

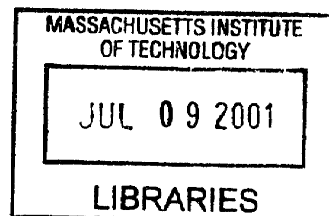
**Building World-Class Chinese Companies**

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**ARCHIVES**

Submitted to the Alfred P. Sloan School of Management  
in Partial Fulfillment of the Requirements for the Degree of  
Master of Business Administration

At the

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Submitted to the Alfred P. Sloan School of Management  
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## **ABSTRACT**

The paper studies China's telecommunication industry and Chinese-owned companies. From analysis on the regulatory environment, corporate governance structure and management incentives, we discuss the challenges of building world-class companies in China.

The paper is in two parts. In the first part, we use the frameworks of supply chain and disruptive technology to investigate the competitive landscape of China's telecom industry. We conclude that the state-owned operators dominate the entire telecom value chain. Because of the internal and external environments, these carriers have rigid technology and market outlooks. The regulatory environment reinforces the rigidity. We argue that the industry structure has stifled the emergence of truly disruptive technologies in China.

In the second part, we analyze the corporate governance and management incentives of the state-owned operators in greater details. We conclude that the state imposes on the operators many, often conflicting, goals unrelated to profit maximization. As a result, the carriers have government responsibilities that are incompatible to their business goals. The problem will not be fundamentally solved until the roles of ownership, corporate governance and management are clearly defined.

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## PREFACE

Twenty years after the Chinese Communist Party (CCP) discarded the doctrines of command economy, China is now a vibrant place with abundant products and commerce activities. In 1978, there was no private company. In 2000, private companies accounts for over half of the country's economy. Many have grown from family workshops into large corporations, with spectacular IPOs, high-profile managers and so on. Yet the list of companies that have achieved world-class success is rather short.

We search the answer by studying China's telecommunication industry. The industry is especially interesting to us chiefly for the following reasons:

- China's telecom market is one of the most dynamic emerging markets in the world,
- The industry is a fast clock-speed<sup>1</sup> industry, characterized with many disruptive technologies<sup>2</sup> in business model and technology,
- The industry is regulated and managed by arguably the brightest talents in both government and business sectors, and
- The government has been increasingly de-regulating the industry and introducing competition in expectation of the entry into the World Trade Organization (WTO).

In short, we believe that the industry is in the forefront of the Chinese companies in terms of technology, management talent, capital and legal reforms. By looking at this

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<sup>1</sup> Fine (1998)

<sup>2</sup> Christensen (1997)

industry. we hope to answer the questions why so few Chinese firms have achieved a world-class success.

We conclude that there are two obstacles preventing Chinese firms from achieving world-class success. First, the industry structure stifles real competition. As a consequence, the government, despite its intentions, has crushed the emergence of true innovation. Second, the murky ownership and corporate governance of Chinese companies undermine the sustainable growth.

The paper divides into two parts. In Part One, we study competitive environment landscape, with the concentration on the value chain. We discover that despite the central government's intention to introduce market mechanism, few state-owned enterprises (SOE) behave like for-profit commercial entities. On the other hand, the SOEs have monopoly control on a crucial piece of the value chain. Combining with an interventionist government policy, the emergence of truly disruptive technology is stifled.

In Part Two, we go inside the SOE and private companies, and concentrate on the management incentive and corporate governance issues. We conclude that the misalignment of management incentives and ill-defined corporate governance have undermined the SOEs and private companies' ability to achieve world-class success.

The process of researching and writing of this paper has been such a tremendous learning experience for us. Professor William Pound's insightful lectures on corporate governance are the inspiration of this paper. We also have heavily borrowed Professor Charles Fine's theory on clockspeed and supply chain, and Professor Clayton

Christensen's theory on disruptive technology. Their frameworks made the analysis of the seemingly impossibly complexity so much easier.

Many people working in telecom sector in China talked to us candidly about their experience, hope, excitement and frustration. Unfortunately, listing all their names is not simply impossible but also inconvenient for them. But from bottom of our hearts, we are grateful to them. Their passion has motivated us to write this paper.

Finally, Professor Edward Steinfeld has been a mentor for every MBA students with interested in business in China at MIT Sloan School of Management. We are deeply grateful to his help, friendship and mentoring in our two great years at Sloan. His insights into the China's social, political and business systems are refreshing to Jim, who has left China for ten years, and Anne, who has been there all the time. We are saddened that the MBA students at Sloan will not have our good fortune since he is leaving the school. This paper is for him.

**PART ONE**

**FORCES SHAPING THE COMPETITIVE LANDSCAPE**



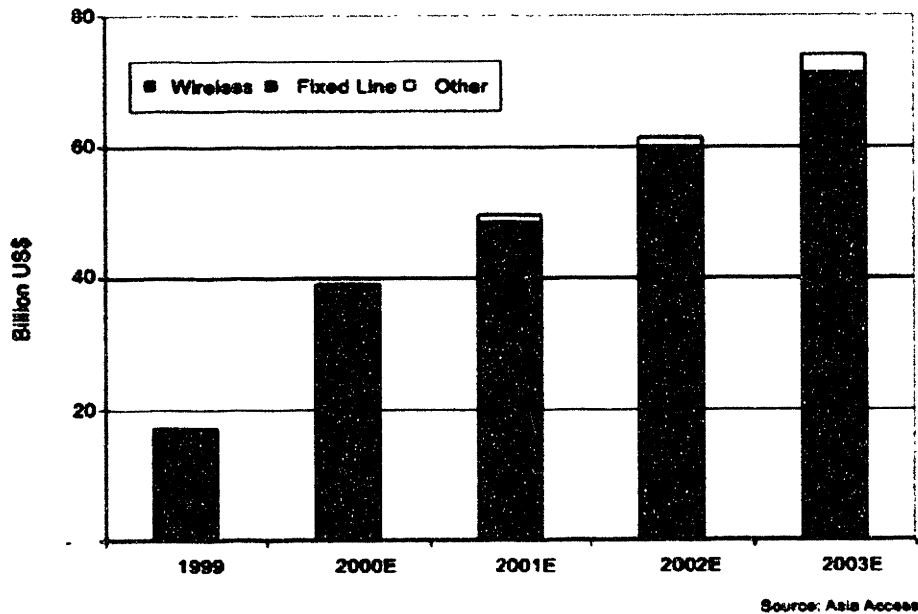
## Introduction

China's telecommunication industry is one of its most dynamic industries in the world for at least several reasons:

- The country's massive population, booming economy, and underdeveloped state telecommunication sector present huge growth potential.
- The state is gradually de-regulating the industry to encourage competition.
- The country's imminent entry into the WTO will result even more de-regulation.

An evidence of the excitement is that Chinese government and international capital market are investing heavily in the industry. The government forecasts that the telecom infrastructure investment will be US\$185 billion in the next five years.

**Exhibit 1 China Telecom Investment forecasts**



China's telecom boom is another evidence of the country's increasing integration into the global economy. In the wake of US telecom restructuring and boom, many countries in Europe, North and South Americas, Australia and Asia have de-regulated or privatized their telecom industry since 1996. As a result:

- Competition becomes intense among incumbents,
- Many entrants emerge,
- The governments interfere less to the business and act as regulators,
- Technological and business innovation are invented in record number,
- More capital flows into the sector, and
- End-users benefit in terms of service, technology and price.

However, the restructuring on China's telecom sector is also a part of lengthy restructuring to the country's state-owned enterprise (SOE) sector. As a result, we believe that the following aspects will make the restructuring here different from that in the rest of the world. The state ownership on and frequent interventions to the carriers, a crucial piece of the value chain, causes the telecom industry structure to be rigid. Incumbent carriers have no incentives to innovate. New entrants will either encounter similar problems or simply be banned. As a result, players in other part of the value chain are also discouraged from adopting disruptive technology. Therefore, unless the industry structure is altered, local firms will play catch-up game in the foreseeable future.

In summary, we expect that China's telecom sector restructuring will encounter short-term problems due to its rigid industry structure. Unless the state reduces its role to the regulator and see the market evolving itself, the Chinese-owned companies will not be as competitive and dynamic as their counterparts in many other de-regulated markets.

## **Country Overview**

### **Macro-economy Overview**

According to *the Economist*<sup>3</sup>, China will potentially become the second-largest economy in the world in the coming two decades. From 1995 to 2000, the average annual GDP growth was around 9 percent, one of the highest in the world. The inflation is 2.2 percent in the same period.

China's economy suffered but also demonstrated its resilience in the 1997 Asian financial crisis. Since then, the government has been steering the economy away from its reliance on export. So far, the country's economy is still going strong despite the slowdown in the West.

The next decade will be crucial. In order to sustain the growth, the country must transform its command economy to a market one by establishing a capital market and banking system, a business-friendly legal system, a credible accounting system and so on. In the meantime, the state has to lower the unemployment, develop the interior west and revamp its welfare system. Yet the most burning issue of them all is restructuring its massive loss-making state owned enterprises (SOE).

### **State-owned enterprise reform**

Except in a few monopoly industries, including telecom, the SOEs are a tremendous burden on Chinese economy. The financial support and soft loan provided by the state has been sapping the country's financial strength. In 1999, the sector

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<sup>3</sup> "Enter the dragon", *The Economist*, March 10<sup>th</sup>, 2001

provided 72% of the country's non-agricultural employment<sup>4</sup>, commanded 75% of the lending by the four state banks<sup>5</sup>, but only accounted for less than half of the economy.

These companies suffer from overstaffing, low productivity and ever declining profit performance – all the traditional ills of socialist production<sup>6</sup>. Employees are paid low salary but high benefits, including housing, healthcare, pension and even childcare.

After 1997, tens of thousands of small and medium-sized SOEs were cast loose upon private waters, to float or sink<sup>7</sup>. Yet the CCP leadership is not prepared to jettison the SOEs completely. There are at least four reasons: First, the CCP cannot let go the assets for ideology reasons. It is still a controversial topic that private companies should be allowed to acquire state assets. Second, the ownership of key industries is viewed as strategic important to the country's security. Third, the SOE are still contributing the majority of tax revenue despite shrinking productivity. In the monopoly sector, such as telecom, the SOEs are making huge profit, which is especially important when the central government can only collect meager tax revenue and almost only the SOEs pay tax<sup>8</sup>. Last but not the least, privatization on large scale will worsen the unemployment problem, which will undermine the country's stability.

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<sup>4</sup> National Bureau of Statistics PRC “China Statistics Year Book 2000” China Statistics Press 2000. The figure does not include agriculture industry, which is almost 100% private. If the agriculture sector is counted, the state sector employment will be 33% (EIU).

<sup>5</sup> *The Economist*

<sup>6</sup> Steinfeld (1998)

<sup>7</sup> “Now comes the hard part” *The Economist* Apr 6th 2000

<sup>8</sup> According to *The Economist*, the central government collects tax equivalent to about 13% of annual GDP (comparing with 31% in the USA)

## **The state control on Telecommunications**

### **The state's telecommunications strategy and policy**

#### *Strategic considerations on the fundamental industries*

Telecom, railway, power, agriculture and petroleum are considered the fundamental industries. On the one hand, the state views the ownership of these assets as strategically important. On the other, the SOEs in these monopoly sectors are desperately in need for world-class competitiveness in preparation for the country's entry into the WTO. More importantly, the government is eager to vitalize these sectors, especially telecom, to boost the country's technology economy. In order to reconcile the dilemma, the government chose to introduce competition among the SOEs, instead of opening them up to private sectors. The policy is not likely to change in the near future. The Ministry of Information Industry (MII) is entrusted with restructuring the telecom industry and making the sector more efficient.

#### *Rule by order, not by law*

Despite much expectation, the country's Telecommunication Law has been long stalled in the making. The official explanation is that the law is awaiting the market to become more "regular"<sup>9</sup>. The underlying sentiment is that the state wishes to retain the **convenience** to steer the industry towards the right direction. So far, the industry goes by the Regulations on Telecommunication. The State Council issued, interpreted and modified regulations. On the other hand, People's Congress and judicial systems need to

be involved in if regulations are turned into laws<sup>10</sup>. Although the legislature and legal systems are far from independent, it adds the complicity and time required.

In theory, a company can only operate in a business with a license issued by the MII. For an industry characterized for its technological innovation, the MII wields tremendous power for its authority not only to issue but also create licenses as it sees fit. For example, China Telecom, not having a mobile license, is banned from competing in this lucrative sector. In 1997, the MII suddenly create a license on IP calling card business and licensed it to China Telecom. Effectively, it outlawed hundreds of the private companies that have been operating in the area. The case will be discussed in detail later. So far, only China Unicom is the only full-ratchet company with all the licenses.

Currently, private and foreign interests are banned from holding significant equity position in the carriers (No definition on significant, viewed on a case-by-case basis). This is expected to change in five years. Under the deal struck with the US, China will allow foreign companies up to 49 percent of ownership five years after its entry into the WTO.

### **The MII, not only a regulatory body**

In 1998, Premier Zhu Rongji sought to streamline the regulation and operation of China's disparate communication and broadcasting networks. China's telecom regulatory body, the Ministry of Posts and Telecommunications (MPT), was restructured to become the Ministry of Information Industry (MII). Other ministries and departments with

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<sup>9</sup> Interview with Xiang Ligang, *Tongxi Shijie (Communication World) Magazine*, Beijing, April 2001

<sup>10</sup> Interview with a corporate lawyer, Beijing, April 2001

telecom, broadcasting and IT interests were folded into the larger MII. Zhu also started to prepare China for the era of convergence of data and voice<sup>11</sup>.

The MII is one of the most sophisticated and forward-looking ministries in China. It is said that a junior bureaucrat will have no career prospect without an advanced degree<sup>12</sup>. Almost all officials have a similar education and working background. Indeed, almost all hold engineering degrees from one of the four elite post and telecom colleges (*you*): Beijing (*Bei You*), Nanjing (*Nan You*), Changshun (*Chang You*) and Chongqing (*Chong You*) Posts and Telecom Colleges<sup>13</sup>. Both Minister Wu Jichuan and Vice-minister in charge of telecom Zhang Chunjiang are engineers graduated from *Bei You* and *Nan You* respectively.

Most senior bureaucrats graduated from a *you*, worked as engineers, moved to chief engineers and heads of local postal and telecommunication administration bureau (PTAB), before being promoted into the MPT in Beijing. Like in most Chinese bureaucracy, there is virtually no private business experience in the MII. The old-boy ties from the four *you* and the former MPT system are entrenched in the MII, as well as China Telecom and China Mobile, and to a less extend, China Unicom.

The MII is a hand-on ministry. The ministry is said to be under tremendous pressure from the Premier Zhu to keep a distance from the day-to-day running of the companies. However, their re-casting into a neutral regulatory body is complete. The MII is still intertwined with corporate governance and management.

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<sup>11</sup> "Telecommunications Markets in China ", Pyramid Research, October, 1999

<sup>12</sup> Interview with Mr. Gao Buo, Deputy Director, Strategy, Lucent Technologies (China), Beijing, April 2001

<sup>13</sup> Interview with Mr. Li Changshui, People's Posts and Telecommunications Press, Beijing, April 2001

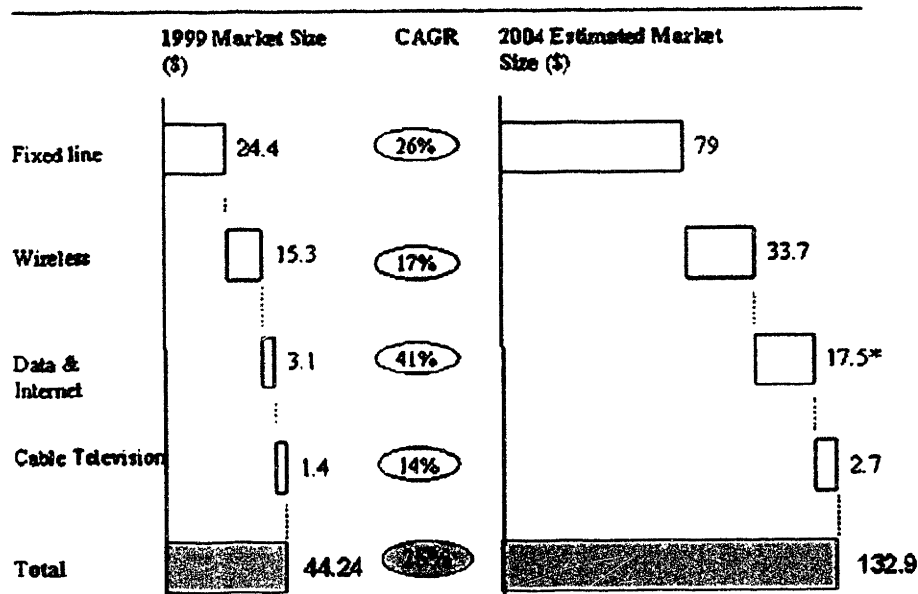
## Industry Overview

China's leadership has great expectations on the telecommunication industry. Viewing technologies key to the future wealth of the country, the state expect the industry to be the engine of growth just as what it did to the US economy in 1990s. In the new economy, the country will develop a high-margin hi-tech industry, and transform itself from purely reliance on labor- and pollution-intensive industries. In addition, by introducing competition, the state is experimenting with revitalizing the SOEs without going through a painful privatization process.

Indeed, the sector is booming. The following exhibits summarize the growth of telecom market in China.

**Exhibit 2 China Telecom Market Profile**

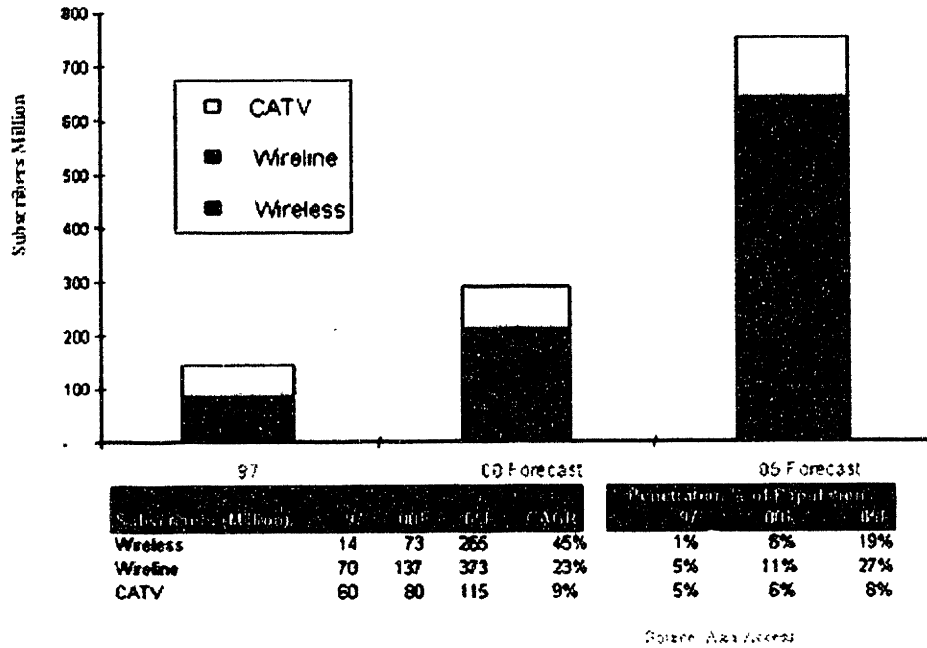
**Current Market Profile**



\* 2003 estimate for Data Communications  
 Source: Pyramid Research, Ministry of Information Industry (MII), UBS Warburg, China Telecom, Salomon Brothers, Ministry of Radio, Film, and Television, Paul Budde Communications, China Unicom, IDC



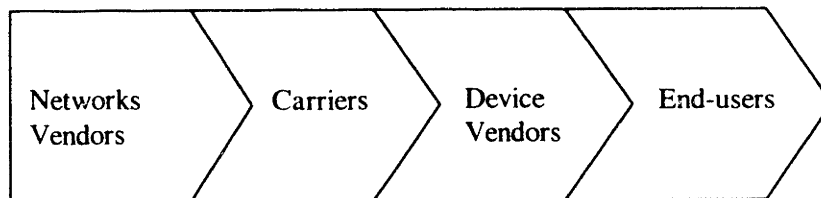
## Building world-class Chinese telecommunication companies



As discussed before, the government's policies are fundamental forces in shaping the competitive landscape in the industry.

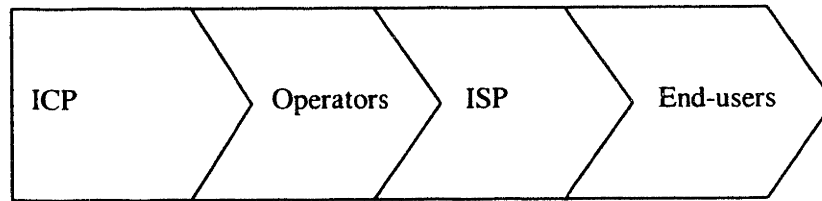
The telecom value chain is rather complicated and often intertwined. For clarity, we divide it into network and service chains. Exhibit 3 shows that the physical network value chain can be divided into network vendors (hardware and software), carriers, device/PC vendors and users.

### Exhibit 3 Telecom Value Chain (Physical Networks)



The service chain can be loosely divided into ICP (internet content provider), operators, ISP (internet service provider) and users.

**Exhibit 4 Telecom Value Chain (Services)**



Each piece can be divided into fixed-line and wireless. And each sub-division can be further divided. Many companies play in many pieces or just a sub-division of the value chains.

In China, the carrier and operator pieces are off limit to the private companies. All seven players operate in both carrier and operator pieces, so we will not distinguish them from now on. China Telecom and China Mobile dominate the wire and wireless carrier/operator spaces respectively. China Unicom trails them in a distance in both areas. Other new entrants are totally overshadowed. However, the competition is becoming intense. The government has been carefully and closely managing the sector.

Multi-national companies (MNCs) dominate the high-end network and device vendor market. The local companies, aided by the state's preferential treatment, are pushing the foreign companies out of the low-end market. However, local firms are still a long way from replacing the MNCs.

Local firms dominate network and billing software, ISP and ICP service. The sector has low barrier to entry, intense competition and low margin. Relationship with the operators plays a crucial role.

## **Carrier/Operator Services**

### *The Breakup of old China Telecom*

Currently, seven SOEs hold various licenses to provide carrier service in China. China Telecom and Mobile used to be the operation arms of the MPT. Until its breakup in 1999, old China Telecom dominated the country's telecom industry, with only an inconsequential competitor of China Unicom. Under Premier Zhu's drive to introduce competition, the giant was broken into four pieces: China Telecom, China Mobile, China Satellite and Guoxin Paging (later merged with Unicom). New SOEs were formed and given licenses to operate.

As shown Exhibit 5, when combined revenues of China Telecom and Mobile, the telecom giant accounted for 94% of telecom revenue in 1999. The breakup creates a breathing space for embattling Unicom. In 2000, China Telecom's market share dropped to about 55%, while Unicom has moved its market share up 2 percentage points to 8%.

### **Exhibit 5 Income Statement of the top three operators in China in Year 2000**

#### Income Statement

US\$ million	China Telecom		China Mobile		China Unicom	
	Year ended		Year ended		Year ended	
	2000	1999	2000	1999	2000	1999
Sales revenue	20,598	17,726	13,720	10,481	3,084	1,952
Cost of Sales	15,305	13,477	9,398	7,592	1,952	1,280
Salaries	923	837	348	280	150	133
Benefits	130	111	41	36	16	19
Depreciation	7,893	7,204	4,597	3,651	861	485
Maintenance	2,707	2,508	491	420	49	48
Low-value damages	410	371	140	117	18	21
Business Expn.	3,242	2,446	3,781	3,088	858	574
Gross Margin	5,293	4,249	4,322	2,889	1,132	672

Source: MII internal Statistics; Year 2000 Statistical Announcement of Telecom Industry

Note: USD 100 = RMB 830.18

### *China Telecom bullies its competitors in Telephone Services*

China Telecom faces almost no competitor in the basic service market. In the DLD and ILD markets, the company's domination is being challenged by VoIP telephony service. As many old telcos in the world, China Telecom first ignored the new technology until it started to threaten its voice revenue. The company is now engaging in a price war with Netcom, Unicom and Jitong on VoIP telephony services. The company is using its monopoly in basic service to its advantage. For example, it cut the ILD tariff by as much as 90% this spring while raising the local call tariff.

Partly to improve the country's tele-density, partly to grab market share, China Telecom has been slashing the installation fee sharply. As a result, telephone has become much affordable to the consumers. There are 130 million telephone accounts in China in 2000, a 33% growth from 1999. On average, there are 20.1 telephones per 100 persons. In urban area, the rate is 38<sup>14</sup>.

### *China Telecom takes all in Backbone and Metropolitan Networks*

China Telecom has the biggest physical networks in the country. The company just completed its national 8x8 DWDM backbone network with 80Gbit/s bandwidth. Almost all other operators have to interconnect to its backbone and metropolitan network or lease its bandwidth. The company, at least at local branch level, is willing and ready to use this power to squash competitors. For example, the line leasing cost accounts for 80% of ISP cost in China, comparing with 5% in the US. We have also heard many tales on their anti-competitive behavior<sup>15</sup>.

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<sup>14</sup> MII Gazette <http://www.mii.gov.cn/mii/hyzw/2000gongbao.htm>

<sup>15</sup> Interviews with two middle managers in China Telecom's competitors, Beijing, April 2001

Railcom is the only operator other than China Telecom to boast a truly national network. The company has inherited the extensive telecom assets from the Ministry of Railway (MOR) and existing 1 million end-users<sup>16</sup>. Unicom and Netcom are both building their own backbone and metro networks connecting the major cities.

In the past, parallel to the old MPT networks, many ministries had built separate networks for their own systems. So the country has some of the largest industry-based under-utilized networks in the hand of power, CATV and petroleum industries, and education and military authorities. The networks have potential to be turned into commercial operations. However, they are often fragmented in terms of technology standards and ownership.

### *Broadband is hot!*

Broadband is becoming a buzzword in China although China Telecom is the only operator with a commercially access network. China Telecom, Unicom, Netcom are competing to build the broadband access networks in the large metropolitan areas. In many cities, such as Chengdu, the competition is so intense that the carriers are building the networks for the real estate developers free of charge. In exchange, the developers sign an exclusive service contract for 20 years. The Chinese consumers may have broadband access cheaper than their Western counterparts will for the following reasons.

- The rights of way are cheaper. Residents are less sensitive to the inconvenience of construction because the country has been full of civil construction for decades.

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<sup>16</sup> "China Telecom feeling increasingly embattled"  
[http://www.chinaonline.com/issues/econ\\_news/NewsArchive/secure/January/C01013151.asp](http://www.chinaonline.com/issues/econ_news/NewsArchive/secure/January/C01013151.asp)

## Building world-class Chinese telecommunication companies

- The population density is higher. Urban population lives in high-rise buildings so the cost of connection is low per household.
- Many residential buildings are being built so the installation of access network can be a part of construction.
- Labor cost is lower.
- The hardware is cheaper due to competition and local manufacturing.

Judged by the popularity of CATV, the Chinese families are prepared to pay for the broadband services if there is sufficient content to justify the costs.

Like in backbone and metro spaces, there are many under-utilized capacity in the hands of many large SOEs and industry authorities. The country's extremely developed CATV network is still an untapped resource. Nominally controlled by the State Administration of Radio, Film and Television (SARFT), the standard, ownership and equipment are in the hands of individual SOEs, local governments and communities who invested<sup>17</sup>. The SARFT is paying to convert the co-axial cables into two-way ones. But the fragmentation of ownership is the major obstacles for the use of these resources.

### *Market segmentation in Wireless*

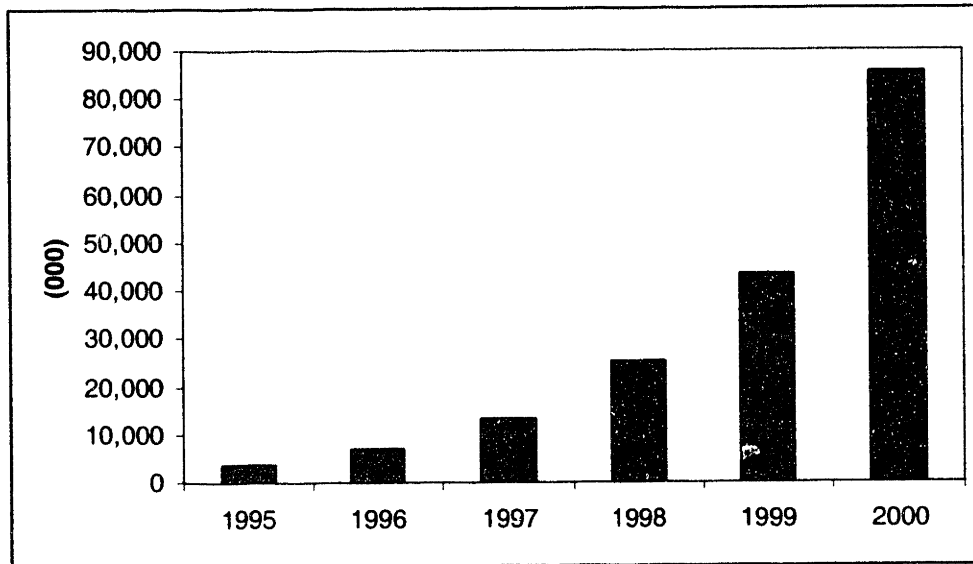
The growth of wireless service subscription continues to stun everyone. In 2000, China Mobile and Unicom added 41.97 million users to their network, a stunning 98% growth. So far, only the two have licenses to operate in this lucrative sector. China Telecom, having lost the fast-growing area after the breakup, has been lobbying the MII

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<sup>17</sup> "New national company set to control cable tv new national company set to control cable TV networks" Interfax – China IT and Telecom Report, Sept 1, 2000

for a mobile license. However, the MII has indicated that it would not issue another license at least in 2001<sup>18</sup>.

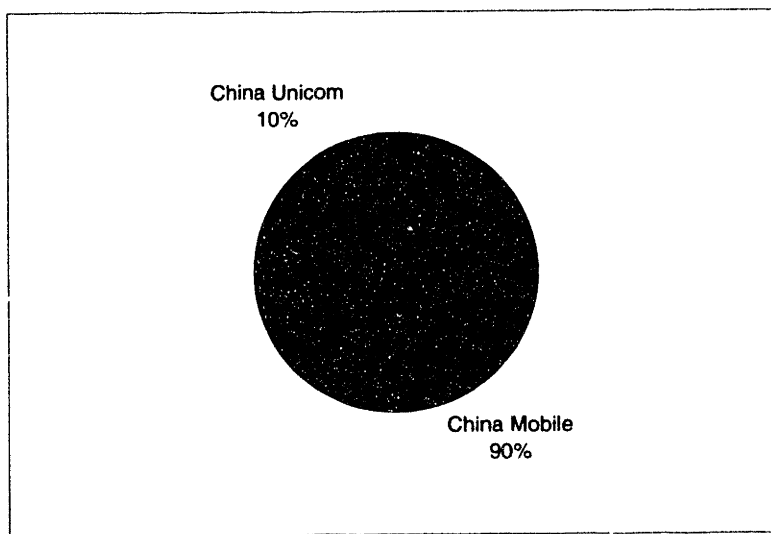
**Exhibit 6 China Cellular subscribers, 1995-2000**



Source: the MII

The following exhibits compare the China Mobile and Unicom's market shares by subscribers and by revenue.

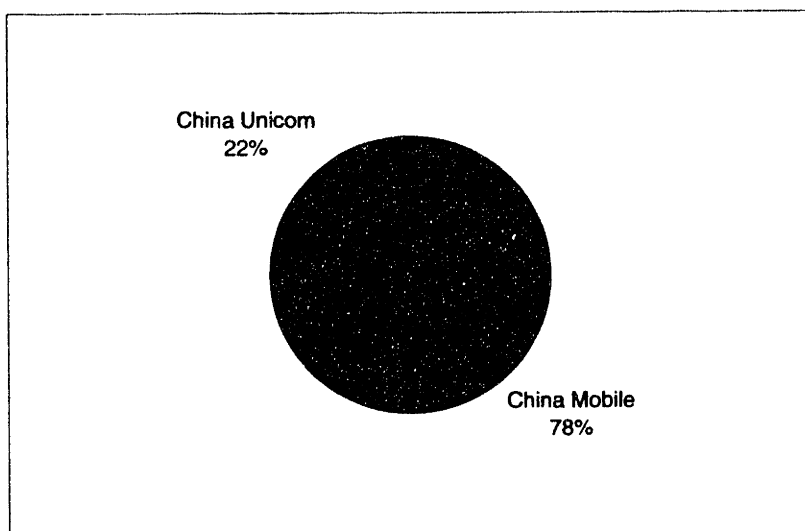
**Exhibit 7 China Wireless Market Share: by revenue**



Source: The MII

<sup>18</sup> Interview with Xiang Ligang, *Tongxin Shejie (Communication World)*, Beijing, 6/2001

**Exhibit 8 China Wireless Market Share: by users**



Source: the MII, China Unicom and Beijing Youth Daily

It is evident that Unicom has the low-end customers. According to *Beijing Youth Daily*, the total talk time on the company's network increases from 6.6 billion to 17.6 billion minutes from 1999 to 2000. Yet the average monthly talk time per user drops from 200.2 minute to 179.5 minute. In other words, the revenue per user decreases by RMB 41.5<sup>19</sup>. According to a rule of thumbs used by Goldman Sachs, 200 minute/user is about the breakeven point<sup>20</sup>.

In both wired and wireless sectors, the MII has used a so-called asymmetric control to tilt the playground to Unicom's favor. For example, the MII halted the plan of one-way tariff last July in order to protect Unicom in its battle with China Mobile.

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<sup>19</sup> "Unicom (HK) annual report indicates mobile subscription increased but talk time decreased" *Beijing Youth Daily*, April 9, 2001

<sup>20</sup> Interview with Madeline Wang, who worked in Goldman Sachs covering telecom in China, Boston, May 2001.



*Data Communication: China Telecom is dominating*

Almost all ISPs have to lease lines from China Telecom, which has 99% of fixed-line infrastructure. The leasing expense accounts for 80 percent of ISP charges, comparing with 5 percent in the US<sup>21</sup>.

The number of internet users was 16 million in 2000, and grew 430 percent from the year before. However, the users are mainly teenagers and university students, with little disposable income.

**Exhibit 9 China internet subscribers**

	<b>China Telecom</b>		<b>Jitong</b>	
	2000	1999	2000	1999
Subscribers (million)	15.6	2.8	0.37	0.17
Growth	453%		109%	

Source: the MII

The lack of contents, underdeveloped e-commerce, relative high price of PC and high telecom tariff (half of local call tariff, cumulative per minute) are keeping the average consumers away from the technology.

**Telecom Fixed-line equipment vendors**

Almost all large equipment vendors have a presence in China. The intense competition and local competition have driven the price down. The emergence and rapid growth of domestic equipment vendors has fueled the Chinese government's excitement to develop the country's domestic high-technology industry. Pyramid Research observes:

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<sup>21</sup> Asia Research Report  
<http://www.chinaonline.com/industry/telecom/NewsArchive/Secure/2001/February/c01021655.asp>

Major Chinese players, including Great Dragon Telecom (GDT), Datang, Zhongxi and Huawei, have conquered the switching market and are moving onto the rest of the market. Already strong in access market, local vendors are catching up with foreign vendors in the transmission market and to a much lesser degree, in the datacoms equipment market. They have already entered the datacommunications market, and have rolled out ATM switches. PTIC has sought to shift the focus of Chinese vendors from manufacturing to technology and product development. The government is encouraging local vendors to gain a larger share of China's transmission market; so far, local vendors have been strong only in the rural and less-developed market, not the backbone market. The majority of backbone contracts have been awarded to foreign vendors. Although local vendors, including Huawei, Zhongxing and WRI, have already developed WDM products, they have yet to win any major backbone contracts. Datang and GDT are still trialling their products. Although their foreign counterparts have a much longer track record in large-capacity transmission equipment, Chinese vendors are expected to have a larger share of this market in two to three years time<sup>22</sup>.

We are less optimistic than Pyramid. We believe that the domestic firms will not replace the MNCs in the short-term mainly because of industry structure. We will discuss the point in great detail later.

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<sup>22</sup> "Telecommunications Markets in China" Pyramid Research pp.155-156 Oct 1999

## **Wireless equipment vendors**

MNCs totally dominate the both mobile infrastructure and mobile device markets. Due to intense competition and local manufacturing, average prices for both devices and infrastructure are estimated to be between 15% and 25% less than global averages<sup>23</sup>.

Almost all (99%) the country's users are GSM based. The standard gives European firms the dominating position in China. In the infrastructure market, Ericsson is leading the market with about 50% of the market share. Local companies only have 2-3% of the base stations and less than 10% of switch market<sup>24</sup>.

The MII considers localization in wireless sector a top priority and has established a RMB1.50 billion (US\$168 million) R&D fund allocated among local firms<sup>25</sup>.

Nokia and Motorola are leading the race in mobile device market in China. Closely followed are Siemens, Samsung and Ericsson<sup>26</sup>. Philips, Sony, Alcatel and numerous local firms are also-runs. The market is becoming more and more like the consumer electronic market, where brand management is crucial. However, the fast clock-speed on technology, design and process has kept the local manufacturers away from gaining major market share.

The move into 2.5G and 3G will be a critical point in this race. The lack of operating experience may put local companies in even greater disadvantage. Since most major GSM networks are locked into the current vendors, the Unicom's upcoming

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<sup>23</sup> "Wireless markets and strategies China" Pyramid Research May 1999

<sup>24</sup> "Are the locals ready for 3G" *Tongxi Shijie (Communication World)* March 28, 2001

<sup>25</sup> "Officials call for officials call for domestic telecom domestic telecom industry support" *Interfax China IT and Telecom Report*, Sept 1, 2000

<sup>26</sup> "Second and third groups of foreign mobile phone are catching up" *Tongxi Shijie (Communication World)*, March 28, 2001

**CDMA network deployment MAY provide the local firms valuable operating experience.**

**We will discuss Unicom's CDMA deployment in details later.**

## **Don't do anything I wouldn't do!**

### **Sustainable vs. Disruptive Technologies**

Christensen<sup>27</sup> summarized that a firm has but two winning strategies in a competition: sustainable or disruptive technologies. In a sustainable technologies game, the winner will better satisfy the existing customers' needs. In other words, you try to beat your competitors in their own game. In the current wireless device battle, you need to offer better products than Nokia and Motorola in terms of broader bandwidth, more user-friendly WAP menu, more reliable connections, longer battery life, and so on.

In a disruptive game, the winner will create a need for a new market. The winner follows a similar development pattern. In the first stage, "they offer a different package of attributes value only in emerging markets remote from, and unimportant to, the mainstream." After gaining a foothold in the emerging markets, the winners start to grow in size and perfect the technology. Once the technology begins to offer equivalent or similar functions or standards as the incumbent technologies do, and with the additional benefits of its own, the newcomer make inroad into the existing market. Finally, the disruptive technology becomes the mainstream.

Combining with Fine's theory, the disruptive technology almost inevitably disrupts of the value chain in the process<sup>28</sup>. First, the disruptive technology has an initial customer base, albeit small, recognizes the valuable attributes of the technology. The initial base is often a group with needs not served by the incumbents. Then the group

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<sup>27</sup> Christensen (1997)

<sup>28</sup> Fine (1998)

grows in size and attracts customers from the incumbents. Finally, the group overtakes the incumbent customer base, and disrupts the existing incumbent value chain. The disruption upsets not only the incumbents, but also incumbents' upstream and downstream. For example, the 5.25" disk drive disrupts 8" disk drive. Yet the disruption is parallel to the disruption of minicomputers to mainframe computers. The whole value chain was replaced by a new paradigm on almost every piece.

### **Chinese companies cannot play the sustainable game in telecom**

#### *Local vendors' strategy*

So far, the local firms in telecom industry are playing the sustainable technology game. With a large supply of technical talents, government's blessing, and often their foreign partners' cheers<sup>29</sup>, the locals have conquered many markets, most significantly in the areas of PSTN CO and ATM equipment. Shenzhen based Huawei has even launched its long-haul DWDM transmission system.

All over the country, entrepreneurs and engineers are diligently dissecting the world-class technologies on a large scale. Many foreign vendors also establish jointed R&D programs with the local companies in order lower costs and to influence the standards<sup>30</sup>. Combined with Chinese government's buy-local policy, many local firms have achieved remarkable marketing and technological achievements. Yet the local vendors are inevitably one or two steps behind their foreign competitors cum

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<sup>29</sup> Interviews with Michael Chan, Former Chairman of Lucent Technologies (China), Holmdel, NJ, July 2000, and Felix Yeo, VP Marketing, Siemens ICM, Hong Kong, April, 2001

<sup>30</sup> "Lucent, Huawei team on broadband communications project"  
<http://www.chinaonline.com/topstories/000620/1/C00061502.asp>

collaborators. The following excerpt from an Interfax report describes the SDH market, a rather matured market in the US and Europe.<sup>31</sup>

Before foreign companies entered the China market, China's domestic companies were incapable of producing SDH equipment. With gradual development, a few leading domestic companies such as Huawei Technologies, Zhongxing Telecom and Datang Telecom are capable of manufacturing some types of SDH. For SDH2.5Gb/s, 622Mb/s and 155Mb/s, domestic companies have mastered matured technologies. Compared with foreign equipment, these domestic products show competent performance, but offer the advantages of lower prices and competitive after-sales service.

Few domestic companies can compete with foreign producers, however, for high-end 10GB/s SDH, which are being put into commercial operation this year. Domestic producers lack technical development and their products continue to suffer unreliable performance.

China issued duty-free polices on the import of 2.5Gb/s SDH, which made telecom operators more willing to adopt foreign SDH rather than the performance-unstable domestic-made SDH. Overall speaking, foreign companies continue to dominate the overall SDH market. Nortel, Lucent and Alcatel are the top three sellers with a combined market share of approximately 50%.

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<sup>31</sup>“A comparison of the major domestic suppliers of optical communications system equipment” Interfax China IT and Telecom Report Sept 1, 2000

*Late-mover disadvantages in a fast clock-speed industry*

Yet it is hardly surprising considering the gap of financial strengths on R&D, not to mention engineering and operation experiences. For example, Lucent Technologies, the leader in China's high-end SDH and DWDM transmission market, spent over US\$ 5 billion and 4 billion<sup>32</sup> on R&D globally in 2000 and 1999 respectively. In contrast, Huawei, the market leader in low-end transmission market, claimed to have spent US\$266 million and 150 million<sup>33</sup> in the same period. In the wireless industry, Ericsson, the leader in network infrastructure, spent US\$ 4.1 billion and US\$3.2 billion on R&D in 2000 and 1999 respectively<sup>34</sup>. Zhongxing, the leader in Chinese domestic flock, was reported to have spent RMB 300 million (US\$ 35 million) over five years<sup>35</sup>. Indeed, the foreign vendors view their R&D strengths as insurmountable competitive advantages over the local manufacturers<sup>36</sup>.

Clearly, followers always have tremendous disadvantages on finance, market and technology in hi-tech industry. The battle between Lucent Technologies and Nortel Networks in North American market illustrates the problem facing later-movers. Lucent developed 10G transmission first in 1999 but shelved the project when its major customer, AT&T, was not interested. However, Nortel launched the 10G a few months later and gained tremendous market success. Lucent resumed the product development and rolled out its own 10G after 18 months. Yet Nortel has perfected its product by then

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<sup>32</sup> Lucent Financial Statement 2000 <http://www.lucent.com>

<sup>33</sup> Huawei claims that it spends 10% of its annual revenue on R&D. According to Huawei, its revenue in 2000 and 1999 are \$US 2.656 billion and 1.5 billion respectively. <http://www.huawei.com>

<sup>34</sup> Ericsson Financial Statement 2000

<sup>35</sup> "Domestic CDMA vendors ready for actions" Tongxin Shijie (Communication World) March 28, 2001

<sup>36</sup> Interview with Mr. Gao Puo, Lucent Technologies, Beijing, April 2000



and taken 90% of the market share, with huge financial advantage over Lucent. In mere 2 years, Lucent totally lost the battle.

In this battle, Lucent has always possessed the basic R&D expertise. The delay was purely caused by product development. Yet the technological gap between the foreign and local firm is much wider. Playing followers have helped the Chinese companies in slow clock-speed and matured industries, such as, consumer electronic or PC, to succeed in the past since the country has a tremendous cost advantage. However, telecom is a dynamic and fast clock-speed industry, where money is made in the early part of product cycle.

Although Chinese government has been helping local manufacturers by encouraging the operators to buy locally, the technology advantage has enabled the MNCs to continue dominating the country's high-end market.

**Industry structure does not allow the  
local players to be the leaders**

*The concept of disruptive technology in China*

The disruptive technologies can be a technology or a business model, but more likely as a combination of both. Certain technology, such as optical network, was disruptive when and where invented. But we do not consider it disruptive in China because its replacement of copper wire had been inevitable before its introduction to Chinese market. Adopting such technology is a mere a catch-up.

We are interested in the disruptive technology that is either cutting-edge in the world or unique in China. We believe that adopting such technology at early stage when the trend is not clear will make a company internationally competitive. For example,

NTT DoCoMo's iMode may never be as popular in other countries as it is in Japan. The business does not involve cutting edge technology. But the business model has made the company a world-class success.

### *Industry structure – Guaranteed by the MII*

Yet the state in essence guaranteed that the current value chain not be disrupted. Through its ownership of the carriers, and its interfering MII, the state imposes its vision on the industry. Any challenges to the vision are quickly dealt with fatal blows.

In addition, the state-owned operators, with virtual monopoly power, control the linchpin of the value chain, thus claiming the supremacy. The power stifles innovation in three ways. First, although no individual operator is guaranteed the market share, the collective group of seven members of the club has no incentive to innovate. Second, no entrant with disruptive technology is likely to be admitted into the club. Finally, even substantial threat is not possible since the operators can always extract maximum rent.

### *Incumbents have no incentive to innovate*

Even in the US, Chistensen's statistics indicates that the established firms are usually no good at managing disruptive technology for three reasons: resource, process and value. In China, the incumbents' incentive for innovate is even less for the competitors can be always outlawed.

The resource dependence theory<sup>37</sup> posits that companies' freedom of action is limited to satisfying the needs of those entities outside the firm (customers and investors,

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<sup>37</sup> The theory of resource dependence has been most thoroughly argued by Jeffery Pfeffer and Gerald Salancik in *The External Control of Organizations: A Resource Dependence Perspective* (New York: Harper & Row, 1978)

primarily) that give it the resources it needed to survive. In China, since the state has such overwhelming power over the fate of the company, its managers and employees, the companies' primary customer is really the state. As a result, employees at the SOEs have a very different set of values from those in the private sector. As we will discuss in Part Two, the companies' performances are measured by their market share, implementation of best-in-the-class technology and so on. On each level, the individual managers also give the central and local governments what they want: market share and technology.

On the other hand, creating new market is a highly risky and haphazard business. In the SOE culture, no one will be punished for doing nothing. Doing one thing wrong would be enough to tarnish a manager's career. Ambitious managers are much better off directing his energy towards something that will never go wrong: implementing the most advanced technology in the US, fighting for existing market share. If the technology or business models have been done overseas, there would be nothing wrong if they do not work in China. If they are unproven elsewhere, there would be no financial or career incentive for the managers to risking their reputation on some novel projects in a non-existing market. Fighting market share demands prudence. Lowering price is always a safe way and will guarantee success, albeit often in short-term. But never touch the business model or try something new because there is no guarantee that they would work.

Therefore, the drive to adopt disruptive technology will be more likely to come from the private sector, as we will discuss in the IP telephony case. But if the disruptive technology proven to be successful, the incumbents can always rely on the government to shut down the troublemakers before they really make a disruption. So why bother?

### *A gentlemen's club*

Although encouraging competition, the state and the MII have a clear vision as how the competition should end: China Telecom, Mobile and Unicom should be in a comparable position with Netcom, Railcom, Jitong, and maybe additional companies, being relatively competitive. Companies are given their own sphere of influence and they should fight themselves out in their designated spheres. The fight should be as intense as possible, but not intense enough to hurt anyone. In our interviews, many people used the analogue of a race among brothers. The mother (MII) would like to see her sons to grow stronger in a race, as long as no one is hurt.

Second, even there is any new admit to the club, it is likely to be someone with similar value network as the MII. Christensen defines the value network as "the context within which a firm's competitive strategy, and particularly its past choices of markets, determines its perception of the economic value of a new technology". Since the MII issues the licenses and views itself the guardian of the industry, it will only issue licenses to those who will enhance the industry, by the MII's standards. The decisions are final and losers have no avenue of appeal. The system works like an exclusive country golf club where the MII is the captain. New members can only get in if they fit in. The membership in turn reinforces the culture of the club. Gentlemen play golf with the right etiquettes and endeavor to achieve great drives, chips and putts.

### *Golden rule: Those with gold make the rules.*

Since the incumbents reign supreme in the value chain, they impose their, by extension the MII's, value network on the entire supply chain. For example, if the carriers care about in a wireless infrastructure network in the order of nationwide

connectivity, reliability, scalability and WAP-enabling and costs. Equipment vendors will duly design, build and deliver products with the order in mind. They have no incentive to design a network with cost being the selling point. Maybe many consumers really care about cost but never use nationwide roaming. But consumers do not buy equipment. Any vendor care about the cost-conscious consumers will never sell anything and be out of the business soon.

In turn, the suppliers of the equipment vendors also have the MII's priorities in mind. They will produce chips, software and so on to suit the MII's value networks. In the entire supply chain, entrepreneurs, executives and engineers will innovate within the framework of current value network. The obvious strategies for Chinese firms are to follow the lead of their foreign competitors and to cut prices.

### *Downstream Innovations*

One might argue that the downstream piece of the value network is less affected because their customers are the end-users. However, the downstream suppliers have to comply with the operators' standards, connect to their network and so on. In addition, the operators are so close to the end-users that the breathing space is rather small. Worse, the MII still has the right to step in any time if you make too much money. As a Motorola executive remarked, "If they regulate you, that means that they don't like you."

If the MII does not, China Telecom will. At the commanding height of the value chain, the operators always extract maximum rent of the value chain. As discussed, China Telecom extracts 80 percent of ISP fee, comparing with 5 percent for US

operators<sup>38</sup>. If a downstream player makes too much money, its upstream monopolist can always squeeze them dry.

### **Case Study: Why innovate when you can shut down your competitors**

#### *VoIP in China*

In 1996, the VoIP made its debut in China roughly at the same time as it did in the US. China Telecom, AT&T and many incumbent telcos (with the exception of Deustch Telecom) responded similarly. At the time, it cost US\$2 per minute to call the US from China, and US\$0.65 the other way around. Using the packet-switched technology, a call from China to the U.S. cost around US\$0.10 per minute<sup>39</sup>. The company investigated and concluded its QoS no match to that of PSTN. Besides, VoIP would threaten the existing PSTN investment which was extremely profitable. China Telecom decided to wait and see, a decision made by most telcos around the world<sup>40</sup>. The entrepreneurs all over the country quickly filled the vacuum. In 1997, there were hundreds of startups in China setting up routers and selling IP cards. Before long, China Telecom began to feel the pinch on its revenue. In the US, the story was similar. The CLECs started to sell the IP telephony service aggressively to compete with AT&T. Yet what happened after was quite different in China from that in the rest of the world.

In October 1997, police in Fuzhou, Fujian Province charged a Chen brothers of offering IP telephony services on information provided by China Telecom. “The brothers

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<sup>38</sup> Asia Research Report

<http://www.chinaonline.com/industry/telecom/NewsArchive/Secure/2001/February/c01021655.asp>

<sup>39</sup>“Internet Telephony in China Pits State v. Private Sector” 3/12/1999

[http://www.chinaonline.com/industry/telecom/NewsArchive/Secure/1999/march/tel\\_c9031221.asp](http://www.chinaonline.com/industry/telecom/NewsArchive/Secure/1999/march/tel_c9031221.asp)

charged RMB 6 to RMB 9 per minute for an international call, much lower than the rate of RMB18.4 per minute offered by China Telecom". The brothers were arrested and fined, and their equipment confiscated. The brothers sued the police and won in January 1998. "The Fuzhou Intermediate People's Court ruled that international calls made via the Internet are technologically different from conventional international telephone calls". The news made national headlines<sup>41</sup>.

Within months, the MII announced its intention to issue IP license. Vice-minister Zhang Chunjiang accused independent operators of "information smuggling". He "promised to crackdown on such operators with a 'firm hand' in order to stop what he claimed to be the siphoning off of billions of yuan from the nation's telecom revenues"<sup>42</sup>.

In April, the minister issued IP licenses to China Telecom, Unicom and Jitong, four state-owned operators. According to the MII, the regulations were to promote technology and to protect consumer rights. Over night, hundreds of entrepreneurs around the country were forced to shut down their businesses.

### *The MII is China Telecom's competitive advantage*

According to an entrepreneur in Beijing, the SOE's typical attitude towards innovative entrepreneurs is: "You do it. If it works, I will take over."<sup>43</sup> Using their relationship with the MII, the incumbents often influence the policy-making process towards their favor. With such blessing, the incumbents have no incentive to move first.

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<sup>40</sup> John Williamson "Peering Into the VoIP Void" *Global Telephony*, May 1999

<http://www.telecomclick.com/magazinearticle.asp?magazinearticleid=10715&mode=print>

<sup>41</sup> *Shenghuo Shibao (Life Times)* January 22, 1999

<sup>42</sup> "Internet Telephony in China Pits State v. Private Sector" 3/12/1999

[http://www.chinaonline.com/industry/telecom/NewsArchive/Secure/1999/march/tel\\_c9031221.asp](http://www.chinaonline.com/industry/telecom/NewsArchive/Secure/1999/march/tel_c9031221.asp)

<sup>43</sup> Interview with an internet entrepreneur, Beijing, April 2001

Rather, they can wait out all the technology and marketing risks before moving in and shutting down the first-movers.

As it is always the case in disruptive game, the technology in its infancy is not measured up using the existing value networks. The entrepreneurs take the risk in exchange for the potential upside for being a first mover. Without protection on the upside, they will never start the venture. In an industry that is known for its innovation, and disruptive technologies, the use of government power to shut out competitors discourages innovators from entering the market.

### **Case Study: Xiao Ling Tong (XLT)**

#### *The Cannibal in the family*

After China Mobile was broken away in 1999, China Telecom was left with over 530,000 employees and a large physical networks to maintain. Without a mobile license, the company was stuck with a slow-growing business. The management was desperate in search for a high-growth area.

Entered *Xiao Ling Tong*, a personal handyphone system (PHS) manufactured by Hangzhou based UTStarcom. Invented in Japan, the PHS technology is a low-power mobile service offers only local coverage. Viewing a way to circumvent the licensing issue, China Telecom offered the XLT service for the same tariff as local call.

Introduced in Hangzhou in December 1999, the service became hugely popular in cities where the service was rolled out. In many cities, all XLT accounts were sold out



within days. By December 2000, there were over 60 cities offering the service with 1 million users. In city of Yuhang, there were 15,000 users in a population of 40,000<sup>44</sup>.

According to *Science and Technology Daily*<sup>45</sup>, 90 percent people in China spent 90 percent of their time in their own cities. They did not care about the national roaming service, WAP, PDA and other fancy bells and whistles of the mobile phones. Many did not own mobile phones for cost concern. The XLT service satisfied the needs of this market segment, and potentially threatened the user base of China Mobile.

The MII frowned on the idea. In March 2000, the MII believed that “PHS is not the future of mobile communications, and so it would be inappropriate to build large-scale mobile communications networks based on PHS technology”<sup>46</sup>.

China Mobile's annoyance erupted in an incident in Lanzhou in August. Lanzhou Mobile (local China Mobile subsidiary) refused the XLT users' interconnection to Lanzhou Mobile users. In retaliation, China Telecom disconnected some of Lanzhou Mobile's users since Lanzhou Mobile leases line from China Telecom. The dispute broke headline news nationwide.

In September, the MII held a hearing on the XLT. In December, the MII ordered China Telecom to halt the deployment of the PHS service and to increase the tariff to existing users by three folds to the level of China Mobile wireless service. In essence, the MII banned the service. The MII described the PHS as “shortsighted” and took up valuable channel resources, required too much investment, was associated with low profits, led to wasteful duplicate construction and could not represent the telecom

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<sup>44</sup> <http://www.sina.com> Sep 22, 2000

<sup>45</sup> <http://finance.sina.com.cn> Aug 14, 2000

<sup>46</sup> “MII Puts A Damper on Handyphone Hopes in China” 3/16/2000

<http://www.chinaonline.com/industry/telecom/NewsArchive/Secure/2000/march/B100031532.asp>

industry's long-term development direction. According to the MII, the PHS did not take off in Japan and was a failure in Thailand. In short, the PHS was an inferior technology, therefore should be banned.

*Don't do anything I won't do.*

The PHS had all the traits of a disruptive technology in its infancy. It was no cutting edge technology in terms of incumbents' value networks: small range, narrow bandwidth and so on. Yet it satisfied the needs of a large market segment. Who knows? It might be the right technology for Chinese market.

UT Starcom, the startup founded by returned a Chinese student from the US, made much improvement before its deployment. The system was much better than it was in Japan and Thailand. If allowed to survive, the startup might have a fighting chance to grow the technology and might one day leapfrog the other wireless technology.

Yet that was not what the MII officialdom care about. As the self-appointed guardians of technology, they have the responsibility to see the best-of-the-class technology implemented in China. They envisioned a three-fold growth of 2.5G or WAP user-base. The PHS was not a part of the grand plan. Worse, it would jeopardized the plan should it succeeded commercially. Worst of all, it would ruin the careers of the officials if the PHS were allowed to try but failed after Japan and Thailand. How could they stupid enough to let this proven failure to even have a chance in China, at a cost of valuable resources and China Mobile's revenue?

As discussed before, in the MII-run country club, gentlemen should compete like gentlemen do. They should not beat each other with golf clubs, not to mention cannibalize each other. According to the rule of Captain MII: China Telecom should

play in the fixed-line arena and China Mobile wireless. Therefore, China Telecom's inroad into the wireless sector was naughty indeed.

A comparison of the XLT with iMode will find many similarities. Both are operated by incumbent telcos<sup>47</sup>; based on a repackaging of existing technologies<sup>48</sup>; and are unique in their own market niches. Indeed, they bear many the traits of disruptive technology. They both have potentials to disrupt the existing value chain.

Yet the role of government made a difference in China. The MII excited about technology, new economy and domestic hi-tech industry punished the domestic innovator UT Starcom. From a market perspective, the MII would not allow any erosion of the SOEs' market share or revenue. The SOEs' performance is used to measure the performance of the ministries. So the MII would prefer revenue growth of all its SOES to China Telecom fighting China Mobile. From a political perspective, top managers of China Telecom and Mobile are former MII officials on business assignments. The MII needs to balance their political powers. From a technology perspective, the MII would protect the technology roadmap that it envisioned.

Ironically, China Mobile, the same company successfully shut down the PHS, is launching its Monternet, a open wireless O/S modeled on iMode. Sure, they will innovate as long as it is a proven success elsewhere.

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<sup>47</sup> NTT DoCoMo is a venture of Japanese former state monopoly Nippon Telegraph and Telephone Corp. Most data on iMode and NTT DoCoMo is from Bruno Giussani's "Attack mode" The Industry Standard 11/13/ 2000

<http://www.thestandard.com/article/0,1902,19868,00.html>

<sup>48</sup> Instead of using the WAP or other wireless protocol, iMode uses IP to transmit and present data onto the handsets.

## **Conclusion**

Adam Smith claimed that the market forces would distribute resources in the most efficient way, just like the God's invisible hand. Twenty years after China moved slowly towards a market economy, government still is still running the market with its visible hand. In telecom industry, the hand is not only visible but ubiquitous.

In this part, we have discussed VoIP telephony and the XLT cases. There are many other evidences: the CDMA saga (see Part Two), China-China-Foreign scheme, one-way tariff, price control, and so on. In other so-called fundamental industries, the government behaves in a very similar fashion. For example, in March 2000, the government stepped in to stop the price war among airlines to avoid bankruptcy of the losers<sup>49</sup>. The state/CCP, through the State Council and the MII, have shown their willingness to step in and use a big stick to sort things out whenever it sees fit.

The implications are twofold. First, even in the absence of personal incentives, the incumbents will toe the MII line purely for commercial interests. As demonstrated in both VoIP and the XLT cases, the companies will be much better off to listen to the MII than to their consumer. The incentives for innovation and risk-taking are taken away from the incumbents. In the end, the MII knows what is good for them. Second, the effects on the innovators on other pieces of the value chain are disheartening indeed. In order to survive, their imagination must be confined to that of the MII. Their successes are always under the threat of the Big Brothers' moving up or downstream.

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<sup>49</sup> "Chinese Airlines Ban Together To Eliminate Price Gouging" *Zhong Xin She (China News Service)* 3/28/2000  
<http://www.chinaonline.com/industry/aviation/NewsArchive/Secure/2000/March/C00032804.asp>

The MII of incompetence is irrelevant in our discussion. Neither are the roles of *guanxi* (relationship), corruption and quip pro quo<sup>50</sup>. On the contrary, many officials' talent, integrity, enthusiasm and technology savvy impressed us. However, their understanding of market mechanism and role of regulators are hopelessly inadequate.

Consciously or subconsciously, they adhere to the idealistic view of efficient central allocation of resources and refuse to let the market to play it out. The PHS should be banned because it wastes frequency resource; the VoIP should be banned because consumers should pay more for better QoS, so on and so forth.

To their credit, the system has its strengths. The whole industry, and even the whole country, can be mobilized and achieve remarkable goals. For example, the country has replaced analogue wireless system with digital one much faster than the US. The deployment of fiber optics is also another exploits of the efficiency. Yet the system will work well when the goals are well defined and in slow clockspeed industry; in other words, in a sustainable game. Yet in a disruptive game, the efficiency is often at a cost of innovation. Despite the state's good intention and administrative competence, the visible and ubiquitous hand has obstructed the development of a dynamic telecom industry, and prevented the local companies from creating value and gaining world-class competitiveness.

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<sup>50</sup> Many interviewees told us that the *guanxi* used to be the necessary and sufficient condition in business dealings with the MII and telecom operators. However, although *guanxi* is still the necessary condition, technology and commercial terms has become the sufficient conditions in business dealings in the industry.

**PART TWO**

**MANAGEMENT AND CORPORATE GOVERNANCE ISSUES**

## **Introduction**

In Part One, we discussed Chinese companies' external competitive environment in telecom industry. The state policy of retaining ownership of the service area and introducing competition among the state-owned carriers is the fundamental force shaping the competitive landscape. The breakup of China Telecom and the introduction of market entrants have stimulated competition. In many areas, the fight for market share is fierce. Consumers and businesses have benefited in terms of services, technologies, choices and price. Yet the industry structure is still rigid due to the SOEs' domination of the value chain, and the state's frequent interventions.

In this part, we examine the companies' ownership, corporate governance and management incentives, both the SOEs and the private sectors. We argue that the state exerts influence over the SOEs through administrative intervention and personal incentives. In the state, the SOEs are not independent commercial entities, each with its own goal. Rather, they are a concerted group of business, social and political units. The state has a role to coordinate and guide them to achieve the maximum common gains.

## **Corporate Governance in state owned operators**

### **A short history on property ownership in China**

The property owners' rights have never been codified by law in China's long history. By default, rulers ultimately own their subjects and their personal properties. Emperors often confiscated private properties of their subjects to punished disloyalty. In time of a new regime, new rulers' attitude towards the private properties was similar to that of colonists to indigenous people. In the 1950s, the communists' seizure, redistribute and claim of private properties was partly driven by the Leninists' doctrines, but also partly a continuation of the Chinese legacy.

After 1958, private ownership was eliminated. The state owned and run all properties and resources. It controlled the supply, production and distribution of every product using a massive bureaucratic system. The Central Planning Committee was the master planner. More than sixty industry ministries<sup>51</sup> run the industries, services and agriculture according to the master plan. A ministry told factory managers exactly from where to buy material, what to produce, and to whom to sell and by how much. The factory then produced as much as possible. The state took all the revenue and paid all the expense.

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<sup>51</sup> The demarcation of the ministries was extremely detailed. For example, there were Ministry of Education and Ministry of Higher Education. The latter was responsible for universities and above. In the machinery industry, there were Ministry of Machinery, Ministry of Farming Machinery, Ministry of Military Machinery, and Ministry of Electronics.



In the end of 1970s, the system was breaking down. Deng Xiaoping, the country's new leader, loosened up the stricture in order to vitalize the country's dilapidate economy. Private enterprises emerged and flourished. The Communist Party leadership was unsure about the ideological legitimacy of private ownership which conflicted with the basic socialist belief. Either were the entrepreneurs. Private ownership lived in a gray area and often under the cover of "collective". In 1989, 80 percent of the enterprises registered as collective in Fujian and Guangdong were actually private business<sup>52</sup>. The word "private" still had a sinister connotation.

As the private sector became an increasingly important part of the economy, the state officially acknowledged the non-state ownership as a complimentary to the state-owned economy. Private ownership started to appear in Chinese official statistics. Zhejiang officials felt it safe to boast that many of its township enterprises had "thrown off their red hats" and were now the country's biggest taxpayers<sup>53</sup>. Only after spring 1999 did private ownership was acknowledged in the constitution.

In the meantime, the state-owned economy is dying a slow death despite the massive blood injections and several heart resuscitations. "The 15th Communist Party Congress in the autumn of 1997 was a watershed. It marked the start of this new phase with the suggestion that tens of thousands of small and medium-sized state enterprises would be cast loose upon private waters, to float or sink."<sup>54</sup> Few really sunk; many are holding on to the last straw. The country has seen unemployment on a large scale in the urban area, especially where the SOE sector dominated. The SOE's industrial output has

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<sup>52</sup> Becker (2001)

<sup>53</sup> Yazhou Zhoukan, Hong Kong, No 2, 14 January 1996, pp 22-8. The article by Deng Liqun, castigates China's new 'bourgeoisie'.

shrunk from 100% to 28% from 1978 to 2000<sup>55</sup>. In the service sector, the figures are 100% and 75% largely due to the state monopoly in transportation, banking and telecommunications. Overall, the SOE is now less than half of the country's economy<sup>56</sup>.

### **Ownership and Governance**

All three types of ownership in China - state owned enterprises (SOE), foreign multi-nationals (MNC) and private companies - have strong presence in the telecom industry. As described in Part One, only seven SOEs have licensed to offer services. Yet the nothing is clear-cut. Foreign interests were supposedly forbidden in the service sector. The state kicked out China Unicom's foreign investors in the so-called China-China-Foreign (CCF) investment scheme in 1999<sup>57</sup>. Yet the state-owned China Mobile and China Unicom are both listed in Hong Kong and New York Stock Exchanges, thus having foreign investors. Vadafone holds 2% of China Mobile. Netcom completed its private placement of US\$325 million in March 2001, where Goldman Sachs, News Corp. are investors<sup>58</sup>.

For the smaller SOEs, it is even messier. Legend Computing is apparently a private company but owned by the CAS. Zhongxin Telecom can be a government

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<sup>54</sup> "Now comes the hard part" *The Economist* Apr 6th 2000

<sup>55</sup> The industrial sector includes mining, power and manufacturing industry. It does not include construction, service and agriculture. "China Statistical Year Book 2000"

<sup>56</sup> The estimation on the size of private sector varies wildly. The figure quoted here is from *China Economic Quarterly (CEQ)*.

<sup>57</sup> William J. McMahon "Beijing Gives China Unicom September Deadline To Resolve CCF" *ChinaOnline News* 9/3/1999

<sup>58</sup> "News Corp buys into China telecom group" *CNN.com* February 20, 2001

research institute or a SOE depending on to whom they are talking<sup>59</sup>. Ask anyone who owns Huawei, you are guaranteed a faded look and a different answer each time.

### **Ownership of the state-owned carriers**

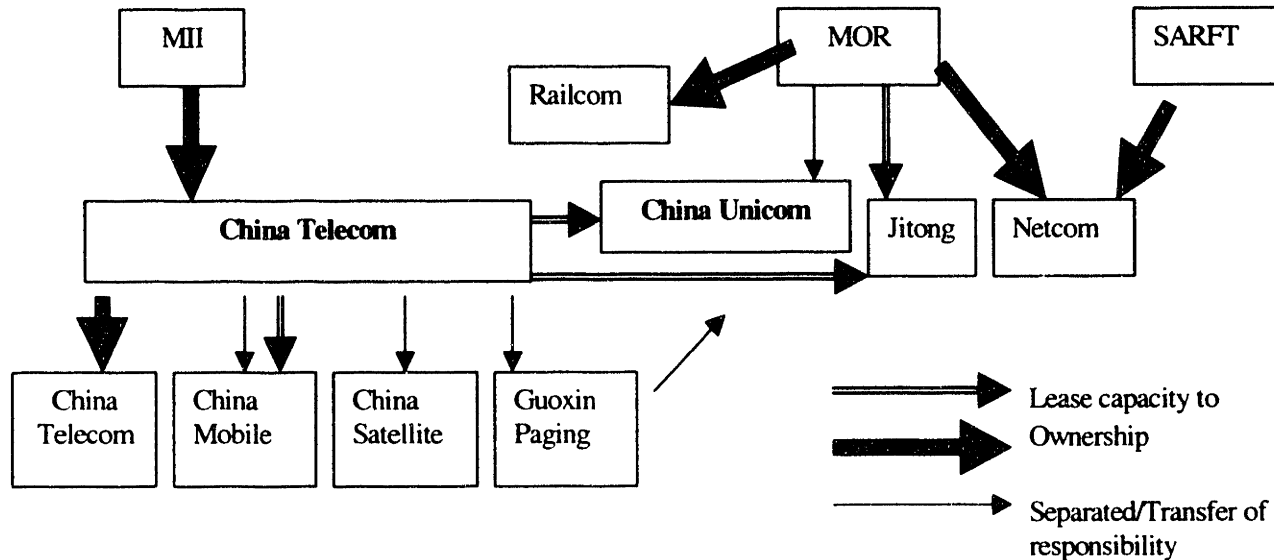
Back in the heydays of 1980s, everyone in China was in business. The CCP, government, universities, and even the army all had commercial interests. A government-funded research institute might run enterprises ranging from hi-tech start-ups to restaurants.

The basic cell of old administrative system is a *danwei* (unit), which could be a factory, a village, a government bureau and so on. An SOE (*guoying danwei*) was administrated by two systems: a regulatory one (*jianguan danwei*) and an administrative one (*zhuguan danwei*). *Jianguan danwei* made policy decisions in the industry that the SOE operated. *Zhuguan danwei* was the owner. For example, China Unicom was founded by the Ministry of Electronics and Information (MEI), so its *zhuguan danwei* was the MEI; while its *jianguan danwei* was the MPT. China Telecom used to be a part of the MPT, so the company's *jianguan* and *zhuguan danwei* were both the MPT. The MPT had both the regulatory responsibility and business interests. It was said that China Telecom was the real son, and China Unicom the adopted son. China Unicom's predicament changed when the MEI was merged with the MPT to form the MII. Many former MPT officials, including Vice-minister Yang, were transferred to Unicom. China Unicom thus became the real son. Yet the arrangement left other carriers, such as China Netcom, Jitong and Railcom, on the non-blood relations side. They have been voicing their grievance loudly through their *zhuguan danwei*.

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<sup>59</sup> Interview with Kefei Wang, formerly NTT DoCoMo, Boston, May 2001

**Exhibit 10 Operator Linkages Operators Linkage before the recent drive to separate government and business.**



Source: Pyramid Research

Having recognized the conflict of interests, Premier Zhu spearheaded the separation of government from business in 1999. Under the new scheme called *Tuogou* (literally, to unhook), government body is no longer allowed to have commercial interest. Early this year, the State Council ordered all ownerships of state owned shares of large SOEs be transferred to the State Assets Bureau of the Ministry of Finance<sup>60</sup>. The Large Enterprise Working Committee (LEWC) was set up to be responsible for the top

<sup>60</sup> There are four kinds of shares in Chinese companies: public shares, foreign shares, state-owned shares and legal person shares. Public shares are owned by public investors. Foreign shares are owned by foreign investors. State owned shares owned directly by the state, now held by the Ministry of Finance. Legal person shares are shares owned by other companies (Legal person is a unique Chinese legal term that describes a profit or a non-profit organization that is other than an individual person, a natural person). There are also the difference between state-owned legal person shares and private legal person shares. The state-owned legal person shares are owned by state-owned companies. China Telecom's shares are all state-owned shares because the company was initially invested by the state. China Netcom's shares are all state-owned legal person shares because its initial investors are state owned companies that were controlled by four

management appraisal and the strategy direction. The committee is directly under the State Council.

### *Corporate governance of large SOEs*

The concepts of independent board of directors and professional managers are still novel in China. An SOE's board of directors is usually consisted of the company's senior managers and its *zhuguan danwei*'s senior managers. When several investors are involved, each sends to the new firm several senior managers who are also members of the board<sup>61</sup>. In this arrangement, board of directors is powerless rubber stamps. The new ownership arrangement has yet to make an impact on the corporate governance. Currently, the LEWC, a company's former *zhuguan danwei*, and the CCP's Department of Organizations (CPDO) all hold powers in the top management decisions.

The LEWC is the official owner but so far has been working as a watchdog. It has not shown its ability or willingness to influence the strategic decisions of the company. The newly built government body has only about 200 staff but 500 companies on its portfolio. The CPDO is more concerned about the political loyalty of the managers, who are almost all party members, than their professional skills. The membership of the board largely reflects the ownership before the change, at least in this transition period. For example, officials from the MII dominate the top management and board seats of China Mobile, Telecom and Unicom.

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government bodies. However, since the investors are all ultimately state owned, China Netcom's shares are ultimately held in the Ministry of Finance.

<sup>61</sup> Interview with a corporate lawyer, Beijing, April 2001

### *Overseas listings*

On October 23, 1997 China Telecom (Hong Kong) Limited completed its IPO and raised US\$ 4 billion in Hong Kong, the largest IPO in HK Stock Exchange's history. The spectacularly successful IPO convinced the Chinese state and other operators that overseas listings solve the dilemma of raising capital while retaining state control. Many operators now have plans for IPOs and we believe that they will use similar ownership structure as China Telecom (HK).

The structure roughly works as following. First, China Telecom transferred the assets of Guangdong and Zhejiang Mobiles to China Telecom (HK). Then China Telecom (HK) listed 25% of its stock on the Hong Kong Stock Exchange. Using the proceeds, China Telecom (HK) acquired another twelve provincial Mobiles from its parent company. Exhibit 11 shows the company structure of China Telecom (HK), which is now China Mobile (Hong Kong) after the breakup<sup>62</sup>.

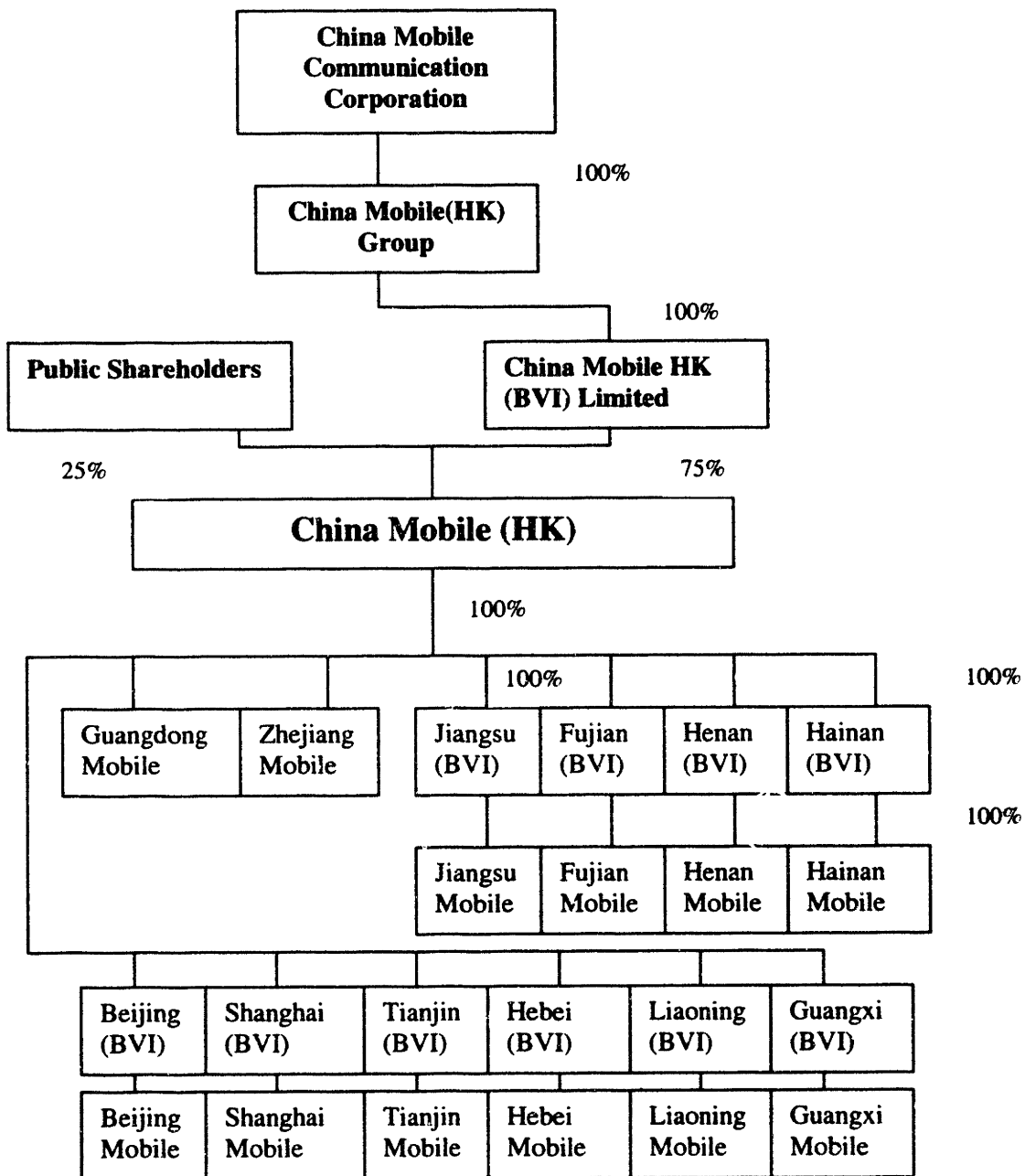
Unicom also copied the same structure and listed its mobile business in 12 provinces, nationwide IP telephony, long distance service and paging services on Hong Kong and New York Stock Exchanges. The company is planning to raise more finance and purchase wireless networks in 18 provinces from its parent -China Unicom Group<sup>63</sup>.

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<sup>62</sup> China Telecom (HK) is renamed China Mobile (HK) after China Telecom was split into China Telecom and China Mobile. The exhibit was slightly changed since.

<sup>63</sup> "China Unicom profit tops expectations: Firm tries to dispel investors' worries" *Wall Street Journal* April 4, 2001 <http://public.wsj.com/sn/y/SB986279751195417411.html>

**Exhibit 11 China Mobile (HK) Limited Organization Structure**



Source: China Telecom (HK)

The overseas listings have forced many changes to the state-owned operators. For example, western style corporate governance structure has been set up with inclusion of a number of independent members of the board<sup>64</sup>. The management has also started to emphasize the importance of the profit. Overseas accounting firms are engaged so the SOEs are increasingly transparent. Nevertheless, the state remains the majority shareholder. As a result, the changes above are largely window-dressing. As long as the overseas capital market continues to finance these listed companies, and as long as their growth will continue, the parent companies have no incentive to loosen its control on the subsidiaries. Conversely, the management of these listed companies have no incentive to maximize profit in face of conflicting priorities.

### **Even more confusing ownership of Small companies**

On the other side of the spectrum, ownership of smaller companies is even messier. These companies usually operate in non-monopoly sectors. A large number of private and state-owned companies are listed in the domestic stock exchange and have much larger percentage of their stocks in public hands. In order to satisfy the CSRC's stringent requirements to be listed, they have to set up corporate governance structures, audit systems and so on. Yet with the unbridled support from the domestic capital market, these firms have even less incentive to undergo any real changes on their corporate governance<sup>65</sup>.

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<sup>64</sup> Half of the members on the board of China Unicom (HK) and China Mobile (HK) are independent members, with the other half being the management.

<sup>65</sup> The average initial return on Chinese A Share is 256.9%, the highest in the world. In comparison, second, third and fourth highest are Korea, Brazil and Germany with 104.1%, 78.5% and 51.7% respectively. In the US and HK, the average return is 18.4% and



Small SOEs are no longer under the wings of the state. Many are withering away without the protection and guaranteed soft loans from state owned banks. But few are active, especially in low-end equipment vendor market. Many of them are de facto private companies. Entrepreneurial individuals, who act as the de facto owners, run them like closely held private companies. The legal owner has virtually no influence. They do not have many the SOE traits, such as lifetime employment, CCP apparatus, and cradle-to-grave benefits.

In fact, some of the so-called SOEs are downright private companies wearing red hats. They wear the hats for its many convenience or necessity. Yet the ambiguity is often a double-edged sword. The legal owner can often threaten to resume its legal role in order to extract more rent.

### **Private Companies**

People-managed enterprise is a euphemism for private companies. The name suggests two realities. The word private still has a negative connotation and the ownership is not always clear. Many successful private firms have their origin in the 1980s when entrepreneurs started their ventures under the cover of village-, collective- or even state-ownership for three reasons.

First, entrepreneurs use the legal ownership to circumvent the legal issues in regulated industry. For example, private companies are banned from a certain industry. But an entrepreneur would strike a deal with a SOE. The former will be the subsidiary of the latter, and use the cover to conduct business.

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35.3% respectively. Source: Tim Loughran, Jay R. Ritter, Kristian Rydqvist "Initial Public Offerings: International Insights" <http://bear.cba.ufl.edu/ritter/int.pdf>

Second, the official owner provided initial finance. This is often the case in hi-tech start-ups with educational or research institute origins. Since there is no venture capital, entrepreneurs usually persuaded a state-owned *danwei* to invest. Yet the division of share is never clear.

Finally, entrepreneurs use the official owner as a fallback position if the startup does not work out. In many cases, the entrepreneurs are officially still the employees of their previous *danwei*, although their *danwei* had nothing to do with the ventures.

The confusing ownership and corporate governance are now damaging the sustainable growth of the companies. Entrepreneurs often face several situations when the companies grow to certain size.

- They slow down the growth to avoid envy from the legal owner.
- They are ousted or involved in legal battles when legal owners claim the ownership.
- They use the company to funnel money to their other endeavors.
- The founding entrepreneurs fight among each other.

As a result, the corporate governance issues have destroyed values in many private companies.

## **The Visible Hand**

In Part One, we discussed the state's role as a regulator, albeit an overzealous one. Yet the government also influences the SOEs through its ownership and its bureaucratic system that is intertwined with the business.

### **The inner circle**

#### *The old boys club*

Promoting talented engineers to administrative positions is a tradition in Chinese government's system. President Jiang, Premier Zhu and former Premier Li are all engineers from prestigious universities. In technology-related industries, the tradition is even stronger. We discussed the career backgrounds of the MII bureaucrats previously. Top managers of the operators, especially the top three, are almost all former MPT technocrats and graduated from *you* (posts and telecom colleges). The *you* are renowned for their engineering departments. Their management departments have much lower academic standard. Graduates from management departments are assigned to staff positions, mainly in the posts, instead of the telecom, part of the former MPT<sup>66</sup>. It was the engineers with wired or wireless degrees that made it to the top. A quick look at the biographies of the CEOs in the top three carriers is revealing.

- Zhou Deqiang, general manager of China Telecom was an MII vice-minister before his business career. His previous experiences include the head of Anhui PTAB, chief engineer of Anhui PTAB. He has an engineering degree from *Bei You*.

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<sup>66</sup> Interviews with an industry observer, Beijing, April 2001

- Zhang Ligui, president and the party secretary of China Mobile. Zhang was the president and the party secretary of old China Telecom, the head of General Posts and Telecommunications Bureau in the MII prior to current position. Zhang has an engineering degree from *Bei You*.
- Yang Xianzhu, general manager of China Unicom. Prior to Unicom, he was an MII vice-minister, the head of Hubei and Henan PTABs. He graduated from the Wired Department from Wuhan Post and Telecommunication College<sup>67</sup>.

### *Values*

The former engineers were promoted for their technical ability and are still technology savvy. And they take proud in, as they deserve, the industry' technology achievements. Many company newsletters describe the top managers asking detailed technical questions in tradeshow and so on.

The former utility bureaucrats are still getting used to a profit driving business. Zhang's speech was reported in trade magazines when he asked China Mobile executives to emphasize the importance of profit, and de-emphasize the importance of installation base<sup>68</sup>. His top and middle managers have almost no commercial experience. Companies are still run like government departments, a problem similar to Deustch Telecom, BT, Telefonica and former state-owned telcos. Unlike Germany, Britain and Spain, China does not have a large-scale private sector to supply talents with large-enterprise commercial experience.

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<sup>67</sup>Biographic profile: Yang Xianzu, chairman and CEO, China Unicom  
[http://www.chinaonline.com/refer/biographies/business/Yang\\_Xianzu.asp](http://www.chinaonline.com/refer/biographies/business/Yang_Xianzu.asp)

The following anecdote illustrates the technocrats' management style<sup>69</sup>. In a China Mobile provincial subsidiary, the top manager decides a priority (*zhua*, literally means pick) each month and runs a competition among county branches, reminiscent to the communist-style movement. When we interviewed, the *zhua* of the month was connection rate. County branch managers are scrambling for resources to improve their connection rate at all cost. At the end of the month, provincial company would collect data. County branches were graded as either pass or fail. An honor list would then be compiled for the top achievers. Next month, there would be another *zhua*.

### *Government connections*

Messr. Zhou, Zhang and Yang are all former vice-ministers from the MII. The top three operators all have an administrative rank of vice ministry. The *tuogou* is supposed to abolish the rankings. But the system is so deep-seated that it will take more than a decree to change. Zhou would still be addressed as Zhou *Buzhang* (Minister), instead of Zhou *Zong* (General Manager)<sup>70</sup>. An SOE' rank, and by extension its head's rank, can still be identified by their *zhuguan danwei*<sup>71</sup>. Mr. Zhou was widely speculated to a contender for the minister of the MII when Minister Wu retires<sup>72</sup>. In the past, the political and business careers at vice-ministerial level officials are crisscrossed. Mr. Su

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<sup>68</sup> Ying Zhiwei "How long the high growth of telecom market can last?" *Tongxun Shijie (Communication World)* 3/28/2001

<sup>69</sup> The provincial subsidiary is a part of listed China Mobile (HK). A telephone interview with a MNC project manager, Beijing, April 2001

<sup>70</sup> Interview with an industry observer, Beijing, April 2001

<sup>71</sup> The LEWC is the *zhuguan danwei* of the vice-ministry level SOEs. Provincial governments are the *zhuguan danwei* of the next level down (*ju*), and son on. You can also tell the rank of a manager by knowing his party supervisor. If he is a vice minister, his party supervisor is in the CPDO, and so on. Interview with a junior government official, Beijing, April 2001

<sup>72</sup> Interview with an industry observer, Beijing, April 2001

Jicheng re-joined the MII to be the head of Telecom Administration Bureau after heading Unicom. Key personnel decisions are inevitably made beyond the level of boards. To the senior managers, the MII is a real career possibility.

### **Personal Incentives**

According to Cialdini<sup>73</sup>, six forces influence people: reciprocity, commitment, social proof, liking, authority and scarcity. We believe that shared values (liking), reciprocity, and authority all play significant roles in the top managers' personal incentives to behave like government officials than business executives.

First, they have a similar value network. The *you* training and PTA careers have forged similar technological and social values. They understand and respect each other. Second, it is a give and take. The inner circle is so dominate in the industry that there are many claims that the top jobs and contracts in the MII, and China Telecom, Mobile, Unicom are jobs for the boys. Third, the personal careers are interlinked. Many top managers view their business positions a post. Many may feel little control over their own destination. Minister Yang and his top management team were transferred to China Unicom from the MII by Premier Zhu's decree<sup>74</sup>, a move to end the MII's bias against the company. In the case of the XLT, The other consideration of the MII may be a political power balance.

The stock option has made Yang, the head of China Unicom, and his top executives some of the wealthiest men in China. They are also paid over a million US

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<sup>73</sup> Robert B. Cialdini "Influence – The psychology of Persuasion" Quill William Morrow, New York, 1993

<sup>74</sup> Interview with an industry observer, Beijing, April 2001

dollar in salary<sup>75</sup>. In contrast, a minister in Chinese government is paid some RMB 300 (US\$ 36) per month. The monetary reward may provide incentive for Mr. Yang to stay outside politics. Yet there is no guarantee. First, regardless of Mr. Yang's personal wish, his destiny is not fully under his control. Second, he still may need political clout to protect his private asset in China where getting rich by managing a state-owned company is still controversial. As long as the managers perceive that the personal assets need political protection, they are likely to be at the beckons and calls of their political masters. Third, the personal wealth may encourage them to re-join the government following the example of Mr. Gao Xiqing. Gao made his fortune in Haiwen Partnership, and now is the head of China Security Regulation Committee (CSRC).

### **Case Study: The Unicom Show**

After the *tuogou*, the state only retains the regulatory authority. Yet more often, influence is exerted through management career incentives and shared value networks. As demonstrated in the CMDA case, Unicom managers dance to the tune of the party, albeit reluctantly, without the explicit regulations. Ironically, all the rationale supporting the CDMA in the following is from the source of China Unicom. We have not found any negative comment on the CDMA from the company.

#### *Why Unicom is half-hearted in the CDMA saga?*

The love affair between the CDMA and Unicom has all the elements of a good TV hit series: sex, money, power, celebrities; full of surprises and suspends. The basic

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<sup>75</sup> "The aggregate annual salary for Yang Xian Zu, Wang Jianzhou, Shi Cuiming and Li Zhengmao shall be HK\$12,300,000" – Excerpt from "China Unicom Global Offering Prospectus" p101.

plot: Unicom is considering a marriage proposal from the CDMA. Apparently, the CDMA offers many advantages to Unicom: a) superior technology to its competitor, and b) expansion of capacity. There was only one slight problem: Unicom was married to GMS and cannot get a divorce.

It took Unicom 10 years to build a GMS network and to acquire 20 million users. The company cannot afford to walk away and build the customer base from scratch. So Unicom claimed that it would build a parallel network running the CDMA: a corporate equivalence of bigamy.

Yet positioning would be problem with two product lines. Unicom currently has the lower-end market (Exhibit 7 and Exhibit 8). There are three possible positions for the CDMA service: under the current GMS, immediately above the current GMS, and the very top end. As discussed in Part One, Unicom is already operating near the breakeven point. The CDMA does not offer cost advantage so the company cannot afford to move down market any further. In fact, the company cannot even afford to go immediately above its current position because the segment is not very profitable to justify the investment.

The last resort is using the CDMA to compete for the top-end users and leaving GMS where it is. Yet the technological superiority of CDMA is at most marginal, not enough to worth China Mobile's customers to switch. In addition, running two physical networks and two brand names would be extraordinarily difficult. (Considering it does not have even one good brand name.) Only one other operator in the world runs two networks. To compound the problem, there is no technical expertise in the CDMA in



China. The company has to build up its engineering force. With two sets of technology, marketing and sales forces, there is very little economy of scale.

However, the biggest risk is 3G standard. Even in the most pro-CDMA country in the world, Korea, both Korea Telecom and SK Telecom have chosen to go W-CDMA<sup>76</sup>, a European standard.

Finally, the company will raise finance from overseas for the project. In this tech-slump market, convincing the investors to believe in the story would not be easy.<sup>77</sup>

*The winners are...*

The domination of European vendors to the Chinese wireless is due to their strengths in the GSM technology. The North America vendors, such as Qualcomm, Lucent and Nortel, have been drooling over this fastest growing sector for long time. However, their technologies are mainly based on the CDMA.

Chinese government's concerns over its lucrative market being locked in by Europeans are well known<sup>78</sup>. We believe that it is partly a commercial concern, but partly a balance of influence of the two powerful political blocs. The Chinese government does not want to shut out the US telecom interests because the commercial interests often play a powerful role in Washington DC. The biggest winner if the CDMA is deployed would be San Diego-based Qualcomm. In addition, North America-based Lucent and Nortel will also benefit greatly. In deed, the Unicom card have been played at every turn of event in the Sino-US relationship.

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<sup>76</sup> "CDMA and China Unicom" *Tongxin Shijie (Communication World)* March 28, 2001

<sup>77</sup> According to the Wall Street Journal (April 4, 2001), China Unicom is contemplating to raise capital in the domestic stock market to finance its CDMA deployment.

<sup>78</sup> Interviews with Mr. Xiao Ligang, *Tongxin Shijie (Communication World)* magazine, Beijing, April, 2001

As discussed before, local manufacturers are still overwhelmed by the European vendors in the wireless equipment market. The gap is increasing because of the GSM uses proprietary technologies. The CDMA uses core technology licensed from Qualcomm, so the technological gap is relatively small. However, if the locals do not acquire operation experience immediately, they will again be left behind when 3G takes place. The MII has been pouring money into the R&D of the CDMA technology. *Communication World* reports that after many years and millions of dollars later, the local firms, such as Zhongxing and Datang have developed their first CDMA equipment.

In February, Unicom again announced its plan to deploy CDMA. In April, it awarded US\$2.4 billion contracts to foreign vendors Lucent, Nortel, Ericsson and Samsung, and Chinese vendors Huawei, Datang and Zhongxi<sup>79</sup>.

As discussed before, the state views the SOEs as a combination of commercial, social and political cells of the government. Unicom has vital commercial stake in the CDMA game yet the firm has little say-so. All the company can do is dragging its feet. On May 1, Unicom postponed signing contracts. The CDMA saga will continue<sup>80</sup>...

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<sup>79</sup> "Qualcomm benefits from China Unicom investment" *Upside*, February 13, 2001  
[http://www.upside.com/Communications/3a8969e241\\_yahoo.html](http://www.upside.com/Communications/3a8969e241_yahoo.html)

<sup>80</sup> "China Unicom delays pacts to purchase wireless gear" *Wall Street Journal*, May 2, 2001

## **One country, many systems**

So far, we have treated the state-business relationship almost as a headquarters-division relationship. Where the headquarters' interest is in conflict with that of the division, the latter usually comply even though they can influence the former. The problem facing a Chinese SOE is that it has many headquarters and they often work at cross-purpose.

### **Too Many mother-in-laws**

#### *Netcom: Nobody's real son*

China Netcom was formed as a joint venture between the Chinese Academy of Science (CAS), the MOR, the State Administration of Radio, Film and TV (SARFT) and the Shanghai government<sup>81</sup> in June 1999. Other investors include Goldman Sachs, News Corp, Hong Kong-based Sun Hung Kai, Henderson Land and the Kerry Groups and two Chinese banks - the Bank of China and the Construction Bank. The four investors were a dream team. The MOR has rights of way along the railway, a nationwide fixed lines stretching 118,000 km, IPoDWDM backbone network running over 41,000 km and 1 million end-users. The assets complement the SARFT's extensive CATV access network. Shanghai Government and the CAS have the all-important government relationships. Mr. Jiang Mianheng, a son of President Jiang Zemin, is on the board of directors representing the CAS. Additional investors bring in the deep pocket.

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<sup>81</sup> All four parties invested through their wholly owned companies. For example, the MOR has 100% of state-owned shares in Railcom. In turn, Railcom owns nearly 25% of state-owned legal person shares in China Netcom.

The company is licensed to carry out data communication, and IP telephony services. It owns international gateways and an 8,500-kilometer high-speed fiber-optic cable network connecting 17 cities<sup>82</sup>. The company is also aggressive in building broadband access network.

Netcom was meant to be a different SOE. Edward Tian, a successful entrepreneur and founder of AsiaInfo, was appointed the president and CEO. He also built a remarkable management team. The EIU enthusiastically reported in 1999:

“Although Netcom is owned by SOEs, Mr. Tian is adamant they do not dictate company strategy. Patrick Horgan, telecoms specialist at APCO China, a consulting firm, agrees that Netcom is truly independent. Although each of Netcom's major backers is represented with a seat on the board, Mr Tian has been allowed to draft his own business statutes along the lines of a US-style corporation.”<sup>83</sup>

Indeed, China Netcom seemed to have it all: strong management team, political connection, extensive backbone and access networks, and plenty of money.

Two years and hundreds of million dollars later, China Netcom is losing steam. The company has 90% of its revenue in low-margin IP telephony service. The national backbone and access networks are still being built and trialled. The company has done nothing to the MOR networks or CATV access network.

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<sup>82</sup> “News Corp buys into China telecom group” CNN.com February 20, 2001

<sup>83</sup> EIU “Netcom moves to offer Internet services”

<http://www.chinaonline.com/industry/telecom/NewsArchive/Secure/2000/november/c000110856.asp>

In March 2001, the worst blow came when the MOR received a service license<sup>84</sup>. The new operator will compete with Netcom head on. Another investor, the SARFT established China Radio and TV Cable Network Group (CRTCNG) to control the CATV network nationwide<sup>85</sup>. The company is lobbying for a separate license operate with intention to use the CATV resource<sup>86</sup>.

Having four powerful investors has not benefited Netcom. There is clearly a free-riding problem. Yet the problem is deeper. The independence Mr. Tian sought and foreign press applauded is precisely the company's weakness. What matters to the western investors is dividend. To the Chinese investing *danwei*, it is control. Individuals of the investing *danwei* do not personally participate in an independent company's upside. In Netcom, the management, instead of the investing *danwei*, earns the credit for its own success. The financial upside of an independent firm has little attraction to the individuals in the investing *danwei*. On the other hand, controlling an even mediocre firm yields higher returns. First, it is an expansion of the empire. Second, the success of the company adds political credits to the investing *danwei*. Finally, the control of commercial stakes brings quid pro quo to the individual bureaucrats, immediately or in the future. Therefore, the officialdom really has little to gain in Netcom. If the firm is successful, they ride on its coattail. If not, they do not care. So Netcom becomes nobody's real son.

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<sup>84</sup> "China Railcom to begin telecommuting on March 1, sources say" 2/23/2001  
<http://www.chinaonline.com/topstories/010223/1/b101022228.asp>

<sup>85</sup> "New national company set to control cable TV new national company set to control cable TV networks" Interfax – China IT and Telecom Report, Sept 1, 2000

<sup>86</sup> "What does SARFT want?" *Tongxin Shijie (Communication World)*  
<http://www.cww.net.cn/xw1.htm>

## Central vs. Local

Moving down to the local subsidiary level, the companies' function of profit making is even more diluted. China Mobile and Telecom are organized like Chinese governments which has five levels of organizations: central, provincial, prefecture, municipal and county. At each level, local subsidiaries have considerable autonomy. Historically, the local branches were the operation arms of local PTABs, just like China Telecom was to MPT. The reporting system is similar to the *jianguan* and *zhuguan danwei*. The MPT controlled the local PTABs' operations, and local government controlled personnel and party systems. When the business was separated, local branches still retain the links with local government just as China Telecom does with the MII.

The company's decentralization is also related to the government power structure. In China, local governments hold considerable powers over administrative, taxation, and judicial systems. As a result, managing the local government relationship is as important as managing the central government relationship. For example, the reduction of workforce is always a thorny issue for companies. Local governments exert pressure on the local subsidiary not to shed their workforce.<sup>87</sup>

This year, Netcom has abandoned the attempt to centralize the decision-making in Beijing and is re-organizing to empower its local branches.<sup>88</sup>

The ownership is equally messy. For example, China has an extremely developed CATV network. But the SARFT has only the nominal control over its local branches.

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<sup>87</sup> We heard story in an interview that Shanghai mayor padded the back of the head of Shanghai Telecom and said, "You are a profiting company. Please do not fire anyone. If you do, I will have to see you (about it)."

In order to use the resources for access networks, the SARFT plans to use similar finance structure as China Telecom (HK) to acquire the local networks from thousands of *danwei*. Once acquired, there are just as many standards and designs for the new company to convert. Worst, many localities are refusing to sell.

### **Ownership Implications on Growth**

The growth of telecom industry in China is impressive indeed. We strongly believe that the growth is fundamentally driven by the demand, technological innovations. However, we believe that not all the growths are a result of commercial needs, but of the ownership structure. As long as the monopoly holds, the operators will continue to make profit individually and collectively. Yet if the new entrants with strong financial backing are allowed, as a result of government policy or the WTO, operators may find that they have been too busy growing their business to worry about long-term profitability?

The ownership structure imposes three sets of incentives on the operators: market profit, the rewards in the state hierarchy, and the social demands from the community their office represents<sup>89</sup>. All have impacts on the growth rate of China's telecom industry.

To the telco managers, expanding user base is not only to make money but also a social responsibility. Unfortunately, the growth is only achieved by lowering price. In the wireless market, China Mobile and Unicom has been attracting customers with price-

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<sup>88</sup> The company's CEO, Mr. Edward Tian, might have realized the necessity after his letter to Guizhou governor asking for assistance to build the information highway was re-directed to the Guizhou Highway Bureau. Source: Interview

cutting. As discussed previously, Unicom is expanding user base by driving down the profit. In a research report<sup>90</sup>, Pyramid Research estimates that the total service revenue will fall an average of over 14% annually over the next five years. This will cause total service revenues, which are expected to plateau at US\$8.9bn in 2001, to gradually decline to US\$7.9bn in 2003.

Under the system, the local branches have tremendous personal and political incentive to award more contracts. On the political level, more contracts bring about more capital expenditure, bigger networks, thus more achievement and more power. On the personal level, more contracts may involve more quid pro quo. We believe the local empire building also contributes to the growth of the country's networks.

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<sup>89</sup> Gore (1998)

<sup>90</sup> "Pyramid Research Wireless Markets & Strategies China" May 1999



## **Conclusion**

Most of our discussions in this part are more relevant to human nature than to a political ideology or social values. Simon<sup>91</sup> described organizational goals as systems of constraints. If a given party can determine the constraints, then they can in effect determine the decision. Similarly, decisions can be affected by goals, norms, rules that are advanced and then accepted by those participating in the decisions making situation. Therefore, those social actors who either have or can acquire influence over the constraints and the values and norms employed in the decision-making process can substantially affect the decision outcome.

In the current regulatory environment, the state sets the constraints, which are never clearly defined, always changing, and often conflicting. In the corporate governance structure, the state intervenes on the micro-level, imposes its political and social agenda onto the management. There are no clear demarcation on corporate and management issues. From the perspective of the SOE managers, they are entangled in issues outside profit making. Their incentives have measured by many criteria, with the company's financial performance being just one of them. "Almost all decision situation confront the decision makers with the necessity of not only choosing among multiple alternatives but also among the multiple criteria that could be used in the evaluation of these alternatives."<sup>92</sup>

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<sup>91</sup> Simon (1964)

<sup>92</sup> Pfeffer (1981)

**We argue that the current state of competition, or lack of it, is really a result of the combination of regulatory, governance and management incentive issues in China today.**

## EPILOGUE

In the first part of the paper, we analyzed the competitive landscape of China's telecommunication market from a marketing strategy perspective. We studied the value chain and discovered that the state-owned operators wield extraordinary power over the entire value chain. The monopoly is suffocating enough for entrepreneurs. The state's protection on this power totally deprives the country of the opportunities to produce truly world-class innovation and companies. Ironically, the state is incubating indigenous hi-tech and telecom companies by research funds, venture capitals, tax exemptions, government-sponsored contracts and extremely favorite policies.

In the second part, we examined the corporate governance and management incentive issues from a social science perspective. We concluded that the messy governance structure imposes the owner's multiple goals and values on the business. Often the goals are conflicting, and many are not related to profit making. As a result, business behaves like government, and vice versa. Managers are merely doing what any social actors would do: dancing to the tune of the state.

In the course of writing this thesis, we have experienced emotional upheavals. Five months ago, when we began our research, we were upbeat about China's telecom market. We believe that the country would experience a telecom and hi-tech boom just as the one we just witnessed in the US after 1996. Then the data and research reports, mainly from oversea-based consultants, hit us. We were stunned by how much control the state and state-owned carriers have on every single part of the industry. They left virtually no breathing space for the new entrants and entrepreneurs in this potentially

dynamic market. We were disheartened that there is little indigenous innovation and world-class success in the industry supposed to be on the forefront of innovation. But when we started our field trip to China and talked to real people, our optimism was restored to a certain degree. We realized that the restructuring of the industry is really a part of the reform of China's state-owned enterprise sector, rather than a part of global telecom de-regulation and privatization. Our optimism is based on our belief that the reform is a continuous, albeit slow, process. We have seen that Premier Zhu's reform on regulatory, governance and incentive started to take effect.

In the short-term, the operators will continue to be influenced by the MII and the State Council, and vice versa. In the long-term, we see trend that the state is removing itself from the management arena while providing the check and balance. There is even suggestions that telecom operators should be allowed to go bankruptcy.<sup>93</sup>

Nevertheless, the *tougou* has not changed the fact that the operators are not independent to the state, although they might to the MII in the long term. The state would like the operators to be the engine of the growth to the new economy, but will be tempted to use them for its social and political goals. Fundamentally, it is not the ownership, but the owners' confusion on its role and running of the business that mess up the companies.

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<sup>93</sup> According to Shi Fenghai, Deputy Director of the State Development Planning Commission's Hi-tech Industry Department, China's telecom industry will soon see the first bankruptcy among operators. Hexun Caijing (Homeway Financial News) April 2, 2001

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## **APPENDIX TWO**

### **ACRONYMS**

<b>CCP</b>	<b>Chinese Communist Party</b>
<b>CPDO</b>	<b>Communist Party Department of Organizations</b>
<b>CAS</b>	<b>Chinese Academy of Sciences</b>
<b>CSRC</b>	<b>Chinese Security Regulatory Committee</b>
<b>LEWC</b>	<b>Large Enterprises Working Committee</b>
<b>MII</b>	<b>Ministry of Information Industry</b>
<b>MEI</b>	<b>Ministry of Electronics and Information</b>
<b>MOR</b>	<b>Ministry of Railway</b>
<b>MPT</b>	<b>Ministry of Posts and Telecommunications</b>
<b>MNC</b>	<b>Multi-national companies</b>
<b>PTAB</b>	<b>Posts and Telecommunication Bureau</b>
<b>SARFT</b>	<b>The State Administration of Radio, Film and Television</b>
<b>SOE</b>	<b>State-owned enterprise</b>
<b>WTO</b>	<b>World Trade Organization</b>

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