

The WTO and the Telecommunications Sector in China*

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A Brief History

In terms of growth and revenue, China's telecommunications sector is arguably the jewel in the crown of the socialist market economy. What was formerly the Ministry of Post and Telecommunications (MPT), and is presently the Ministry of Information Industries (MII), has throughout the 1990s produced phenomenal revenue and phenomenal growth.¹ Beginning with Deng Xiaoping's historic trip to Shenzhen in March 1992, China's reform-minded leadership recognized the importance of telecommunications infrastructure to the success of urgent economic growth. Revenue growth for the MPT was strong throughout the decade, growing over 1,600 per cent. Postal services did well, but the phenomenal growth was in telecoms. From 1991 to 1999, telecommunications revenue grew 2,050 per cent against total postal service growth of 375 per cent. In 1999, combined turnover for post and telecoms reached 331.1 billion *yuan* (US\$40 billion), of which telecommunications activity contributed 311.2 billion *yuan*, or 94 per cent (see Figure 1). As a result, the Ministry became increasingly focused on the telecommunications sector.

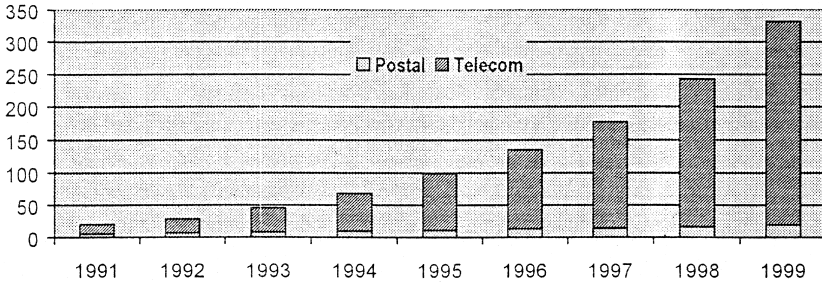
In 1992 and 1993, Minister Yang Taifang and subsequently Minister Wu Jichuan repeatedly emphasized the need to strengthen the administrative planning and control of telecommunications as basic to all aspects of China's reform. They spoke with equal emphasis of the need to maintain the state's monopoly over basic telecommunications operations. The reasons discussed were the requirements of national security, the need to maintain stability and reliability of the public network, and the necessity of keeping all the revenue in the Ministry's hands for reinvestment against the ambitious infrastructure development goals.

The historic monopoly on telecommunications operations dates back to the early 1980s, when a series of pronouncements and circulars defined how China intended to protect its basic telecommunications industries in

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1. For useful studies on China's telecommunications industry development, see John Ure (ed.), *Telecommunications in Asia: Policy, Planning and Development* (Hong Kong: Hong Kong University Press, 1995); Milton Mueller and Zixiang Tan, *China in the Information Age: Telecommunications and the Dilemmas of Reform* (Center for Strategic Studies, 1997), and most recently, focusing on equipment manufacture rather than the service sector, Xiaobai Shen, *The Chinese Road to High Technology: A Study of Telecommunications Switching Technology in the Economic Transition* (New York: St. Martin's Press, 1999).

Figure 1: Total Turnover of China's Post and Telecommunications (1991–1999) (billion yuan)



Source:

State Bureau of Statistics, yearbooks and interim reports.

an era of rapid economic reform. Publications in 1982, 1984 and 1987 consistently asserted the state's decision to protect this sector. For all practical purposes, this aspect of telecommunications in China remains remarkably unreformed, at least as far as direct foreign investment is concerned.

By the early 1990s, however, there was unprecedented pressure on the State Council to improve access and quality. There was also considerable interest on the part of other ministries and the military in the revenue telecommunications operations were generating for the MPT. Experimentation with new technologies began, and the door was opened more widely to foreign equipment suppliers. China sought ways to engage foreign capital in the aggressive build-out of its networks and encouraged foreign investment and technology transfer in telecommunications equipment research, design and manufacture. As the MPT and Provincial Telecommunications Administrations (PTAs) committed themselves to accelerated build-out, essentially scheduling more than 15 million new subscriber lines a year, foreign equipment makers were willing to enter the market on terms very favourable to China's infrastructure development. China was consistently frugal in its infrastructure expansion of the basic network, and in so doing managed to resist pressures to engage significant amounts of foreign capital.

The telecommunications equipment policy was successful in terms of the state's key measures, reducing imports, transferring technology and upgrading the domestic industry. By 1999, a year when China added 23.6 million new lines, the MII annual report stated that 99 per cent of the newly added exchanges were being manufactured locally. Through the decade, China implemented several waves of encouragement for equipment manufacturing to be brought on shore, first to manufacture switches for the circuit switched infrastructure, then for cellular infrastructure equipment, and most recently for handsets. In 1999, mobile handsets were the fastest growing electronic device in China, in both output and sales. Now, as China Unicom prepares to invest heavily in ten provinces

for new CDMA infrastructure, Chinese manufacturers are preparing to bid with their own equipment and technology.

The telecommunications service policy developed separately. The operations of the state monopoly were highly lucrative and reinvestment requirements supported the argument for maintaining high tariffs, high installation costs and monopolistic concentration of the resources for the sector. Nevertheless, a set of forces continued to build throughout the early 1990s that would reshape the network operating sector by the end of the decade. Subscriber satisfaction remained low, and the installation of a fixed line often took six months or longer. Installing a single fixed line carried a 5,000 *yuan* cost, and often another 5,000 *yuan* was needed as an expediting fee. The MPT itself was severely taxed for capacity. Other ministries, including energy and railways, had been developing their private networks, and along with the Ministry of Electronics and the People's Liberation Army began eyeing the very lucrative public telecommunications market. Throughout 1993 and 1994, intense debates among these ministries were brokered by China's State Council. The outcome of these debates, which raged from at least as early as the beginning of 1993, was the opening of the sector to some domestic competition. Jitong was established as an alternate network to provide data services, and it was charged with overseeing and implementing a set of "golden" projects, large area networks for the use of government agencies and China's major financial institutions.

More importantly, China United Telecommunications (China Unicom) was established in mid-1994 to provide an alternate carrier for voice, over both mobile and wireline networks. Unicom was a venture owned 25 per cent by the Ministry of Railroads, 25 per cent by the Ministry of Energy, 25 per cent by the former Ministry of Electronics Industries (now rolled into MII), and in smaller pieces by other state-owned investors. With the establishment of Unicom, two important things were accomplished. First, some influential but controlled competition was created for the original monopoly in the hands of Post and Telecommunications. Secondly, the industry was kept securely in the hands of state-owned entities, assuring that the security interests and financial interests of the state were well protected.

The Unicom build-out that began to unfold in 1995 represented one of China's most difficult interactions with foreign investors. For a period of four years, Unicom and foreign investors operated in a grey patch of regulations. On one hand, Unicom was provided a broad operating licence, permitting both mobile cellular and fixed line operations. On the other, it was provided no capital or sources of capital, just some existing private network infrastructure that belonged to its parent ministries of railroads and energy. The prohibition against foreign equity remained in full effect. As a result a cumbersome arrangement emerged, generally referred to as the Unicom model, or China-China-foreign model. The establishment of these deals was hardly a secret – some 49 were concluded or under negotiation when they were brought to a halt in 1998

– and some investors believed there would be a path from such projects to straightforward equity in telecom operators.

Among the top leadership, by 1998 discomfort grew with the large numbers of ventures in service operations that were fundamentally not compliant with their wishes to keep the sector in state hands and to prevent large cash distributions from leaving China. None of the directors who came and went at Unicom was able to solve the basic problems. Tension between Unicom and the dominant incumbent was intense, as constant fighting about interconnection, rates and standards plagued the relationship. The China Telecom monopoly behaved as telecom monopolies behaved, making life miserable for new entrants. Among other things, this motivated the sweeping set of bureaucratic and organizational changes that were part of the consolidation of MPT and MOE into the MII and the dismantling of the telecom monopoly into four, separately licensed businesses. Ironically, breaking up the competitor that had been overpowering Unicom in every new market had the immediate effect of exposing Unicom politically. In a short time, the Unicom model was under full attack.

What followed was the broadest dismantling of foreign investment in a sector since reforms began. Three of the 49 ventures were found to be illegal and halted immediately. Projects that were in operation were set on an irreversible course toward dissolution. Distributable cash due foreign investors was frozen. Many of the investors were extremely hard-pressed to sustain the loss of cash flow, yet positions were so far apart that almost all the negotiations produced little but ill-will and impatience. But pressure grew on Unicom unexpectedly, as their plans for an initial public offering of stock (IPO) on overseas markets were once delayed and twice threatened by failure to settle the China-China-foreign deals. In the end, settlements were made that largely satisfied the foreign investors, and Unicom marched forward to an IPO that collected nearly four times the amount of capital represented by the failed projects.

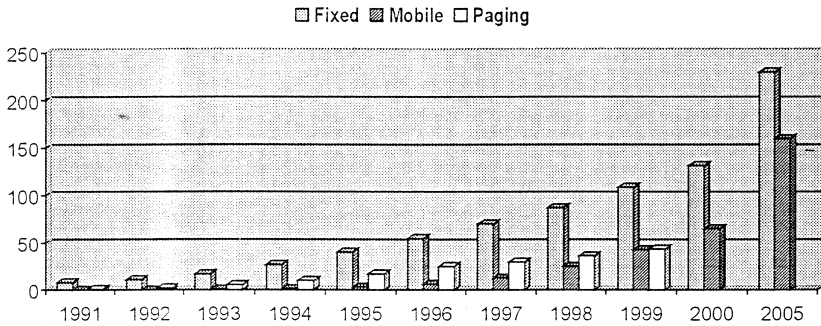
It was at the very end of the 1990s that the accelerated change began to take place, beginning in 1998. Those developments were greatly influenced by the WTO process, but they were also greatly influenced by the dynamics of growth in the sector, and by technological change. Before returning to the narrative leading to the present, the next section looks at the dynamics of growth in the sector.

Growth in the Telecommunications Sector

Today teledensity is still low in China, even in the major coastal cities (Beijing 27 per cent, Shanghai 59 per cent, Guangzhou 47 per cent);² virtually all observers expect the scorching pace of telecommunications expansion to continue throughout the decade. Even with low density, the networks are already huge. Developments are double leveraged in that basic services have barely reached 10 per cent of the population, while at

2. Shenzhen excepted at 117%.

Figure 2: **Subscriber Growth, Historic and Projected (1991–2005)**
(millions of subscribers)



the cutting edge of the sector the demand for mobile and data services is growing rapidly (see Figure 2). The Chinese Internet Information Centre has just estimated Internet users at the end of 2000 at over 22 million, a growth of roughly 40 per cent in the last six months of the year.

The MII actually reported total capacity of the fixed line network at over 160 million lines by the end of 2000. A staggering 35.7 million cellular subscriber lines were added, bringing mobile network capacity to a claimed 98.3 million lines. Because of the dramatic expansion in usage, China Telecom has plans to add over 20 million access line per year to 2004, and projects earnings from all fixed line services to reach US\$70 billion (see Figure 3). Fixed line growth ran between 25 and 30 per cent, whereas mobile growth was between 72 and 100 per cent year on year. Internet growth was more dramatic still, running between 130 and 500 per cent from 1996 to 1999 (see Table 1 and Figure 4). Because the Internet is relatively new, historic regulations have not adequately defined a role for foreign investors. Whereas basic fixed line telecommunications developed rapidly but on an established base, established regulatory realities and proclivities were evident. The Internet is different, and, if anything, is reminiscent of the experience with the mobile industry and the Unicom situations. On the books are laws and pronouncements that prohibit foreign investment in the basic operations. But there is confusion and contradiction in comments and pronouncement at various times by various government agencies and spokespeople.

Facing this grey area, a number of significant foreign investors, including Intel, Dow Jones, SoftBank, Microsoft and Reuters, took early positions in Chinese ICPs, anticipating that the WTO process would both liberalize and clarify the opportunity and framework for foreign investment in this exploding market. More and more companies and funds found investment possible in the sector through one or another model from 1998 forward, but that aggressive investment trend has not clarified

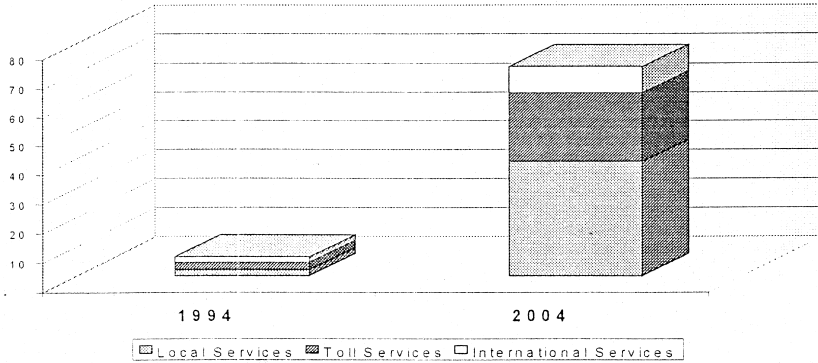
Table 1: Historic Growth of China's Telecom Market from 1995 to 1999

Major Category	1995	1996	1997	1998	1999	2000
Fixed access lines (million)	40.1	54.9	70.3	87.4	108.8	144.0
Year-on-year GR	–	36.9%	28.1%	24.3%	24.5%	33.5%
Penetration	3.3%	4.5%	5.7%	7.0%	8.6%	11.4%
Mobile subscribers (million)	3.63	6.85	13.73	25.00	43.23	85.00
Year-on-year GR	–	88.8%	100.0%	82.0%	72.9%	97.0%
Penetration	0.3%	0.6%	1.1%	2.0%	3.4%	6.7%
Internet users (thousand)	15	150	900	2,100	8,900	22,500
Year-on-year GR	–	900.0%	500.0%	130.0%	333.0%	133.3%
Penetration	–	–	0.1%	0.2%	0.8%	2.5%
Backbone fibre kilometres (thousand)	106.9	130.2	150.8	194.1	213.0	N/A
Year-on-year GR	–	21.8%	15.8%	28.7%	9.7%	–

Source:

MIIT, Pyramid Research, PwC analysis.

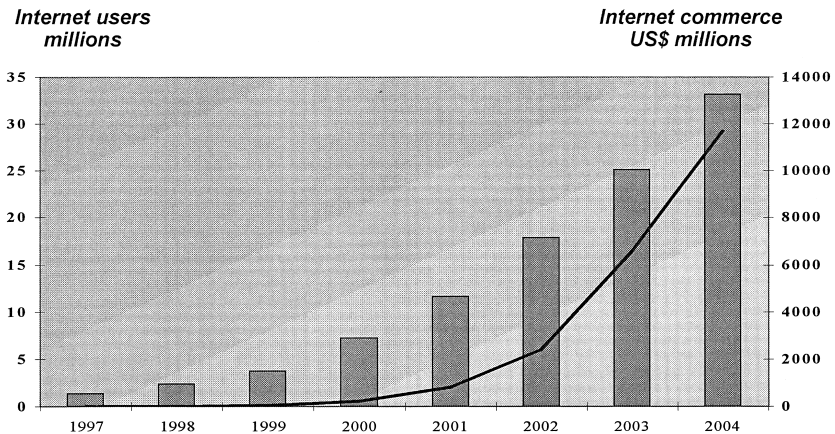
Figure 3: China Telecom Services Growth – Fixed Line Services (US\$ billion)



the regulatory situation. There is little sign of which direction the regulations ultimately will take, within the broad concessions of the WTO agreements. The government has promised a set of regulations specifically focused on foreign investment, but they are not finished as of this writing, and it is likely that the discussions are difficult and moving only with great care and effort.

The implications of this growth curve for the value of Internet service business are enticing, as are the implications for infrastructure requirements. Nearly 50 per cent of China's Internet users complain about slow connect times, and anyone who has used an ISP in China has experienced

Figure 4: Growth of China's Internet



Source:
IDC, October 1999.

painfully slow actual transfer rates. Another 40 per cent complain about high access costs. Slow rates and high costs suggest a huge opportunity for profitable market entry when the sector liberalizes (Table 2). Projections indicate that the growth curve for basic telecommunications lines is tapering off, while the growth of Internet hosts will double in the current year. The figures do not take into account what might be a dramatic upgrade of the CATV infrastructure to carry data and voice.

Global manufacturers of data network hardware have been experiencing very high growth rates in China, even prior to any impact from WTO. The countervailing pressure to the hardware opportunity for foreign investors is the sustained effort by MII to develop domestic capability. The state has been explicit in its expression of interest in avoiding the experience of the basic telecommunications industry, where for lack of forward planning and adequate controls, for a period of time huge levels of imports were required to satisfy consumer demands and growth in the industry. About three years ago, the idea began to be widely discussed that China should promote the development of non-joint venture capability in the fast-growing network equipment market, and four companies were identified as key exponents of this strategy, Julong, Datang, and Zhongxing and Huawei. They were affectionately referred to in the press as *juda zhonghua*, “the colossus China.”

Approaching WTO Accession

Press reports covering both the EU and U.S. bilateral negotiations revealed how difficult the telecommunications agreements were. The long historical prohibition against foreign investment, the intensity of concerns about state security, and even the abrasive and contentious process of dissolving the Unicom ventures all contributed to firm resolve on the part of China’s negotiators to hold the line in telecommunications and Internet sectors as best they could, against tremendous pressure to open the sector.

On the eve of the WTO accession, China is taking several important steps to prepare. As is the case with every major sector, for telecommunications Beijing is predicting “fierce competition” and haranguing its own industry captains to prepare. The government itself is struggling to move forward with requisite changes in laws and regulations to assure compliance with its commitments for WTO.

The regulation adjustment process internally for telecommunications and the expanding new economy is particularly complex. This is true for telecommunications reform globally, a process that has been widespread since the dissolution of the AT&T monopoly in the mid-1980s. Typically, reform involves some form of ownership restructuring and some form of operational restructuring. The former is designed to facilitate the establishment of an independent regulator, who can create a level playing field for the incumbent monopoly operator and new entrants. This is designed to make it possible for new entrants to establish commercially viable market positions and shares.

Given the nature of China’s legacy of regulatory structures and activi-

Table 2: China's Projected Infrastructure Growth (thousands)

<i>Telecom services growth</i>	2000	2001	2002	2003	2004
Main lines in service	131,604.18	154,174.50	177,027.07	199,919.62	222,923.29
Business lines	38,113.62	46,229.42	56,061.40	66,456.55	74,104.54
Residential lines	93,490.56	107,945.08	120,965.67	133,463.08	148,820.74
Main lines added	21,331.79	22,570.32	22,852.57	22,892.56	23,003.66
Leased lines	686.05	1,063.28	1,423.96	1,927.24	2,445.38
X.25/FR subscribers	193.46	312.82	562.46	827.75	1,174.76
X.25 subscribers	115.26	111.64	108.93	95.40	48.42
Frame relay subscribers	78.21	201.17	453.53	732.35	1,126.34
Internet dial up account	8,718.20	14,134.69	20,642.06	30,237.08	41,732.78
Internet hosts	55.13	110.25	198.45	317.52	508.03
CATV Accounts	95,545.57	106,399.54	115,220.06	122,586.74	130,747.73

Source:

Pyramid Research, October 1999.

ties, telecommunications reform has been particularly complex. There are several factors, including the historically weak horizontal linkages among ministries, China's keen interest in content regulation and surveillance, and the distribution of regulatory responsibilities among Party and government actors. In China, the process of reform engages the vested interests of multiple ministries, ranging from security entities like the Public Security Bureau and Ministry of State Security, concerned about state security and encryption; to various press, publications and propaganda entities concerned about content; to MII, Ministries of Railroads, Energy, and the other players in the provisioning sector, concerned about competition; to films, radio and television administration, that controls cable and is eyeing the "last mile"; to the Ministry of Finance and major banks, concerned about e-business infrastructure; to the foreign investment entities like MOFTEC, concerned about foreign investment levels.

There has emerged an urgent need for the State Council to develop a model of regulation that clearly and effectively defines the responsibilities of all relevant agencies, and at the central, provincial and municipal levels. Chinese regulators consider the breaking of the monopoly into four parts in 1998 to represent the first major stage of sector reform. The results, measured in terms of subscriber growth, sector income and service quality have been impressive, and there is an emerging consensus that even more competition among domestic players should be a policy objective of the next stage of reform. On the table now are discussions about the structure of the regulating entity, the distribution of regulatory responsibility between central and provincial administrations, and the service and technology scopes to be consolidated under the main sector regulating body. Politically, these involve redistribution of very significant regulatory power, and accordingly they are the most difficult to resolve.

Much of the early preparatory work has focused on strengthening domestic competition and therefore the domestic hold on the market, prior to the onslaught of foreign investors and competitors. In this regard, China's process was similar to what had become familiar especially in Europe, and in some parts of Latin America.³ The establishment of Unicom and Jitong were key steps in a restructuring process. Subsequently, bitter contention between MPT and the Ministry of Electronics was eliminated by merging the ministries. Dividing the huge, monolithic monopoly under the old DGT into four separate service providers set the stage for competition between China Mobile and China Telecom, and the

3. A series of OECD reports on regulatory reform provide very helpful background on the fundamental reform issues, including universal service requirements, price controls, interconnect regulations, licensing scope and the restructuring of regulatory agencies. See, for example, *Regulatory Reform in Telecommunications* (Paris: OECD, 1997) and *Telecommunications Regulations: Institutional Structures and Responsibilities* (Paris: OECD, 2000). An update and consolidation of the past decade of reform is found in Hank Intven and McCarthy Tetrault (eds.), *Telecommunications Regulation Handbook* (Washington, D.C.: The World Bank 2000). For a detailed analysis of Argentina's experience, see Ben Petrazzini, *The Political Economy of Telecommunications Reform in Developing Countries* (London: Praeger, 1995).

field was levelled somewhat by giving the major paging operations to China Unicom, as well as an exclusive CDMA licence and the remnants of the military's CDMA networks. Unicom's historic problem in getting capital was resolved by authorizing Unicom to go to market in advance of China Telecom.

Interconnection irregularities and difficulties had been a constant source of friction between China Telecom and the alternate providers, especially Unicom. Thus, the MII issued Regulations for the Interconnection of Telephone Networks in September 1999, "to uphold fair, effective competition."⁴ Encryption regulations were issued in late 1999, and established a State Committee for Encryption Management, charged with very broad responsibility to register and regulate the development and use of encryption products.⁵ In October 2000, China announced adoption of a set of Telecommunications Regulations, which were submitted by the MII to the State Council in June 2000. These regulations were crafted with full awareness of China's obligations under the bilateral agreements signed as part of the WTO accession process. As such, they provide very valuable insight into how the governing telecommunications authorities in China are likely to act in the coming years.⁶ Finally, at the end of the year 2000, a massive tariff adjustment was announced, effective from 1 January 2001, reducing retail rates by 50 per cent and underlying transmission rates by 80 per cent or more.

The industry regulations divide telecommunications services into Class One and Class Two, the former being the operation of proprietary networks, the latter the operation of non-proprietary networks. These definitions largely divide along the lines of basic services versus value-added services. The State Council's telecom authority reserves the right to license all players in the sector, both providers and consumers of capacity, "planning, managing, and distributing telecom resources."

The State Council also reserves the right to approve all overseas listings for any telecommunications business, as well as to approve provisional or pilot projects, which has been something of a loophole in the past. The government "determines or guides" the pricing of Class One services. The government *may* guide the price of Class Two services. For Class One activities, state-owned interests must control a majority of the equity, whereas there are no stipulations on equity for Class Two services. The State Council will determine the universal service obligations of providers. An important provision requires that Class One businesses receive their approvals from the State Council telecom authority. Class Two businesses, if operating within a provincial or local jurisdiction, can receive their approvals from the provincial or local telecom authority.

These regulations provide a skeleton for what should become over time

4. Xinhuan (1999) No. 728, 7 September 1999.

5. State Council (1999) No. 273 and clarification of 10 November 1999.

6. Quite pointedly, the draft regulations refer to the "State Council telecom authorities," not the MII, and recently there have been strong rumours that the MII itself might cease to exist.

a complete code of regulations for the industry. They are skeletal in that they note in broad categories what is free and what is not, but there is very little detail that would guide a developer towards anything but much more extensive consultation with the regulators. In other words, the regulations give broad and discretionary licensing and approval authority to the telecom authority, permitting it to limit the number and scope of Class One service providers and to limit the use of any private network capacity for public sale. They also provide guidelines assuring timely response to applications, but the terms governing approval or decline of applications are not described at all, nor is there any indication that the authorities are obliged to explain their decisions in terms of a set of available criteria or standards.

The document is, nevertheless, an extremely important step towards clarifying the roles of all the players in the telecommunications sector. It represents the most recent stage of a discussion and debate that goes back to the early years of the decade at the highest levels of the Chinese government. And it has created a fixed set of reference points for further regulatory work. Most importantly, it has already helped make evident the acute need for a more fully developed regulatory statement that will encompass everything from network standards to taxation policy to universal service obligations.

The changes in the regulations have paralleled other changes in the financial and commercial directions of the industry. An important preparatory effort has been the accelerated entrance of Chinese telecommunications companies into global capital markets. Portfolio investment appears to be an attractive alternative to direct investment, providing substantial inbound foreign capital (nearly \$6 billion for Unicom), without surrendering management rights or even forcing dividends. In addition to Unicom's successful offering, China Mobile has been a formidable stock in Hong Kong, and other network operators are attempting to assemble initial public offerings in the shortest practical time. Where successful, these offerings promise to provide much greater leverage to the domestic operators in their discussions with potential foreign strategic allies, joint venture partners and co-operators. China Mobile's high market valuation in Hong Kong provided the basis for a sale of 2 per cent of its equity to Vodaphone for \$2.5 billion, an evaluation that would have been out of reach based on valuation methods related to their current revenue performance.

China's Major WTO Concessions

China's commitments, based on the U.S. agreement and revised after the EU agreement, are as follows.

Domestic and international fixed wireline telecommunications: foreign investors may hold equity up to 25 per cent in Beijing, Guangzhou and Shanghai three years after accession, 35 per cent in those cities and 14 other cities five years after accession, and up to 49 per cent across China six years after accession.

Gateway facilities: China agreed that gateway facilities would be established with the approval of an independent telecommunications authority in accordance with the principles of the WTO's Basic Agreement of Telecommunications Reference Paper.

Internet and satellite services and other services: China gave verbal assurances that these services would be opened according to the same schedule as domestic and international fixed wireline services above, and that Internet content services would be opened per the schedule for value added and paging service, below. China agreed to allow cross-border mail order services.

Mobile services: foreign investors may hold up to 25 per cent in Beijing, Guangzhou and Shanghai on accession, 35 per cent in those cities and 14 other cities one year after accession, and up to 49 per cent across China three years after accession.

Value-added and paging: foreign investors may hold up to 30 per cent in Beijing, Guangzhou and Shanghai upon accession, up to 49 per cent in those cities and 14 other cities one year after accession, and up to 50 per cent across China two years after accession.

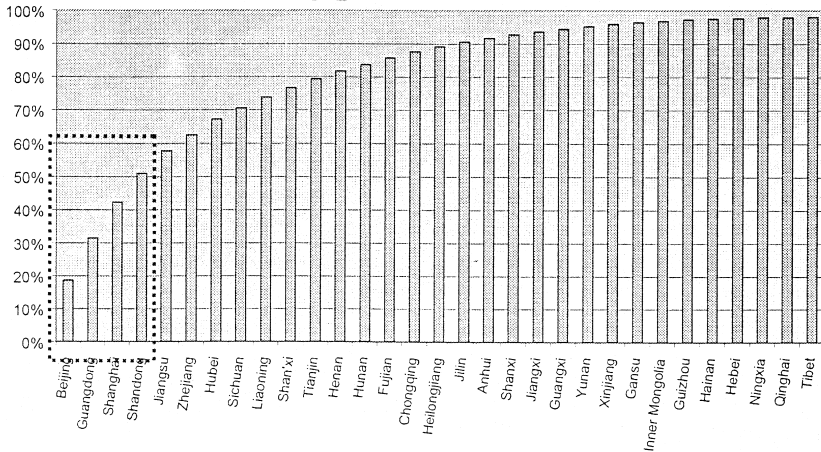
Regulation: China has agreed to the WTO's BAT Reference Paper, including pro-competitive regulatory principles, transparency, independence, national treatment, market access limitations to radio spectrum. China agreed to periodic bilateral negotiations on interconnect fees and that future rounds of trade talks should include reconsideration of equity ceilings and further liberalization.

Analysis of China's WTO Accession

Given the escalating value of China's telecommunication market, the absolute restriction on foreign investment in basic operations that has prevailed since the opening of China and the lack of clarity in the legality of value-added activities, the WTO agreements represent a major step forward. The substance of the agreement aside, it is by no means of minor importance that, through the negotiation process, China has gained an improved understanding of global telecom practices and structures and an appreciation of the priority this sector has for its major trading partners. Put simply, the tough issues have now all been laid out on the table.

A major achievement of the EU negotiations was compressing the time frame of most of the phase-in periods, to become so brief that they were much less relevant to market entry strategies. Many development projects will take two or three years to complete, and within one year the major market places will be open to foreign participation (see Table 3). Beijing, Shanghai, Guangzhou and the 14 cities represent the overwhelming share of China's existing and prospective market, so for all intents and purposes, upon accession the prospects for foreign investment are wide open. Even the phase-in of equity shares can be managed contractually to reflect the most beneficial terms that mostly phase in after three years. Similarly, the Internet usage growth is concentrated in the same set of cities, with Beijing, Shanghai, Guangdong

Figure 5: Internet Usage Growth



Source:

China National Internet Information Centre, June 2000.

(Guangzhou) and Shandong (Qingdao) accounting for 50 per cent of the growth (see Figure 5).

The historic prohibitions on foreign participation in operations included explicit statements on both equity investment and participation in management. The WTO agreements appear to be silent on this latter issue, but presumably, given the equity shares allowed foreign investors, a suitable contribution to management will be permitted. In any case, among the investment community there is confidence that this is likely. Local entities have long been interested in the potentially helpful engagement of foreign technology and management expertise. From the beginning of the 1990s they have generally been a force for more foreign involvement in finance and operations.

The WTO agreements limit the equity shares available to foreigners to 49 per cent for both fixed and mobile networks, whereas the Telecommunications Regulations require that state-owned entities own at least 51 per cent. There will be at least seven domestic national network providers by the time accession is realized. If beyond the state's 51 per cent, other non-state, domestic investors take equity stakes, or a percentage of the equity is on public markets, the shares available (arguably in a "commercial" sense) to foreign investors will be reduced accordingly, below the 49 per cent stipulated by the WTO agreements.

The broad discretionary power reserved for the State Council's telecom authority, which may be MII, some transformation of it or something not yet established, is likely to be a source of reserve and complication. That this power extends beyond the provision of resources to include the

Table 3: Demographic Overview of WTO Cities

	Urban population (million)	GDP (RMB 100 m)	US\$ (million)	Teledensity (per 100 persons)
<i>Phase I Cities</i>				
Beijing	6.63	1,780.98	21,457.59	23
Shanghai	8.94	2,973.26	35,822.41	59
Guangzhou	3.31	1,298.30	15,642.17	47
<i>Phase II 14 Cities</i>				
Chengdu	2.15	578.18	6,966.02	9
Chongqing	3.55	705.96	8,505.54	10
Dalian	2.00	649.22	7,821.93	36
Fuzhou	1.06	422.01	5,084.46	37
Hangzhou	1.35	568.74	6,852.29	54
Nanjing	2.39	618.05	7,446.39	46
Ningbo	0.71	352.59	4,248.07	46
Qingdao	1.70	458.10	5,519.28	28
Shenyang	3.88	790.77	9,527.35	25
Shenzhen	0.90	1,289.02	15,530.36	107
Xiamen	0.59	418.06	5,036.87	38
Xi'an	2.40	465.23	5,605.18	22
Taiyuan	1.77	258.38	3,113.01	21
Wuhan	3.91	876.64	10,561.93	35

Sources:

Urban Statistical Yearbook of China, 1999; PwC analysis.

consumption of resources is important, for it raises obstacles to the free trading in bandwidth, the reselling of capacity and other activities that can create considerable value outside the ownership of the physical telecommunications assets. The state has reserved for itself a reply period of 180 days for applications for class one services, so we could expect a year to pass after accession before it is clear how they will respond to the first significant new class one application involving a foreign investor.

The State Council's reserve of authority to determine or guide pricing might also impose some significant restraints on competition. According to the Telecommunications Regulations, national pricing standards are set directly by the State Council's telecom authority, whereas local pricing standards are set locally, but with the specific approval of the national authority. Historically, in industries like retail fuel distribution, foreign participants have been squeezed between irreducible supply costs, usually determined by the state or a supply monopoly, and retail levels on which there could be formal or informal political pressures that cannot be resisted. Pharmaceuticals is another industry that has seen this practice. It is not uncommon for almost all profits to be wrung out. The state has struggled with pricing issues for years in the competition between China Mobile and Unicom, more recently in wireless competition between China Mobile and China Telecom, and most recently in collapsing prices for international service over the Internet. The overall effect has been to hinder both development of variety in product offerings and vigorous competition on the basis of service quality and service offerings. As happened in the airline industry, China Telecom responded to the market entry of Unicom with predatory price reductions, inviting the state regulators to intervene to maintain some potential value in the market.

Standards are another area the regulations do not address explicitly. These are dealt with by referral to the WTO Basic Agreement on Telecommunications Reference Paper. The history of CDMA in China, beginning with the thwarted joint venture between the PLA and MPT in 1994, has had many twists and turns. As recently as spring 2000, when Unicom was vacillating broadly on its CDMA plans as it prepared for its IPO, observers of the industry were reminded of how complicated and political standards decisions are in China. Most recently, the MII has again committed to deploying CDMA, apparently in part to make good on a commitment made by Premier Zhu Rongji to President Clinton in April 1999, during their unconsummated WTO negotiations. In the meantime, China has won approval for its own TD-SCDMA standard from the International Telecommunications Union, and internally various key officials have expressed widely varying opinions as to what, if anything, China owes to foreign developers of CDMA technology by way of intellectual property obligations. China Unicom is expected to issue an official tender for its CDMA network equipment within weeks, and domestic vendors like ZTE and Datang are proposing what they describe as their own technology to meet the requirements of the network. There is the potential for international trade friction in the outfitting of China's CDMA networks.

The interactions among the many government agencies that have been involved in regulating telecommunications and New Economy businesses will remain a complication. They are also a formidable source of confusion and delay. In addition to the new Draft Telecommunications Regulations 2000, the interconnect regulations and the encryption regulations discussed above, China has issued preliminary rules on e-commerce, Internet service and content provision, advertising, radio spectrum, convergence, and other related areas. Mirroring the complex interactions of regulators, the relationships among the existing and emerging domestic service providers has been tense and, in some cases, belligerent. In a recent incident the two competing camps threatened combat over access to a conduit for new fibre lines. An inflammatory situation erupted in Lanzhou when China Telecom attacked China Mobile's market with its "Xiao Lingtong" trunking system. Each of the giants cut off the other's interconnect to the network. Regulating agencies are engaged in an increasingly urgent effort to put some apparatus into place that will maintain healthy and orderly growth among the competitors and prevent the emergence of a similar belligerency among regulators themselves. With this very short history of competition, and with an incomplete separation of regulatory authority from business operations within the MII, it is reasonable to expect some serious growing pains in implementing China's WTO commitments, no matter how committed the top leadership may be to doing so fairly and expeditiously.

The development of e-commerce activity is constrained not only by regulation issues in the telecommunication sector but by a broad swathe of related infrastructural and regulatory challenges. Even as the Internet regulatory problems are resolved and the market is liberalized, the rate of e-commerce growth will be tempered by the prevailing set of deficiencies in China's current transitioning business environment. Many of these are part of the general business environment. A few examples are the weak judicial system and poor reliability and efficiency of legal recourse, the lack of confidence consumers have in remote transactions, the strong legacy of regional protectionism and intertwined interests at the local level, and ongoing strict restriction of direct selling activity. Other challenges are related to the special demands of new economy activity. Examples of these include the difficulty in winning acceptance of a national certification authority, the reluctance of major banks to co-operate with each other in a national, consolidated credit/debit card clearing facility, the developing state of logistics capability, and the regulatory burden and high cost of Internet connect time. Improvement in these areas will come over time. But the pace of Chinese regulatory reform is not entirely congenial to so-called "Internet time," and delay in the actual realization of these improvements may have a major impact on the economic viability of most if not all B2B and B2C business models.

The Future of the Sector

For telecommunications, the most wall-less of all industries, the Great Wall is coming down. For a decade, the major international equipment makers, in both the data network industries and mobile telephony industries, have enjoyed huge growth in China, and many have watched China become a major fraction of their global business. Operators have been kept out, while they eyed from afar the prospects of similar benefits.

What is certain it that over time foreign investors will be able to enjoy substantial business in China's telecommunications and new economy markets. It is unclear how long the major opportunities will take to mature and how steadily and in what time frame China will achieve meaningful compliance with the letter and the spirit of its WTO commitments. Most likely, non-traditional sectors where the state's prospective interests are strong but its vested interests are limited, like Internet content provision, will be the first and easiest to access. More established sectors, like mobile telephony, will remain difficult and entangled in regulatory process and non-competitive practices for a time.

Under the pre-WTO scenario, the telecommunications sector in China grew at an astonishing rate. Because of this growth, foreign investors were attracted to China and drawn into projects such as those generally described as China-China-foreign in co-operation with Unicom. These projects seemed to violate China's regulations, but some participants believed the model offered a temporary compromise acceptable to the government. In time, China made it very clear that these projects were non-compliant, because they offered paybacks to investors that were not at fixed rates for fixed times (in other words, loans), but were indexed to the profitability of the operating business. The experience was sobering to the participants in the 49 disallowed projects, and it created new respect for China's ability to take a tough stand to protect an industry that is very close to the hearts of the top leadership.

Currently, there are major investors in Chinese Internet businesses, with a regulatory and approval environment every bit as "grey" as that of the Unicom projects. Pending the final negotiations to create the multilateral protocol and a final document, there appear to be two factors that will require clarification over time. One is the lack of adequate definitions for the classes of activity, the other is the use of state security to trump any commitment. What are the boundaries that will be applied to related services across the ISP, ICP and ASP space, and how will they be classed and regulated? The issues with definition and business scope are not unique to China. In all mature markets there is a variety of shared turf among what are called service providers, content providers, portals, search engines and other components of the Internet world. But in China there are highly material regulatory consequences, because general business licensing requires a specific business scope to be approved, and because Internet regulations attempt to draw sharp regulatory distinctions along the lines of these fuzzy definitions.

Internet development involves numerous issues that have to remain

outside the scope of this article, but the last two years have demonstrated the challenge to controlling its growth and use. It is in some respects the instrument that the Party most loves and most fears. The problems presented by the Internet relate to its decentralization of content provision, the openness of the international gateways, the potential anonymity of its users, and its facility to create virtual assemblies or communities of like-minded people. Regulatory solutions for each of these problems have been tested. These include, respectively, strict guidelines that prohibit posting of unapproved news, filtration and supervision of traffic through international gateways, record-keeping requirements of user activity imposed on ISP providers, and perpetual monitoring of chat rooms and other exchange spaces.

Periodically a discussion surfaces of an *Intranet* for China, an essentially self-sufficient, nation-wide “Dazhai” of healthy and helpful content, facilitating communication between the government and the people. In the last few weeks, the C-Net discussion has been raised again by top leaders, who have pointed to numerous faults in the existing Internet that make it insufficient for China’s requirements. The vision of the C-Net Intranet includes its own physical infrastructure, its own operating systems, authoring systems, protocols and even access devices.

Through the discussion of the Internet in China, there is a lack of defined constraints on the use of security and ideological controls to address the creation, ownership and sale of content in all channels. Here again, these controls are not unique to China, but China has a very long history of management of both the channels and content of information that is particularly uncongenial to Internet dynamics, at least as they have been experienced outside China to date. In traditional media, foreigners have been severely constrained by the monopoly the state has on retail publication of almost anything. Foreign investors have faced not only a particularly heavy burden of compliance in publication businesses but also such a barrage of unforeseeable risks created by the regulators and state-owned competitors that only the heartiest have stayed in the market.

Here again, however, is a place where the technology has frustrated efforts to regulate content effectively. A Taiwanese pop singer officially banned in the PRC because she sang at Chen Shuibian’s inauguration is said to be among the most popular singers in urban China. Chen’s inauguration speech, specifically banned in the media, which were instructed to carry only the official presentation and commentary, was available in real time almost wherever Internet users gathered. Gambling, prohibited in the Internet content regulations, is easily available on dozens of sites around the world, in Chinese, for any PRC resident who can get an international credit card or proxy account overseas.

With the WTO agreements gradually coming into place and the accession process well under way, the environment for foreign investors is already improving. As the accession process continues, it would be surprising if there were not a new rush into China by telecommunications players. This will further contribute to the leverage of the domestic

industry, in particular for investments that require a major domestic partner. Because the criteria the State Council regulatory authority will apply for basic licensing require at least a 51 per cent state share, the availability of appropriate partners will be a key constraint, just as it is in the insurance sector. But wherever partnerships are successfully formed, they will conjoin with market pressures to accelerate the pace of change and speed submission to market forces of all aspects of the telecommunication industry. Vectors of change in the industry do not necessarily have much to do with control of the major, traditional telecommunications operators.

Finally it is useful to consider telecommunications in the context of the declared overall goals of China's GATT/WTO initiative. Two strong goals have persisted throughout the discussion of China's WTO accession over the last three years. One is the potentially huge contribution to China's economy by securing its trading relations with the outside world on a firm, explicit and documented foundation. Another is the importance of stimulating domestic reform by the threat and eventually the reality of global actors coming to compete on an even footing with China's domestic ones.

For the leadership to have expended the political capital to come this far in the WTO process, they must have a commitment to these goals. It might reasonably be assumed that they will be diligent in preventing derailment of the process, through all stages of implementation, in any way that would undermine the potential benefits for external market access and SOE reform. As in any well-developed joint venture negotiation, additional issues to be negotiated have surfaced. Focus now is said to be on aspects of the implementation plan which raise difficult issues for Beijing. In many sectors, it may prove difficult to generate consensus as to how exactly China will meet the bilateral commitments and render them in the multilateral protocol.

The terms of the bilateral agreements are not widely accepted nor understood yet, throughout the bureaucracies and even at the top. Training of a wide range of officials is under way, some overseas. MOFTEC has taken a leadership role in this process, as they did in the negotiations. But MOFTEC has not always been forthcoming about the content of the negotiations, and even today, the exact terms of the bilateral agreements may not be available to some of the entities responsible for implementing their contents.

China's regulatory response to progress in the WTO process has been substantial. Some was in the form of published draft regulations or approved regulations that set out elements of China's interpretation and intentions of their WTO commitments. It is reasonable to assume that this has motivated some careful talks in Geneva on the enforcement of the commitments. But a new and important factor is China's exposure on world capital markets and this could be an impediment to reform. The two major overseas listings, China Mobile (HKG) and China Unicom, are supported in the market entirely by their mobile service revenues. When rumours surfaced last autumn that the MII was going to restructure rates

to make air time free for incoming calls, both stocks sank precipitously on the markets. Within days, Minister Wu Jichuan was speaking to the press, assuring investors that such a policy was not going to be implemented. Investors feared the lifting of regulatory constraints on pricing that would have produced more competitive billing schemes.

The difficulty of reaching detailed, implementation agreements and the assertive nature of new regulations suggests a counter-current to that towards WTO accession. Internal resistance to a substantive and compliant approach to WTO is fundamentally a continuation of resistance to basic SOE reform. The continued strength of that resistance makes it clear how deeply imbedded in the structures of both the ministries and their industries are the processes by which policy and practice changes are executed. By the end of October, as foreign trade partners were ready to celebrate China's entry into the WTO during 2000, predictions surfaced in the Chinese press that mid-2001 was a more realistic date. Long Yongtu began to refer to a growing unease among "some government officials and workers, and especially farmers."⁷ He blamed this partly on predictions being touted in foreign countries of the windfall China's entry would provide trading partners.

What may make the WTO reform process even more problematic than past resistance to state-owned reform is that now the issue is internationalized. State-owned reform in the past has largely been a matter of competing domestic agendas, although some notable issues have spilled into the international arena. The debate over degrees of compliance and protection going forward is international in nature, and the argument to protect and develop domestic industries is powerful in the face of almost terrifying international competitors. In some ways, it is more intractable than the previous argument for social stability and community support.

As the narrative above attempts to show, what has emerged in this competition between protectionist forces and pressures to comply with WTO terms is a fast opening to domestic competitors. This competition has gone beyond what the central regulating authorities originally envisaged. For example, the international minute rate of VOIP services, whether by prepaid card or billed, was set officially. But once there were numerous service providers, cards were widely discounted as much as 50 per cent. The burst of VOIP revenue was nearly the sole revenue for recently licensed China Netcom as well as the very first industry competitor, China Jitong. Others, like SparkIce, hungry for revenue, have joined the competition. China Mobile began offering IP-competitive rates on what were widely believed to be circuit switched lines. As market forces pull down the tariffs, the hope is that volumes build very rapidly to keep aggregate revenue levels attractive for the VOIP providers attempting to develop more diverse revenue streams. There is no longer any hope that price management by the state will preserve the generous margins enjoyed prior to 2001 for virtually every telecom service.

7. Xinhua, 26 October 2000.

It appears that late in 2001, China will dramatically restructure China Telecom, dividing it into a set of operators in the south, and in the north merging it into China Netcom, among the newest of the licensed operators, whose CEO is a U.S.-educated entrepreneur who was also a founder of Internet builder AsiaInfo. In thinking through future scenarios, the new domestic competitors will arguably be more important vectors of change than foreign investors. Or, put another way, they are likely to be the primary channel through which the change influence of foreign capital and practices is exerted. There are entrepreneurs; they are PRC citizens and well-represented in the upper echelons of the administration. They have substantial personal wealth calibrated by international capital markets, and they are boring into the carefully controlled competitive space the state has opened. State-owned entities themselves, once public like China Mobile, or aspiring to be public, like China Telecom, are behaving far more aggressively in approaching new turf, driven by the need to maintain high growth rates in a decade of declining tariffs, fees and share.

Conclusion

China's preparation for the WTO at present is focusing on three streams of work. These necessarily include designing and implementing regulations that are compliant with commitments made during bilateral negotiation, as China's interprets them. To prepare for competition, they include aggressively stimulating the defensibility of state-owned and other domestic entities through restructuring and controlled domestic competition. Finally, to offer additional protection to domestic owners, they include diversifying mechanisms for aggregating capital, domestic and international, driving market value of domestic entities and improving their leverage in joint venture, merger and acquisition initiatives.

In telecommunications specifically, recent regulatory pronouncements make clear how China's top leadership plans to continue close planning and management, even after WTO accession. All basic network operations will continue to require approval from the central regulatory authority and cannot suffer a reduction of state ownership below 51 per cent. The central regulator reserves the authority to intervene in network activities that are defined broadly if not vaguely, including such things as conduit leasing, and reserves authority over consumption as well as provision of basic network capacity, much in the spirit of central resource planning as opposed to market liberalization. Finally, to date, there has been little clarity on how regulations will provide for foreign investment in the telecommunications sector.

These developments are in large part conserving the state's commercial interests in the sector, reflecting both a high level of anxiety about meeting the spirit of WTO commitments and the extreme difficulty of managing the process needed to align domestic political, commercial and security interests. If protectively enforced, ironically, they threaten to undermine the key value the leadership identified in pursuing WTO accession at this stage of reform, protecting and enhancing the value and competitiveness of the state's assets.

The difficulty in birthing the 2000 regulations indicates how complex the political work to reform the sector is. For example, the commercial value and consumer benefits of using converging technologies to break the last-mile bottleneck in China's nation-wide infrastructure was held hostage in a bitter ministerial battle over China's cable network and its deployment for voice and data carriage. Tight policies were still unable to contain pressure to build experimental or pilot systems, stealthily running on a small scale. The stuffing of the PLA's CDMA network into China Unicom and the recent commitment to deploy a CDMA solution have debatable commercial rationales.

When considering a final overview, one must remember that the traditional infrastructure, asset-intensive sub-sector is still almost entirely state-owned, whereas the retail, downstream service sub-sectors are increasingly diverse. The state tends to own the hardware, where earnings have traditionally been concentrated. The non-state sector owns the software and content. There is globally a trend for earnings in the sector to migrate towards the latter. As applications and content become the critical differentiators among competing service providers, bandwidth and carrying capacity increasingly become a tradable commodity. It is reasonable to foresee in the next decade much of the potential earnings of the telecommunications and infocom businesses slipping out of central state hands.

Overall, the telecommunications service sector is one of the most lucrative, fast growing and intensely debated sectors in the reforming Chinese economy. Moreover, in terms of changing technology and its impact, it has the fastest history of any sector. Finally, since 1997-98, it has been the most intensely contested, radically restructured, generously capitalized and marketized sector. It has been assiduously protected from foreign equity investment, and it has engendered the most significant set of joint venture crises since reform began.

Regulatory and structural change in the sector has been highly motivated by four converging pressures: high-level recognition of the need to support China's economic growth with a vastly improved IT infrastructure; intense and meticulous negotiations with major trading partners to bring China into the WTO and engage the WTO's massive book of telecom and infocom agreements and protocols; technology change that obviated many regulations that were either not adjusted with sufficient nimbleness or unenforceable from their beginning, and dependence on and exposure to international capital markets. Regulation has proven weak in the face of the irresistible impact of technology. Over the past 15 years, regulatory issues were forced repeatedly by technology changes. Facsimile regulations, international call-back regulations, IP telephony regulations, encryption regulations, price setting regulations, and even more broadly, content and publication regulations provide several examples. Fax technology, call-back systems and IP telephony each appeared in the world, and each triggered a negative and protective response from Chinese regulators. In each case, within a relatively short time, technological progress forced major responses from regulators, toward liberalization and pricing reform.

Exposure on international capital markets has proven a strong force in shaping management and regulator behaviours. Investor reaction forced the minister to deny that China was considering change in mobile rate structures that potentially reduced revenue, as mentioned above. A more profound and sustained impact will be made by China's emerging technology magnates. Through public and private offerings, both entrepreneurial founders and fortunate former SOE managers, with equity positions in listed companies, are accumulating wealth, notoriety and political clout. This phenomenon is not limited to a narrow piece of the value chain, but includes operators, equipment suppliers, content aggregators and systems integrators. The growing numbers of powerful entrepreneurs have generally proclaimed their patriotic support for state activity, both commercial and regulatory, and that is consistent with their near-term commercial survival.

Contrary to what some observers expected, when the State Council announced highly restrictive regulations and new licensing requirements for posting news on-line, all of the major portals publicly expressed their enthusiastic support and declared they would comply. They showed similar support for the Internet bulletin board regulations that spelled out requirements to monitor the movements of their customers. Most recently, the renewal of the call for a "walled garden" or Intranet of content and access, C-Net, has been endorsed by some of the new economy's most visible players. Portals that had done a reasonable job of content management and *guanxi* management, notably Sina.com and Sohu.com, were recently awarded licences by the State Council Information Office to publish news on-line. What is missing here is the vigorous, open debate on regulations and freedom that is the defining characteristic of new economy entrepreneurs and their regulators around the world.

This immediate compliance notwithstanding, over time the influence of this group is more likely to be as advocate for greater freedom to pursue the commercial goals of their companies. The playing field now has three tiers, the state-owned entities, the new entrepreneurial entities (which may also be state-owned or companies limited by shares in a technical sense), and foreign investors. The role of the new entrepreneurial entities is not unlike the venerable *maibande*, compradore role of intermediary. What is most significantly different is that in the past their role was entirely dependent on the favour of the government, who licensed them, often exclusively, and with regulations created their *raison d'être*. Now, although created by the government, their survival depends on markets, and that will make them more rebellious than could have been foreseen.

This is assured because they were sent out to be the darlings of China's economic reform and groomed to attract the highest possible market interest – and valuations – of any Chinese firms in international capital markets. They have to grow; they have to be guided by the requirements of attracting click-stream, which in turn will require attractive content, applications, access and interfaces. And in the marketplace, there is no content more attractive than what pushes the limits of the traditionally permitted, whether it be political, philosophical or sexual.

It is no secret that there are significant players with significant commercial interests in China's new economy who are also politically well-situated. They are able to align effectively with other interests against the ministries themselves. Public proclamations aside, realistically one would not expect a manager of a portal company in China, holding perhaps two or four million shares, to be deeply enthusiastic about any policy move that could frustrate user access, dilute user interest, and affect traffic growth, revenue and earnings.

There is a sense of dilemma in the sector. In terms of state ownership, telecommunications is almost as restrictive as railway and military manufacturing. At the same time, the sector is being driven through radical changes by several forces. Behind this dilemma is the high tension of the policy process for a sector that must be reformed for economic reform generally to succeed, but that must be strictly managed for social and political stability to prevail. The dilemma gives dimension to the overwhelming force of prevailing change factors against the persistent conservative tendencies of the key ministries. The long-coming tariff reduction mentioned above, which cut the international rates in half and reduced backbone data capacity costs by 80 per cent or more, was a change of courageous dimensions. But that is not necessarily a tribute to policy makers and their willingness to embrace change. It speaks, rather, to the simple fact that it was so dramatically needed and totally unavoidable, in part because the revenues from the previous rates were under attack from new technologies. Even so, international telephony and data carriage rates remain high, by global and regional standards, and more reductions will be forced into effect.

Approaching WTO accession, the telecommunications restructuring has gone in the exact opposite direction of many other major sectors, faced as it is with a unique set of external forces and conditions. Whereas the State Council chose to consolidate fragments of many industries into *Chaebol*-like entities, it permitted telecommunications to diversify, and diversify quickly and deeply. In the same period that network operators went from a Big One and Little Two to a Big Seven, oil and gas was consolidated down to essentially two operators, non-ferrous metals down to a handful, and the airlines were brought under tighter co-ordinated operations, pricing and investment. A high-level view informs us that in the past two decades, when the Party and central government felt an industry was drifting from a desired course, the marketplace was becoming chaotic or broader interests were at stake, the remedy was to reconsolidate through a fundamental structural change. This sector has gone in the opposite direction, and therefore poses an unprecedented challenge to regulators.

There is left a question that will take a decade to answer. Can China establish a policy direction with respect to reform in a post-WTO scenario and align powerful ministerial forces with it? Or have the very practices of the socialist market economy concentrated such valuable assets and revenue-generating capability in the hands of certain ministries and their commercial agents, most notably for this discussion, MII, railways, and energy, that they can effectively resist deep reform that would bring the potential benefits of a more open economy to China and Chinese consumers?