will have fewer concerns with their balance of imports and exports and will be able to focus more on their performance in the local market.

Under WTO rules, the use of quotas to restrict the import of foreign products will be banned. In the telecommunications industry, the current regulation still imposes quotas on several products produced overseas. For example, Motorola needs quotas to import mobile phone handsets manufactured outside China, and the same restriction is imposed also on other manufacturers such as Nokia and Ericsson. After China joins the WTO, the use of quotas has to be eliminated because any kind of quantitative restrictions on imports and exports would violate WTO's principle of free trade. China agreed that it would cease the use of quotas within 5 years of its WTO accession. Once the quota is removed, foreign companies will have better chance of increasing their sales in the China market.

The government will be neutral about the technology choices made by local companies. In the past, technologies used in the Chinese telecommunications industry, especially in the public telecommunications networks, were chosen by the government. Normally the government authorities, the MPT, would conduct several rounds of feasibility research, on-site testing, and commercial testing for different technologies. After the results showed that a certain technology was commercially feasible, the MPT would then make a final decision. Only after their technologies were chosen could manufacturers have access to the Chinese telecommunications market. If MPT concluded that a certain technology did not fit China's "national conditions," products that had related technology content would be banned from the Chinese market, and the company producing them would lose out. One example is China's choice of GSM technology as opposed to CDMA. In 1994, when China began to introduce digital mobile communications technology, MPT chose GSM instead of CDMA. The result of this decision was that Motorola lost its leading position to its European rivals, Ericsson and Nokia, and the company lost millions of dollars of sales in the mobile communications market. After the WTO accession, the government will be neutral on technology choices, and companies that purchase technologies will make the decision based on their competitive strategies. The result is that technology development becomes less risky, because the company no longer needs to bet on one particular technology. If different niche products exist, different kinds of technologies will find their own market positions.

The WTO general principles require that all non-tariff barriers should be eliminated and that the sole trade restriction, if any, will be tariff, because it is fair, transparent, and accountable. Currently China imposes an average customs tariff of 13% for IT products including semiconductor, computer, telecommunication equipment, and other IT equipment (Zhang, 2000). China has made the commitment that after joining the WTO it will reduce the customs duties for most IT products to zero by 2003, and all customs tariffs for IT products will be eliminated by 2005. This policy will definitely benefit the telecommunications manufacturing industry as it gives companies more choices among suppliers worldwide. According to a statement made by Mr. Zhu Jinwen, President of Zhong Xin Telecommunication Ltd., the decrease of customs tariff will bring about a 59.4% reduction of costs for importing components (Zhu, 2000).

China will open its telecommunication services market and issue more licenses to domestic and foreign carriers. While this is certainly good news for service providers such as AT&T and MCI WorldCom, it will also benefit manufacturing companies. With more service providers available, the market for telecommunication equipment will be much larger, the

manufacturers will have more customers, and those customers will have more bargaining power.

Currently the equipment manufacturers' only concern with regard to customer relationship is their local customers, i.e., China Telecom, China Mobile, and China Unicom. When the foreign service providers come to China, the status quo could be changed because those foreign players have their own preferred suppliers in their home country, and they may want to bring their suppliers to the new market.

New Business Opportunities for Foreign Service Providers

China's telecom service market will be open to foreign players after the WTO accession. Considering the huge potential in the service market, currently closed to foreign service providers, the WTO agreement will bring considerable business opportunities for those telecom companies (Lightman, 2000; Gates, 2000). In the short term, however, foreign telecom companies cannot set up wholly owned subsidiaries to provide telecom services in China because the restriction only allows up to 49 percent foreign equity in a company. In that case, the only choice for foreign companies to operate in China is to set up joint ventures with local partners.

Mobile services and data services often offer great potential for high profit margins. Additionally, they present great growth potential that is very appealing to investors. Therefore, foreign companies will likely target mobile and data services. With their ability to provide differentiated services and high service quality, foreign service providers will be able to target business customers and expand rapidly in metropolitan areas and industrialized regions. Business customers, who demand high service quality and service customization, are less sensitive to pricing than individual consumers. Service providers can afford to experiment with charging high premiums for better services.

For global telecommunication companies such as AT&T and British Telecom, another benefit of entering China's market is to increase their global network coverage. More coverage means broader business opportunities. Those companies could therefore attract more customers looking for a one-stop shopping experience.

The biggest concern of foreign companies is whether they will be competing on a "level playing field" when they enter China. As part of its accession to the WTO, the PRC will become a signatory to the General Agreement on Trade in Services (Gats) which governs trade in service among WTO members. It stipulates that the PRC must grant the services and service suppliers of all WTO members treatment equal to the best treatment given any other country and the PRC must publish all international regulations of general application and international agreements relating to trade in services. The PRC will be obligated to allow access to and use of public telecoms networks and services on reasonable and nondiscriminatory terms with respect to any telecoms service to which it has granted market access (Farris & Stocks, 2001).

While the second-mover disadvantage does exist for foreign service providers when they enter the China market, it will be compensated by their experience providing high service quality. The domestic service providers lack customer centric service approach. Service

quality is a rare commodity in China. Foreign service providers have a competitive advantage in this dimension.

The Impact of the WTO on Domestic Service Providers

In anticipation of China's joining WTO and as part of its reform agenda, China Telecom, the state-owned monopolist, was split into four independent companies, among which China Mobile is one of the two major players in China's mobile telecommunications market. Another major domestic player is China Unicom that was founded in 1994 when the government started to break China Telecom's monopoly.

China's WTO entry will directly threaten the two major domestic players' duopoly positions. They have been operating under the government's protection from foreign competition for years. As the market becomes more open to competition, more licenses will be issued and the competition in the service sector will be fierce. As a result, the current high profit margin will likely be reduced. Domestic players will have to benchmark their service quality against foreign competitors and improve their operational efficiency. They may need significant changes in optimizing networks, restructuring organization, improving customer service, and adjusting management styles. Since this industry was dominated by very few large players, the customers previously did not have any choices. With the advent of WTO and competition from foreign service providers, customers will become more demanding. China Mobile and China Unicom's first mover advantage will eventually taper off.

WTO accession also brings about opportunities for domestic players to create strategic alliances with foreign partners, which was previously prohibited by the government. By establishing strategic alliances with foreign telecom companies, domestic players may obtain support from foreign partners in terms of capital, technology, and management expertise, which were urgently needed for future growth. Once they consolidate those resources, the domestic companies could improve their competitiveness in the global telecom market. Fewer regulatory restrictions will be imposed on domestic players when the government gives telecom companies more freedom to make operational decisions. Less government intervention means that domestic players will be more sensitive to customer demand and have more freedom with regard to pricing strategies, service category, and network coverage. The pressure of competition will drive domestic players to improve their operational efficiency, which will eventually benefit the companies themselves. Changing people's mentality from providing little to none service quality to competing and excelling on service quality would be one of the biggest challenges for domestic service providers.

The Impact of the WTO on Domestic Equipment Manufacturers

The manufacturing sector in the Chinese mobile market is one of the world's most competitive industries. Almost all of the world's famous telecommunications manufacturers have operations in the Chinese market. Even with the government's support, the local manufacturers are niche players at best in this dynamic market.

By 1999, 87% of the mobile equipment market was held by the top three players: Nokia, Ericsson, and Motorola. The other foreign players took about 10% market share, and the local companies had only 3% of the total market (Chen, 2000).

While the local players are trying hard to seize more market share with the help of government subsidy, problems such as limited R&D investment, lack of technology, and technical compatibility make it hard for them to go up against the foreign competition effectively in the network equipment market. The Chinese telecommunications operators are reluctant to open their network to equipments made by domestic manufacturers, believing the introduction of local equipment might reduce the reliability and quality of the existing network.

The handset market is actually a consumer market. It is characterized by mature technology, low entry barrier for new players, enormous buyers' bargaining power, personalized products, and price sensitivity. Currently there are 9 foreign brands and 10 local brands in the handset market, and the local brands have less than 15% market share. The problem for local producers is that their production remains at the Original Equipment Manufacture (OEM), Semi-Knock Down (SKD), or Completely-Knock Down (CKD) levels, and they do not have the core technology needed to develop advanced products. It is expected that in the next three years the local companies may expand their market share slightly, but currently they can only attract the low-end and non quality-sensitive users. The situation may change in the upcoming CDMA handset market. China Unicom will launch its CDMA service in early 2002. To make sure that there will be enough handsets on the market for the consumer to choose from, China Unicom selected 19 manufacturers as handset suppliers, among them Motorola is the only foreign brand.

In summary, Chinese manufacturers are strong in the low-end product range, but fall short in quality high-end range. Despite the support of the Chinese government for local players, the big three (Nokia, Ericsson, and Motorola) have advertising budgets that local companies can't even dream. However, local manufacturers are improving their R&D to produce more complex products. In 1990, Chinese color TV companies had zero market share at home; ten years later, they controlled nearly 100%. The question is whether the same thing will happen in the mobile handset market.

The Impact of WTO Entry on Government and Consumers

WTO accession will change the way the government regulates the telecommunications industry. Instead of intervening directly in companies' operations by issuing administrative commands, the government assumes the role of policy maker.

The majority of the mobile phone subscribers are geographically located in the metropolitan areas along the east coast. High-end users are almost exclusively business users while the demand from individual consumer subscribers is increasing steadily. For instance, the total number of mobile phone subscribers in Shenzhen had already exceeded the total number of fixed line telephone users as of February 2000. Currently the main complaints from consumers are the high prices, low service quality, and a lack of enough customer service. With the WTO accession, consumers would have more choices of service providers. Competition can also bring down prices and improve service quality. Overall, consumers in the mobile telecommunications market should benefit from the WTO.

THE FUTURE OF CHINA'S MOBILE COMMUNICATIONS INDUSTRY

From the introduction of mobile communication in 1987, the average rate of market expansion in China exceeded 100% annually. The growth of the mobile communications market is considered to be healthy, sustainable, stable, and rapid. With a current penetration rate of 9.2%, the Chinese mobile communications market still has great potential for growth. In the next few years, a healthy national economy, the new regulatory structure, and the government's preferential policies for infrastructure industries will benefit the expansion of mobile communications.

Most economists conclude that China has successfully overcome the negative impact associated with the Asian financial crisis of 1997 and that the Chinese economy is growing at a sustainable pace. In 2000 China's GDP increased by 7.8%, and in 2001 it grew by 7.5%, and in 2002 it is expected to grow at 8%. This is particularly impressive against the backdrop of global economic slowdown.

The reform of regulatory structure, the establishment of MII, and the restructuring of China Telecom Group ensure that competition in the mobile communications market will be more open and fair. With more service providers competing with one another, the market will be better developed and an already sizable "pie" will become even bigger.

The government views mobile communications as an infrastructure industry, and some preferential policies are given to this sector. For example, as part of this policy, China Unicom was allowed to issue equity in the overseas capital market. The government is also considering adjusting the fee structures for mobile phone services. The hottest topic is the one-way charge for mobile traffic. If the new fee structure is imposed by the government, the number of mobile subscribers is expected to soar.

In 1997, China had 13 million mobile phone subscribers. That number almost doubled in 1998 to 25 million. In 1999, 18 million new subscribers were added to the mobile phone network, and this number exceeded the number of new subscribers to the fixed line telephone network. It is believed that, in the next few years, the growth of mobile communications market will surpass that of the fixed line telephone market. According to MII's "Tenth Five-Year Plan" for the mobile communications market, total market capacity will increase by 50% in the first two years (2001 and 2002), 30% in 2003 and 2004, and 20% in 2005. By 2005, the number of mobile phone users in China will have exceeded 300 million (Liu, 2000).

Table 3 illustrates the Chinese mobile phone service market based on factors such as network coverage, distribution channel, brand awareness, financial performance, and government regulation.

TABLE 3
Forecast of the Chinese Mobile Phone Service Market

	2002	2003	2004	2005
Market Capacity	157mil	204mil	266mil	319mil
Growth rate	50%	30%	30%	20%
China Mobile	118mil (75%)	146mil (72%)	186mil (70%)	216mil (68%)
China Unicom	39mil (25%)	58mil (28%)	69mil (26%)	77mil (24%)
China Telecom	--	1mil	10mil (3.8%)	24mil (7.5%)
China Netcom	--	--	1mil (0.2%)	2mil (0.5%)
Railway Communications Group	--	--	--	0.2mil

Source: Internal Development Plans from MII, China Mobile, China Unicom, and China Telecom.

In summary, China's entry into WTO will have a profound impact on China's mobile communications market. The growth opportunity is tremendous for both foreign and domestic investors. Competition will be fierce and customer welfare is expected to increase as a result. Here are some of the highlights of future trends for the industry. In the post-WTO era:

- Foreign manufacturers will continue to enjoy dominance in providing telecommunication equipment with the elimination of non-tariff barriers and reduction of tariff barriers.
- Foreign service providers will have direct access to the huge telecommunication service market. Service quality and customer service will be the major differentiators in future competition.
- Domestic service providers' market dominance will be threatened. They will actively seek strategic alliances with foreign partners and focus on improving the operational efficiency and marketing efforts.
- Domestic manufacturers might still be able to hold their niche market in low-end equipment market. In order to survive, they need financial and technological infusion into the current operations.
- The government will have to adjust its method of regulating the telecommunications industry. The government's role will be more restricted to policy making as opposed to direct intervention.
- Consumers will enjoy wider selection of products and services, higher service quality, and possibly lower prices due to more competition.

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