

Research Article

The Triumphant Consumer? VoIP, “Little Smart,” and Telecom Service Reform in China

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Abstract

Can innovations in communications technology dilute the power of China's authoritarian government? When Voice over Internet Protocol (VOIP) and Little Smart (xiao lingtong) personal handyphone service first broke into China's market, they were illegal. However, consumers loved the services and demanded more. Using VOIP consumers can make cheap long distance calls. Little Smart introduced an old technology to China that makes mobile phone services more affordable to the masses. Eventually, the Ministry of Information Industry (MII), which initially had banned both, then legalized both under pressure from other parts of the government and from consumers. The planned economy is breaking down and the government is constructing piecemeal the foundation for a rules-based economy.

Can innovations in communications technology dilute the power of China's authoritarian government? When voice over Internet protocol (VoIP) and Little Smart (*xiao lingtong*) personal handyphone service first broke into China's market, they were illegal. Consumers, however, loved the services and demanded more. Using VoIP, consumers can make cheap long-distance calls. Little Smart introduced an old technology to China that makes mobile phone services more affordable to the masses. Eventually, the Ministry of Information Industry (MII), which initially had banned both, legalized both under pressure from other parts of the government and from consumers. This, however, is not just a story of the government backing down. The planned economy is breaking down and the government is constructing piecemeal the foundation for a rules-based economy. The state is transitioning from an iron fist to a somewhat invisible hand.

The study of telecom reform fits into two trends that researchers today identify in China's politics. One focuses on the decentralization of national power and the disintegration of the economic and social governance—the rise of local over national authorities, rampant problems of corruption, and the emergence of informal or illegal markets. VoIP and Little Smart began as local phenomena that grew to national proportions. The second focuses on the rise of China as a great power—its rapid economic growth, its share of the global market, its role in world politics. From this

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perspective, the Chinese state is growing stronger not weaker (Naughton and Yang 2004). A balance between these two analyses is struck by Dali Yang in *Remaking the Chinese Leviathan: Market Transformation and the Politics of Governance in China* (2004). He argues that China's centralized state is neither disappearing, nor is established yet as a great power. Rather, it is still in the midst of transformation. In some respects, the central state's goal is to limit the role of government, such as letting markets set prices; in other respects, the central state's goal is to extend its power—for example in building regulatory frameworks to oversee industries that were previously run by the government (Yang 2004). The telecommunications sector is an excellent example of this.

Telecom reform also illustrates two dynamics that explain much of economic policy making in China. One is that government bureaucracies vie for resources, prestige, and authority, and the final policy decisions that emanate from the government are essentially the negotiated compromises among these parties (Lieberthal and Oksenberg 1988; Lieberthal and Lampton 1992). Although this explanation for Chinese government policy has fallen out of favor recently as more of the economy escapes central planning, in the relatively highly regulated sector of telecommunications, it is actually still quite relevant. In the case of VoIP and Little Smart, there is ongoing bargaining among the major institutions involved: MII and other government organizations responsible for overall economic development. The ministry maintains a state-industry framework within which it oversees licensees and implements policy. The ministry sees that technology innovation and market growth benefit its licensees. In contrast, other government bodies with a broader remit for overall economic development are more tolerant of diverse paths to getting more communications services out to more people. They are more willing to see entities other than MII's licensees benefit from technology innovation and market growth.

A second dynamic in economic policy making is that economic reforms in China are fundamentally self-reinforcing, once they are unleashed. A state-owned monopoly is broken, new actors enter the market, prices begin to reflect market supply and demand, old enterprises must adjust to compete, and reforms are once again necessary to make those adjustments (Naughton 1995). Telecom reform in

China bears similarities with other network sectors such as electricity, banking, and airlines in China (Xu 2001; Zhang and Chen 2003; Brehem and Macht 2005). At the heart of each of these sectors is a former monopoly that was divested into smaller enterprises; however, these smaller enterprises remain giants in the sector compared to private companies that may have entered. The giants often represent the commercial interests of various government ministries, all of which must arrive at some consensus for any major policy reform to go forward. These bureaucracies compete to achieve policies most advantageous for themselves and the companies they represent. Nonstate forces, however, are continually changing the context in which these bureaucratic negotiations take place; they are the forces that push forward the reform cycle. Markets expand, innovative services arise, and consumers become more demanding. Policy reform is required to meet the demands of the new context, in the case of network industries this often means increased government regulation. If not, failures happen: phone calls fail to connect, power shortages occur, bank lending dries up, airline safety rules are ignored. Those familiar with life in China in the past twenty-five years will recognize all these travails.

In telecommunications, the government has taken three cuts at restructuring the market. First, in 1994 China Telecom's monopoly was broken when Unicom became the first competitor. Second, in 1999 China Telecom was divided into four separate wireline, mobile, satellite, and paging companies. Third, in 2002, China Telecom, now a solely wireline company, was divided into northern and southern units that could compete against each other. One reason for these repeated reforms was widespread discontent with telecommunications services. As *Cajing*, a major Beijing-based news magazine reported in December 1998,

In Beijing the installation fee was higher than 6000–7000 yuan [US\$723–843], at that time [1995] people told a joke, "Americans don't eat and drink for 10 months to buy a car, Chinese don't eat and drink to install a telephone." Until the first half of 1997, in Beijing the average waiting time for a telephone was greater than 36 days. "China Telecom's" workers seemed to leave an unhappy impression on every customer, including a high-ranking MII official—a former secretary of the minister—visited by this reporter. Although

there were ever-emerging indicators of China Telecom's very large waste, there was never any reliable evidence, because although it is a public corporation, China Telecom nevertheless never released its financial information. Among Chinese industry's "dinosaur" industries, originally known as the "Iron Big Brother," the Ministry of Railways shrank because of competition with the highways and airlines, leaving "China Telecom" as the lead dinosaur. (*Cajjing* 2003)

Now there are four major operators—China Telecom, a wireline telecom operator, with large operations in the south; China Unicom, a mobile phone operator; China Netcom, a merger of the northern half of China Telecom's wireline market with two much smaller companies; and China Mobile, the largest mobile phone operator and formerly part of China Telecom (Lee 1997; Mueller and Tan 1997; Xu and Pitt 2002). The state defends this industry structure and, to the extent possible, divides the spoils of the market among these four players. When VoIP and Little Smart services first emerged they disrupted this state-industry framework. The story of their development serves as a microcosm of telecom policymaking in China.

The Case of VoIP

What is VoIP?

VoIP is distinguished from traditional telephony in the transmission technique used to carry a call from the originator to the recipient. Traditional telephony, also known as circuit-switched telephony, involves a technology that occupies a definite amount of capacity on a telecommunications network during the entirety of a telephone call. In traditional voice telephony, a call from person A to person B occupies telephone lines between them that are solely dedicated for the duration of that call. Take, for example, an analogous situation from the transportation field. A train is set on railroad tracks between point A and point B on the tracks. Only one train can travel back and forth at a time. In VoIP, the network is structured differently so many telephone calls—or even other communications, such as e-mail—can share the same capacity of the network at the same time. There is no dedicated capacity between caller A and receiver B during the time of their telephone conversation. A message, whether a voice call or an e-mail is broken into small units called packets. The

packets are labeled and sent into the network, where each packet is delivered on its own to the final destination. At the destination, the packets are reassembled and delivered to the recipient. Consider a large shipment delivered by a fleet of trucks along a highway system, another analogy from the transportation field. Many vehicles can simultaneously use the highway to travel from many points to many other points, but a single shipment can be broken up, dispersed, and reassembled on arrival (Taggart and Kelly 2000).

The advantage of VoIP is that it uses network capacity more efficiently than traditional telephony. Many more telephone calls can be packeted and dumped into the network at the same time. Although in the future quality may improve, today more packets degrade the quality of the service, and, therefore, VoIP is often of inferior quality to traditional circuit-switched telephony. There is a downside to traditional telephony, too. Once circuits are tied up, there is no more capacity for additional calls.

VoIP is often offered at a cheaper price than traditional, circuit-switched telephony. The reasons are many. Certain key components differ in an IP network from a traditional network and, as mentioned before, capacity is used more efficiently. Another reason VoIP is cheaper is often because traditional telephony rates are often not competitive and are set above market prices, however; simply because it does not conform to regulatory categories, IP falls outside traditional tariff schedules and is offered at a market price. VoIP offers arbitrage opportunities in part because of technical advantages, and in part because of the inflexibility of some countries' tariff schemes.

How Are Prices Affected and What Was Consumer Response?

"Five free minutes to the USA," read one ad promoting the sale of digital video disc players in southern province of Fujian. Brothers Chen Yan and Chen Zhui began offering free Internet telephony service to customers of their Internet café in October 1997. To provide VoIP service, the Chens legally leased a telecommunications line from the telecommunications carrier and paid for their Internet service. Software made it possible to place voice telephony calls using their Internet subscription. The Chens initially used VoIP just as a promotion, but it soon became a

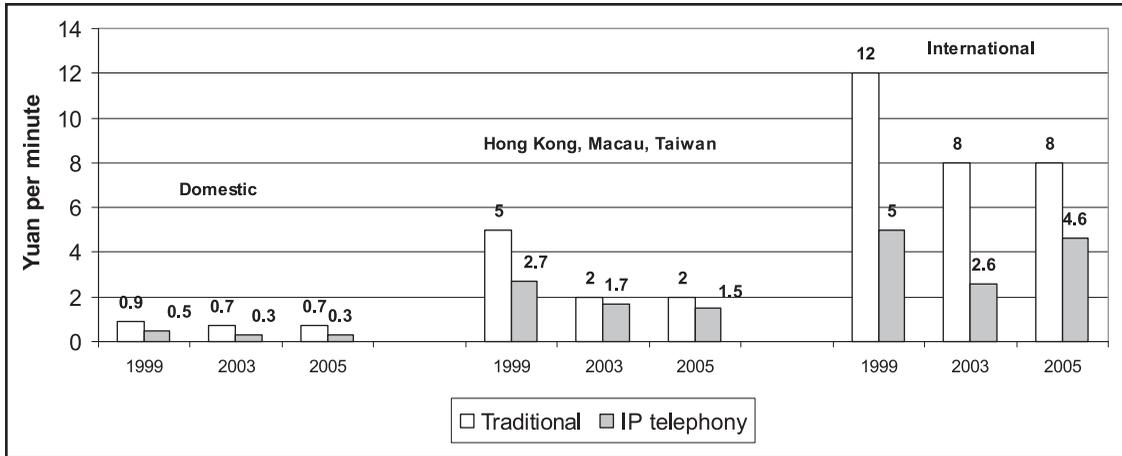


Figure 1. Traditional and IP Long Distance Rates
 Sources: MII; Interview 4 (2003); Wang (1999); China Telecom (2006); China Netcom (2006).

business mainstay. They offered a rate of 4.8 yuan (US\$0.58) per minute for international calls, about a quarter of the government-mandated tariff of 18 yuan (US\$2.17) per minute (Zhou 2000). In general, the main attraction of VoIP is cheaper prices. Since late 2001, the MII has relaxed government-set tariffs, and no longer sets prices for VoIP, but continues to set tariffs for traditional long distance. Figure 1 shows how attractive IP long distance prices are. In 2005, VoIP prices for long distance were as much as 57% less than traditional long distance rates.

In 2001, an estimated 30–40% of the long distance service was carried by VoIP. Official government statistics in 2006 put VoIP at over half of all long-distance traffic, measured in minutes (figure 2). Before VoIP attained this powerhouse status in the telecom market, however, the state had to set the rules of the game in which the operators would play.

How Is the State-Industry Framework Disrupted?

In 1997, by launching a commercial service, the Chens competed directly with China Telecom. China Telecom soon complained that their service was below the official price, of poor quality, and illegal. In January 1998, they had the local police arrest the two brothers, confiscate their equipment, and charge them with endangering national security (M. Wang 1999b). The Chens were fined 50,000 yuan (US\$6,024) and one computer. They fought back,

demanding redress and arguing that no crime had been committed. In July 1998, the district court decided in favor of the local public security office. The Chen brothers took their case to a higher court. In November, the Fuzhou mid-level court sought expert opinion on the difference between Internet and traditional telephony (Zhou 2000). Two months and much media coverage later, Xu Yongdong, judge at Fuzhou Intermediate People’s Court, favored the Chens and ruled that VoIP was a different technology from traditional wireline telephone services (Kynge 1999a). VoIP was found to be just one of many computer information services, which, according to a state council circular issued in 1993, was not included in China Telecom’s legal monopoly. The case then returned to the local Mawei court for another review (Kynge 1999b).

Immediately, MII responded that the VoIP and fax services market would not be liberalized. “If this is allowed to continue unchecked, the consequences are unimaginable,” a spokesman for the MII said, referring to a possible burgeoning of privately run Internet telephony services all over China (Kynge 1999a). Zhang Chunjiang, director of MII’s telecommunications administration bureau, said that Internet telephony damaged the country and the telecom industry’s interests and was “tantamount to information smuggling by bypassing government supervisions in our country. . . . We will crack down very harshly on these incidents” (Holland 1999). MII’s reaction stemmed partly from the recognition

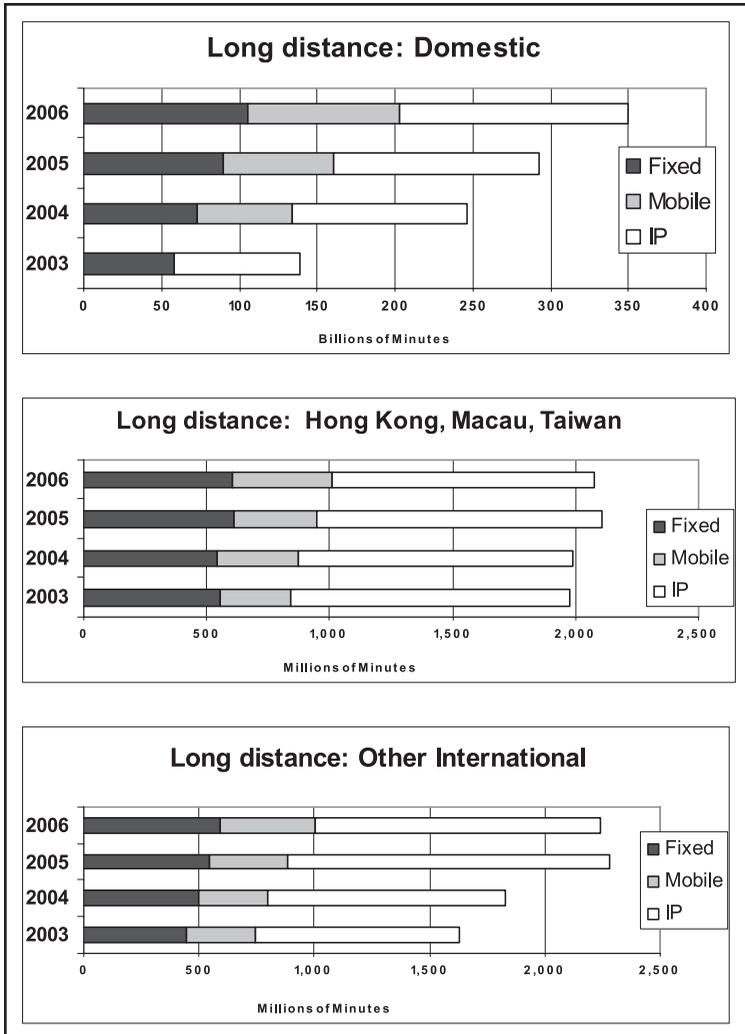


Figure 2. Long-distance minutes by technology, 2003–2006.

Source: Ministry of Information Industry

that many small entrepreneurs had secretly been operating VoIP businesses. Around this time in Zhejiang province, Qingtian county, the local telecommunications office also had shut down various privately run VoIP businesses for the crime of making excessive profits. The Chens' enterprise was not a singular case, but only one in a tide (Zhou 2000).

In 1999, the local court in Mawei reviewed the case again and, after six months, found the Chen brothers guilty of illegal telecommunications services. Late in 1999, the Fuzhou midlevel court once again reversed the local court's decision. As Profes-

sor Zhou Qiren of Beijing University wrote, "The Chens have sacrificed 50,000 yuan [US\$6,024], their computer (almost the entirety of their capital), and two years' worth of work—is this what they get for being pioneers? Those interested in high technology change or innovation in China—see the Chen's case as a warning" (Zhou 2000).

How Is the State-Industry Framework Repaired?

Instead of liberalizing, MII announced "a strict permit-issuing system will be implemented when conditions are ripe." MII planned to have VoIP administered by a centralized state telecommunications department. MII officials announced that IP phone licensees would need to submit to an examination of their qualifications by MII to be granted an appropriate permit. In contrast, at this time, a State Development Planning Commission official, Zhang Dongsheng, publicly supported the growth of IP phone service to improve the choices for international callers (Zhao 1999), an indication that within the government there were conflicting views on the benefits of VoIP. The Chinese media presented the

Chens as heroes against an MII that was interested only in protecting government revenues, despite the popularity of VoIP driven by widespread dissatisfaction with high telecom prices (M. Wang 1999b).

By March 1999, three months after the Fuzhou Intermediate Court's initial decision in favor of the Chen brothers, MII announced that three state-owned operators would be allowed to legally offer VoIP on a trial basis. The operators would be required to charge prices identical to the prices the Chens and other entrepreneurs were charging at the time. The MII Bureau of Telecommunications Admin-

istration deputy director Zhou Baoxin said that the government would crack down on other illegal VoIP operators (C.D. Wang 1999).

Trial services began in May 1999. To make an IP telephone call, users bought an IP telephone card, dialed an access number unique to each operator, and entered an account number and password (M. Wang 1999a). In twenty-five cities, Jitong began phone card sales in values of 50, 100, 200, and 500 yuan each on May 18, 1999. In less than two days, Jitong received request for 10,000 cards, and had difficulty keeping up with demand (*China Online* 1999). China Telecom began trials in twenty-five major cities with international service to sixteen countries and regions (M. Wang 1999a). By June 1999, China Unicom had begun offering IP phone service in twelve cities (Dong 1999).

Continued Uncertainty

In early 2000, when the success of the trials was clear, a debate ensued over how many licenses should be issued. In the end, because MII viewed VoIP as a basic telecommunications service, the ministry chose to limit licenses to the major state-owned operators. No licenses were issued to the entrepreneurial upstarts so important in getting the service started. Today, services that are technically illegal reportedly flourish in China's telecommunications market. At one level, small operators not licensed for VoIP, such as computer stores and Internet service providers, have been providing services at rates much lower than China Telecom's. Because these enterprises are small, however, they have little impact on the market and have not been prosecuted with any vigor, according to one Chinese official in the Internet area (Interview 8 2003). As of 2006, one industry observer claimed there were over 4,000 illegal voice over IP operators active in China (U.S. Department of State 2006).

These providers have a variety of options to duck regulations. In 1999 reportedly only about 5% of China's international IP phone calls traversed the officially licensed VoIP operators. Internet service providers transmit calls via Intranets to Hong Kong or Taiwan, and then carry the calls internationally through large capacity lines leased from China Telecom. This entirely avoids China's public international gateways (U.S. Department of State 1999). The Hong Kong paper the *South China Morning Post* reported that Xiao Puning of Shanghai was ar-

rested in March 2002 for routing IP telephone calls between the United States and Vietnam. Xiao leased lines from Shanghai Telecom and, using smuggled satellite and other telecommunications equipment from a United States-based partner, could deliver telecommunications services to U.S. consumers calling Vietnam. Xiao's illegal service generated an estimated 2.3 million yuan (about US\$280,000). An investigation was triggered when Shanghai Telecom reported to police a sharp increase in traffic on lines leased by Xiao in 2001. Xiao was found guilty and given an eleven-year jail sentence (*South China Morning Post* 2002). Of course, in other countries with open and competitive telecommunications markets, such entrepreneurial efforts would be legal. Industry experts indicate that within China Telecom's operations, the sales office for leasing high-capacity lines operates separately from its sales office for international telephony, which created an opportunity for competition. Leasing lines, for whatever purpose, benefit these leasing offices, regardless of the impact on the company's international telephony service revenues. Provincial telecommunications officials have the authority to take action against these legally murky activities, but have no incentive to do so (U.S. Department of State 1999).

After China Telecom began offering VoIP service in March 2000, the next month the other state-owned operators claimed that China Telecom used unfair tactics to compete in VoIP and manipulate the system. These other companies found bottlenecks in IP card distribution channels (*China Online* 2000).

Furthermore, as of 2003 it was widely known, and confirmed by MII, that much of what was marketed and sold as "VoIP" in China is not VoIP, but in fact traditional circuit-switched telephony. A 2006 report by the U.S. State Department confirms this practice continues (U.S. Department of State 2006). Apparently, the operators offering "VoIP" have ample traditional telecommunications capacity and prefer to use it rather than build new IP capacity. More than just price arbitrage, the emergence of VoIP in China is also a case of regulatory arbitrage—operators seek to apply the most advantageous regulatory label to a service, whether the service actually provided technically meets the definition of the regulatory classification, said one Chinese official (Interview 9 2003).

Another form of VoIP is the service enabled by

Skype, a popular Internet application that can be downloaded from the Internet to make voice calls between personal computers (PCs). With additional applications, calls can be made to phones on the traditional public network. Officially, the Chinese government has prevented Skype from expanding its business from PC-to-PC calls to PC-to-telephone calls by preventing Skype from setting up gateways in China (U.S. Department of State 2006). It is well known, however, that Skype is easily available to consumers in China over Tom.Com, a popular Chinese language Web site. Whereas Tom.Com serves customers in mainland China, it is headquartered in Hong Kong and incorporated in the Cayman Islands (Tom.Com 2005). Formally, MII's rules do not extend to Hong Kong. The market there is overseen by the Office of the Telecommunications Authority (OFTA), a regulator with a long reputation for supporting competition and innovative technologies.

In conclusion, VoIP technology gave new entrants an opportunity to offer inexpensive telephone service. Beating the official telephone rates was not difficult, as they were held artificially high to subsidize other services. These new entrants, however, are outside the government's plan for telecom development. Although the courts and State Development Planning Commission were not necessarily against the new entrants, in the end MII succeeded in cutting them out of the VoIP business and returning to the status quo state-industry framework. In the main, the benefits of the new technology flow to the major state-owned operators; however, as long as there are still good business opportunities in providing service cheaper than the official rates, gray area services flourish using IP and other technologies.

For wireline operators such as China Telecom and China Netcom, historically most of their revenue came from local and long-distance service. This massive migration of traffic from one regulatory category to another squeezes domestic and international long distance service market revenues. Although retail prices for domestic and long-distance market are still set by the government, they are doomed in the face of competition with unregulated prices from the VoIP market. With VoIP squeezing this market, wireline operators are driven to seek other sources of revenue.

The Little Smart Case

What is "Little Smart" (Xiao Ling Tong) Service?

For wireline operators, one of these alternative revenue sources is Little Smart, a service that is like a cellular phone service, but usable only within a specific geographic area. Based on personal handy-phone service (PHS) technology from Japan, Little Smart has been described as a kind of extended cordless phone service. The core of the network is a wireline network, but the final extension from the network to the consumer is wireless. In telecommunications, this extension to the customer is known as the local loop, which, on a per customer basis, is usually the most expensive part of the network to build. For telecommunications operators that already have wireline networks, however, the Little Smart technology makes building local loops relatively inexpensive. As of late 2001, the cost of building a wired local loop to a new subscriber was about 1500 yuan (US\$180). Nevertheless, adding a Little Smart subscriber cost China Telecom only 1,000 yuan (US\$120), and by 2003, the cost had fallen to about 700 yuan (US\$84) per subscriber (Hui 2001, 2003). While behind the mobile handset, the Little Smart and cellular service networks are different; from the consumer's perspective the difference is only a matter of degree. When initially introduced, the Little Smart service could be used only from a limited service area, such as a single city. If the consumer left that city, the phone will not work. However, a cellular phone can easily be used wherever the network exists; if there are limitations, they are not technical but have to do with the type of service package the consumer is buying. Many consumers who previously could not afford cellular service offered by the wireless operators, could afford the wireless local loop service offered by the wireline operators. Priced attractively, these wireless local loop services have grown quickly.

How Are Prices Affected?

There are a variety of Little Smart and cellular phone price packages. The figure below compares Little Smart to Unicom and China Mobile packages in 2001, when Little Smart had just recently begun. Monthly fees for Little Smart are usually lower than

those of the cellular operators; when they are just equal, Little Smart per-minute usage fees are lower.

Beyond lowering the level for usage charges, Little Smart service is also the first to introduce one-way charges in China's wireless telephony market. In China, as in many other markets such as the United States, India, and Singapore, most cellular phone subscribers pay for both making and receiving phone calls, a system known as two-way charging, receiving party pays, or mobile party pays. The alternative payment system, popular in markets in Europe and Japan, for example, is a one-way charging system, or calling party pays. The mobile phone subscriber pays only for outgoing calls; incoming calls are free to the mobile phone subscriber. Instead, the person who originates the call to the mobile phone user usually pays a higher fee, although this is not always the case.

Consumers in China, long accustomed to one-way charging on the wireline network, have long expressed a preference for one-way charging for mobile services. Educated consumers regularly describe the fact that China has a two-way charging system for mobile services as "unreasonable," though by international standards such a pricing scheme is not uncommon. The emergence of Little Smart with a one-way charging system responds to this consumer demand and has intensified the debate in China over whether the entire mobile regime should be shifted to a one-way charging system. In short, Little Smart's combination of lower prices and a one-way charging system is immensely attractive to consumers.

What Is the Consumer Response?

Good statistics on Little Smart's early years are difficult to obtain because of the service's murky legal status. In 2001, however, there were reports of 5 million subscribers; by the end of 2002, there were reports of more than 10 million subscribers (Hou 2002a; Kan 2003). On the basis of data released by MII and the operators, Figure 4 demonstrates not only that Little Smart subscribership now approaches 100 million, but also that for fixed operators, Little Smart is a source of more rapid subscriber growth than traditional fixed service.

How Is the State-Industry Framework Disrupted?

The Little Smart service began in 1997, as a service approved by the telecom ministry for deployment in

rural areas. In 1998, a temporary spectrum frequency allocation was granted China Telecom. However, as a practical matter, Little Smart service did not begin deployment in rural areas, but rather in small and medium-sized cities (Xin 2001). In 1999 an order from MII said wired line telecommunications carriers should stop developing Little Smart; however, China Telecom continued. In 2000, MII agreed to recognize the Little Smart service as legal under two conditions. First, MII insisted that Little Smart not be deployed in large cities, only in smaller cities; at this point, this was a recognition of the development that already had taken place. Second, MII set a tariff for Little Smart service, which was higher than wireline tariffs, but lower than mobile tariffs (see figure 3). Again, China Telecom defied MII public announcements and deployed Little Smart into provincial capitals, which, with populations of 3 to 5 million, are considered large cities. The MII retreated again, and prohibited Little Smart service only in the three largest cities—Beijing, Shanghai, and Guangzhou.

In September 2001, cellular operator Unicom CEO and chairman Yang Xianzu, remarked that he believed Little Smart would not threaten Unicom and that MII would terminate China Telecom's spectrum rights. That did not happen. Despite Unicom's hopes, MII's attitude to Little Smart actually remained vague. Indecision favored wireline operators over the cellular operators. At that time, China Telecom was offering Little Smart in about 300 cities, sometimes exceeding Unicom's subscribers. In Zhaoqing City, China Telecom's Little Smart subscribership was reported to be 100,000, twice that of Unicom, but only a fraction of China Mobile's 300,000 subscribers (Hui 2001). By the end of 2001, Little Smart reportedly had attracted 5 million users in China. When China Telecom was split into China Telecom and China Netcom, Netcom also sought to grow and expand its Little Smart services (Hou 2002a).

By early 2002, the cellular operators were expressing concern that in fact Little Smart was bringing pressure on the cellular market. China Mobile chairman Wang Xiao Chu said in March 2002 that at the lower-price end of its cellular service, Little Smart was a competitor (*AFX News* 2002). In July 2002, MII reportedly ordered the halt of Little Smart's introduction into Beijing and Tianjin because of the possible negative impact on China Mobile

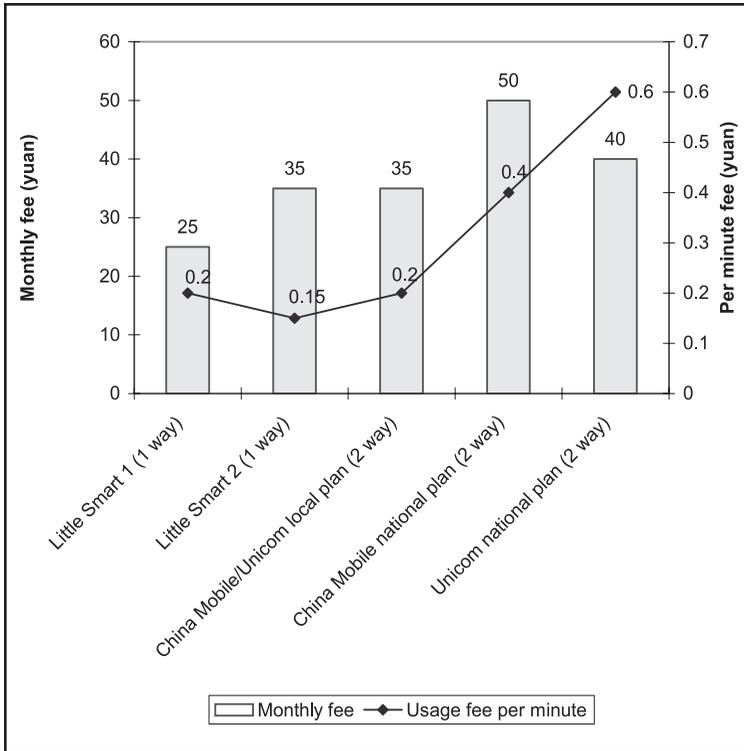


Figure 3. Cellular and Little Smart Prices, 2001.

Sources: ITU World Indicators (2003), Financial Times (2003b), AFX News (2002).

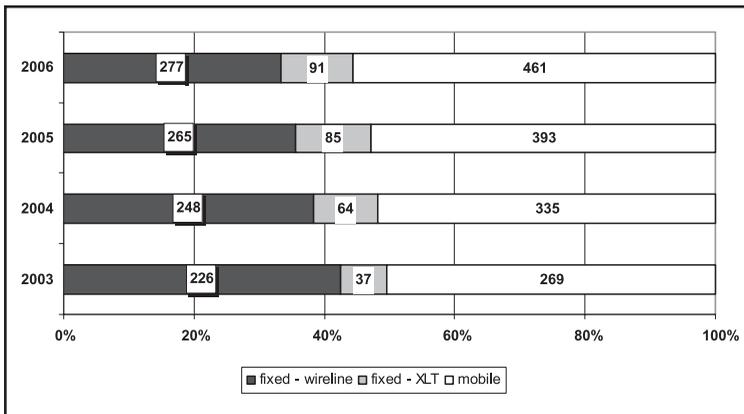


Figure 4. Total telecom subscribers by technology (2003–2006). (millions)

Source: MII, China Netcom, and China Telecom SEC filings.

and China Unicom’s share value. Little Smart’s entry into the largest cities—Beijing, Guangzhou, Shanghai—was expected to have the greatest impact on investors’ perception of the two cellular carriers. In the background of the Little Smart issue was

a debate over whether China Telecom and China Netcom, the two wireline operators, would be allowed to enter the cellular market. In the summer of 2002, however, MII Minister Wu said only that two new cellular licenses would be issued in the future, but not in the short term, only increasing the incentive for China Telecom and Netcom to push Little Smart even further (Hou 2002b).

In February 2003, the Little Smart dam broke on Beijing, Shanghai, and Guangzhou. A foreign analyst noted with amusement, “[Little Smart] networks are theoretically *verboden* everywhere. But, we had thought that they were more *verboden* in the Tier 1 cities [Beijing, Shanghai, Guangzhou], with Beijing the likely last hold-out.” In other words, if Little Smart could be offered in Beijing, right under the noses of the national government cadres, without negative repercussions for the operators, the service could be offered anywhere in the country with impunity. Trials in Shanghai began at this time as well (MFC Insight Update 2003a).

How Is the State-Industry Framework Repaired?

Media began to circulate rumors that MII’s ban on the service might be rescinded officially (Chung 2003). Indeed, on March 12, 2003, MII Minister Wu announced that the government would no longer ban wireline operators from developing Little Smart service in major cities. Specifically, Wu said, MII’s policy would be “neither to encourage nor to intervene.” *China Daily*, known for expressing official government views, released an opinion, “Consumers should be the top priority”:

New telecommunications technology can either make or break a monopoly, so the industrial authority should always put consumers first when introducing new businesses. It was reported that on Monday Xiaolingtong, or "Little Smart," a city-wide mobile service . . . finally made its way to Beijing—one of the two last forbidden areas designated by the Ministry of Information Industry (MII) for the personal handyphone service (PHS). . . . This is long-awaited good news for the consumer as the new system will not only offer them a cheaper telecommunications service, but pressure mobile phone operators to substantially slash their widely criticized high charges. . . . Being the industrial authority, however, the MII was understandably worried about the impact of wireless technology if adopted by fixed [wireline] line operators as it may cut too deeply into mobile markets and affect the development of mobile phone operators. While heeding the interest of mobile phone operators, unfortunately, the industrial watchdog did not listen to the public's deafening cry for lower mobile phone service charges. . . . Unstoppable technological progression will only further fuel market competition in a way that regulators and ex-monopoly companies have yet to adapt themselves to. The Xiaolingtong issue is just one test of nerves for them. (2003)

Editorials expressing similar sentiments appeared over the next few weeks in newspapers around the country. Most notably the official news agency Xinhua released an opinion on April 10 stating that Little Smart offers improved consumer choice (Li 2003). Given the government's control of the media, the release of such opinions confirms that significant parts of the government supported Little Smart (Wu 2003a). Observers such as Yang Peifang, researcher at China Institute of Telecommunications Research, note that by delaying approval for cellular operators to offer discounts to compete with Little Smart for as long as possible, MII actually abetted Little Smart development (*Financial Times* 2002). In the end, MII accepted Little Smart service once it was deployed so widely that it was not feasible to roll back the service.

In March 2003, in Guangdong, cellular operator Unicom launched a counterattack with a package it called "Unicom Little Smart" service, which enabled subscribers within designated urban areas to enjoy charges similar to China Telecom's Little Smart service. Outside a designated urban area, higher

charges similar to cellular phone service apply. China Telecom's subsidiary Guangdong Telecom lodged a complaint against Guangdong Unicom's use of the "Little Smart" trade name and arguing that its price cuts need pre-approval by government departments (Wu 2003b). As one analyst put it, "trying to fend off the Little Smart hordes," China Mobile and Unicom began engaging in "guerrilla warfare in the local areas" (*MFC Insight Update* 2003b). China Mobile and Unicom offered discounted rates, free minutes, one-way charging, all of which were not contemplated in officially sanctioned price packages.

China Telecom and China Netcom turned to Little Smart because they faced competition from the cellular operators and the threat of declining revenue from long distance service due to competition from VoIP. Executives of the operators who were offering Little Smart service claimed that, because they already had wireline networks and the spectrum assigned to them by the government, the additional investment required to deploy Little Smart was small compared to the potential gain. In a market where the fastest growth is in mobile services, the fact that these operators were explicitly prohibited from offering cellular service and were not likely to receive licenses for such services until some uncertain time in the future, gave them additional incentive to experiment with Little Smart (Interviews 4 and 15 2003).

Continued Uncertainty

Compared to VoIP, which enabled unlicensed operators to start service, Little Smart's disruption to the state-industry framework was tame. The new entrants into the wireless market were old wireline operators. Nevertheless, the ministry is still concerned disruption to the distribution of advantages among the operators. In May 2005, MII issued a notice curtailing the expansion of Little Smart services. In an effort to reinforce the distinction between operators with wireline licenses and those with wireless licenses, the ministry has prohibited operators from supporting Little Smart roaming services (U.S. Information Technology Office 2005).

Global Context

VoIP and Little Smart are both technologies used in different parts of the world. As in China, in many emerging economies, VoIP met great resistance from governments seeking to protect the revenues of their incumbent telecom operators, many of which

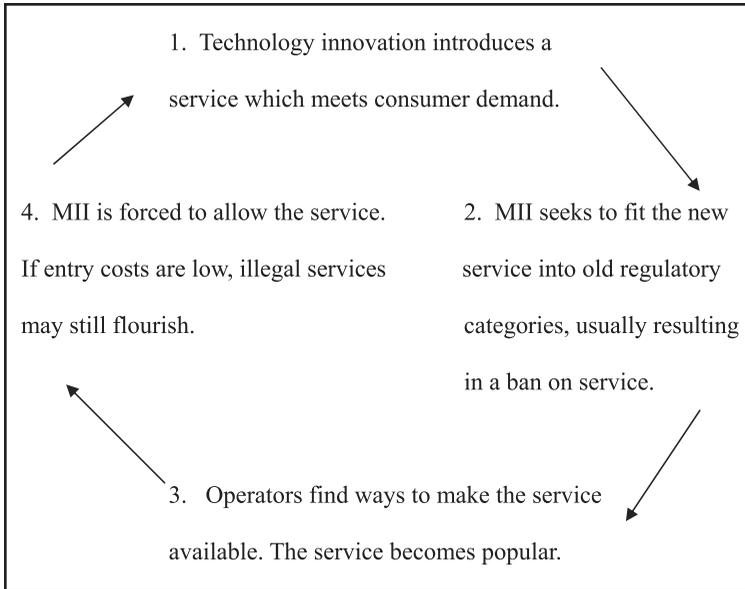


Figure 5. China's approach toward new technology: challenge, defense, and retrenchment

remain monopolies today; however, in most middle and highly developed economies, VoIP has been welcomed as an innovative service that provides not only price competition, but also quality competition. In Japan, VoIP as an adjunct to broadband service dramatically decreased prices for long distance and international calls, a phenomenon welcomed by both consumers and the government. Similar developments are now beginning in North America and Europe (Ono and Aoki 1998; Hussain 2002). The main question in these markets is not whether to allow VoIP, but whether certain scarce resources such as telephone numbers should be allotted to it, or whether the service should be connected to emergency networks, like 911 emergency service in the United States.

Technology like Little Smart, wireless local loop systems with mobile handsets, are growing in popularity in parts of the world where a significant fraction of the population still do not have easy access to wireline telephones. Other than China, the most prominent example is India, where such "limited-mobility" phones quickly doubled the availability of phones nationwide. In contrast with China, India did not ban the limited mobility phones, but instead, after an extensive public debate, transformed its licensing regime to treat limited mobility operators

equally with cellular and wireline operators. Today, therefore, the legal standing of these limited mobility operators is clear and companies' investment in these networks is geared toward serving current customers who demand a cheap service and future customers who are likely to demand advanced services, such as video and Internet (Telecommunications Regulatory Authority of India 2005).

Whereas to China observers, the state's adaptation to VoIP and Little Smart may seem quick, in an international context, China more resembles those emerging economies that resist challenges to incumbent operators. India's regulatory innovation in rationalizing licensing regulations for wireless local

loop is a significant example where a government embraced technology with greater agility than China. China adapts quickly, but in the area of technology, much of the rest of the world is adapting even faster.

Conclusion

Can technology force an authoritarian government to change? Yes, it can, but in the case of VoIP and Little Smart, the change was evolutionary not revolutionary. China is relatively willing to use state power to slow down innovation if it challenges the established balance of power among government ministries and state-owned enterprises. The cases of VoIP and Little Smart demonstrate that at this stage, the ministry is willing to take decisions to protect its state-industry framework, even though these decisions are unenforceable and, therefore, risk undermining the ministry's credibility. Numerous interviewees indicated they gave little credence to MII decisions, confirming that the kind of cyclical reform and retrenchment, of which VoIP and Little Smart are only two examples, does weaken the standing of the state over time.

This story of challenge, defense, and retrenchment (see figure 5) is consistent with the work of

Barry Naughton and Yi-Min Lin, who argue that while shifts in ideology or bureaucratic interest may trigger reforms in China, they are sustained with forces generated by society outside the state realm (Naughton 1995; Lin 2002). In these two cases the interests of consumers seeking better services and lower prices converged with the interests of firms chasing larger market shares. These two cases are also consistent with studies of bargaining as part of China's economic policy making. The novel aspect of these two case studies is that technology was the catalyst for bargaining. Technology change enabled the creation of popular services, which in turn led to recalculations in the relationships between bureaucracies and the relationship between the state and industry. The emergence of VoIP and Little Smart destabilized the industry structure; in the first case, small entrepreneurs quickly appeared in the market as competitors to China Telecom; in the second case, wireline operators began competing against wireless operators. After the initial challenge, MII stabilized the market by allocating the spoils of technology innovation to players within its state-industry framework. While with VoIP, innovation was initiated by small entrepreneurs—*ge ti hu*—and in the end they lost the legal right to offer VoIP. When the ministry legalized the service, licenses were limited to the major state-owned operators. In the case of Little Smart, the operators who introduced the service were large and politically strong. Whereas for some MII officials, the operators' blatant flouting of government rules was an embarrassment (Interview 9 2003), at the highest levels of the ministry, as one telecommunications executive said, "MIl opened one eye, but closed the other" (Interview 4 2003). The innovators, wireline operators already well ensconced in the state-industry framework, fought and won the opportunity to profit from their innovation.

From these two cases, is it possible to tell whether the Chinese state is becoming a great world power or disintegrating among the centrifugal forces of rising local governments? On the one hand, both emerged as localized phenomena—VoIP as the innovation of small entrepreneurs scattered across the country and Little Smart as an experiment in small and medium-sized cities. On the other hand, in the end, the MII had enough clout to reassert its authority after temporarily losing control over the market. MII confined VoIP to the major wireline

operators and eventually slapped tariffs to control Little Smart prices. The state no longer rules the telecom operators with an iron fist, but the regulator has a long road ahead before becoming the invisible hand of the market. ■

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