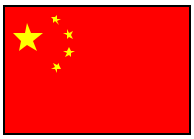
IV. CHINA



A. INTRODUCTION

No country has been more eager to embrace electronic commerce yet more fearful of its impact, than China. During the last three years, Chinese business and government have pursued an aggressive plan to prepare the country for electronic commerce. At the same time, regulators have imposed strict information controls and economic regulation on the Internet to protect the current government regime. Reconciling these two forces dominates discussion of the Internet and e-commerce in China.

China is a communist country yet over the past 20 years, the government has been moved its economy purposefully from a planned to a market-based system. As a result of reforms undertaken since 1978, the economy has grown more than tenfold. The gross domestic product is expected to increase 7.2 percent from 1999 to 2000. Foreign trade has increased by the same factor as Chinese manufacturers have begun to compete in the global marketplace in goods including personal computers.[12]

Lately, China has had limited success maintaining its economy in the face of the Asian financial crisis. Structural problems, the problem of reducing employment levels in the state enterprise system, unemployment in general and low rates of income especially in rural areas all pose serious challenges to long-term economic growth.

The potential market for e-commerce in China is huge but the investment risks are great as well. China has virtually none of the regulatory, technical and operational elements that, taken together, will allow and promote e-commerce growth in the near future. Also, content issues will continue to impede growth of the Internet and e-commerce.

B. TELECOMMUNICATIONS IN CHINA

China is the world's fastest growing telecommunications market.[13] Growth has resulted from widespread economic reforms that rely on advancing high-technology industries. According to an official government report, the Chinese communications industry earned over 289 billion yen (US$34.9 billion) in 1999, up nearly 25 percent from the year before.[14] Since 1992, China's ICT spending has experienced a compound annual growth rate of approximately 30 percent. At this rate, China would present a US$174 billion ICT marketplace by 2004. In comparative terms, China's share of worldwide ICT spending has increased more than any other country but

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12 OECD Country Report: China 2000.

13 Information Technology Association of America, ITAA White Paper "Permanent Normal Trade Relations with China Will Strengthen U.S. Leadership in IT, May 2000.

14 China telecoms market booms in '99, Telcomasia.net, February 21, 2000.

Brazil. In 1992, China accounted for just 0.6 percent of the global ICT spending. By 1999, this percentage had jumped four-fold to 2.3 percent.[15]

The Chinese government recognizes that continued development requires market liberalization and technological advances in the telecommunications and information technology sectors. Infrastructure investment is also a key element of China's economic growth potential with major infusions planned for the telecommunications sector. China's forward-looking, centrally-planned and infrastructure-focused development program means that the country will continue to make major investments in high-capacity, high-speed and advanced technology. The government's approach to reforms, however, has retained a very active role for regulators and state-owned enterprises which is likely to impede Internet and e-commerce growth.

As with most things in China, there is a divergence in infrastructure between urban areas and rural areas. Overall, China has 8.7 fixed phone lines per 100 people, but in urban areas the number rises to 27.7. At the end of 1999, China had 6.4 cellular subscribers per 100. Although cellular penetration trails fixed-line at the moment, by 2001, cellular penetration will exceed fixed line penetration (12.8 to 12.1 per 100). Because of this, mobile telephony is expected to play a large role in the development of e-commerce in China.

1. Regulatory Factors

Regulatory Authority
The Chinese government is torn between the desire to create a modern telecommunications infrastructure and concerns about security and control of information. Recent actions to liberalize the domestic telecommunications market notwithstanding, the industry remains highly regulated. The three telecommunications providers are operated by state-run organizations, all with close ties to the Ministry of the Information Industry (MII), the industry's chief regulator.

China Telecom, the state-run monopoly, continues to dominate the fixed-line services market, including local, long-distance, international and data transmission services. Historically, the company has controlled the industry by restricting access to its network. As a government monopoly, it also influences policy through its close association with regulators.

Licensing
Research did not uncover any information.

Accounting System
Research did not uncover any information.

Local Competition
Competition, however, is emerging in China. In 1994, an alternative, state-designated telecommunications competitor, China United Telecommunications (Unicom), began offering services in urban areas. Together, China Telecom and Unicom control the wireless sector (with 100 percent of the market) and dominate the paging sector (with nearly 70 percent of the

[15] Digital Planet 2000.

market). Last year, China's third domestic provider, China NetCom, introduced limited service, primarily in metropolitan areas. Once complete, NetCom's sophisticated fiber-optic network will offer enhanced services at lower prices than its competitors.

In preparation for China's entry into the WTO, the Chinese government has begun to make changes in the telecommunications industry. The MII replaced the Ministry of Posts and Telecommunications as the industry overseer in 1998 and the telecommunications sector was split from the postal sector. The MII has encouraged greater competition between China Telecom and Unicom, using administrative means to create a more level playing field. China Telecom itself will be restructured into four separate operational entities focussing on fixed-line, mobile, paging and satellite services.

Available Services
Research did not uncover any information.

Foreign Competition and Ownership
The communications market in China remains closed to foreign investors. Foreign interests are prohibited from holding a direct equity position in Chinese telecommunications service companies, or having any degree of operational control without permission from the State Council, which has been resolute in denying permission. As a result, foreign involvement has been limited to arms length agreements whereby foreign companies surreptitiously provide investment in exchange for a share of operating revenue. Until it was able to obtain state funding last year, China Unicom entered into this type of agreement as a way to circumvent the investment ban. Toward the end of 1998, these arrangements came under scrutiny from the MII, which reaffirmed that foreign investors are not allowed "to participate in the design, construction, operation and management of telecommunications networks."

These rules, however, should begin to change later this year in preparation for China's accession to the WTO. First, as a WTO member, China will be required to adhere to the WTO Basic Telecommunications Agreement, implementing certain regulatory reforms and opening basic telecommunications to other members of the WTO. Additionally, as part of its November 1999 agreement with the U.S. government, the Chinese government will relax foreign ownership restrictions immediately upon its accession to the WTO. The agreement allows up to 50 percent foreign ownership in value-added services in two years and 49 percent foreign ownership in mobile and fixed-line services, domestic and international, phased in over five to six years after accession.[16]

The development of telecommunications technology presents yet another dilemma for the Chinese government. The MII would like to foster the development of a domestic manufacturing industry, and has used its control over China Telecom to ensure that purchasing favors locally-made products. However, to acquire best-in-class technology from the global market, the MII cannot afford to favor domestic companies to the exclusion of foreign technology firms. Foreign investors must be allowed sufficient access to the China market to continue investing and transferring technology. To this end, under the *1997 Guidelines for*

[16] USTR, Agreement on Market Access between the People's Republic of China and the United States of America, November 1998.

Foreign Investment in Industries, micro-electronic technology and information and communications system network technologies are listed as two newly emerging industries in which foreign investments are encouraged. The *Guidelines* also list the manufacture of digital communications multi-media systems and the manufacture of equipment for network accessing communications systems as industries in which foreign investments are encouraged.

The government still directs the type of technology adopted in China through its stringent control of frequency and standards. For various wireless technologies, this is a major hurdle. The recent surge in popularity of IP telephony in China challenged the MII's desire to protect its traditional long-distance business. The speed with which technology is evolving and converging is making it increasingly difficult for the MII to maintain its control.

The MII's aim to establish a nationwide broadband multimedia network will continue to drive the market, although China's large, still under-served market means the MII will need to devote the bulk of its efforts to basic telecommunications infrastructure over the next three to five years. Convergence trends have a long way to go before they become evident in China, except in the more prosperous provinces and economic zones, where networks are being upgraded to prepare for emerging convergence technology.

2. Technical and Operational Factors

Spectrum Efficiency and Management
Research did not uncover any information.

Network Architecture
Investment in new equipment and extension of the country's communications infrastructure have only recently become priorities for policy makers as telecommunications is increasingly linked with continued economic growth. Currently, China lags behind its Western and East Asian counterparts in the availability of telecommunications services. According to official government reports, teledensity reached 13 percent nationwide in 1999 with the level closer to 30 percent in major urban areas. The telephone lines connect nearly 80 percent of villages across the country, making limited telecommunications available to most Chinese.[17]

It is clear that China's telecommunications regulator has been very concerned with public security. It has taken measures to ensure that there is ample control over the flow of information on its networks. However, strict control over telecommunications, the Internet and electronic commerce is likely to hinder Internet use and e-commerce development.

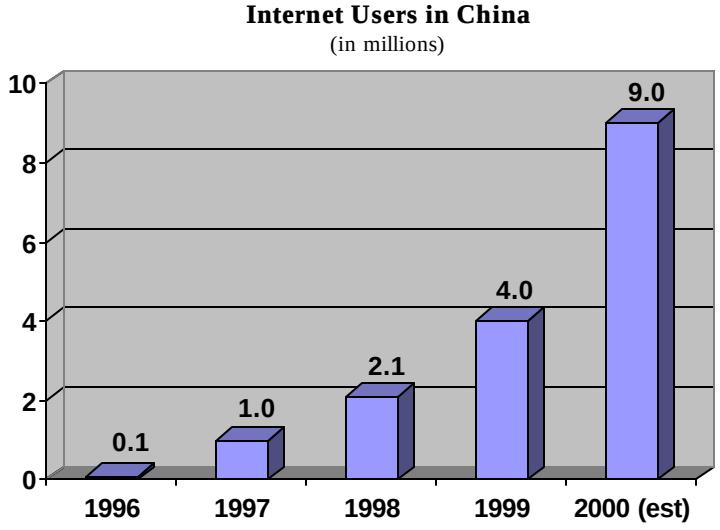
Infrastructure and Rights-of-Way
Research did not uncover any information.

[17] China telecoms market booms in '99, Telcomasia.net, February 21, 2000.

C. THE INTERNET IN CHINA

The Internet presents significant opportunities for Chinese economic development, but free access to news and information poses challenges to the current political regime. Though the government has said a comprehensive nationwide set of rules will be released in 2000, recent rapid growth of China's Internet industry has so far outpaced the government's ability to regulate it. As a result, Beijing has undertaken a unique approach to the Internet: promote its development while restricting its content and availability. In China, 1999 was proclaimed "The Year of Getting on the Internet."[18]

Internet use in China is growing at a rate three times faster than the global average.[19] Since 1996, the number of Internet users has increased 300 percent annually. According to government reports, Internet users more than doubled from 4 million to 8.9 million during the last six months of 1999 alone.[20] These Internet users are now able to access nearly 150,000 mainland-based Chinese Web sites, and over 2,300 registered government-sponsored sites.[21]



Source: China National Network Information Center

Internet use is largely concentrated in urban areas around Shanghai, Beijing, and Guanzhou where computers, communications infrastructure, and wealth are concentrated. According to the U.S. Department of Commerce, Shanghai has the highest computer penetration level. The city has 1.3 million computer users, representing 10 percent of the city's population.[22] According to China Computerworld, 18 percent of urban Chinese households have purchased a PC, with ownership as high as 35.4 percent in the city of Guangzhou.

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18 Ecommerce Asia Online, April 17, 2000.

19 U.S. & Foreign Commercial Service and U.S. Department of State, "China and E-Commerce", 1999.

20 San Jose Mercury News, January 26, 2000.

21 China telecoms market booms in '99, Telcomasia.net, February 21, 2000.

22 China E-Commerce, U.S. Department of Commerce, March 1, 1999.

Estimates for China's potential Internet growth are staggering: it is estimated that the number of Internet accounts will grow to 116 million in 2004, making China one of the largest Internet markets in the world. This will be made possible by widespread use of mobile phones and personal electronic assistants (such as the PalmPilot) to access the Internet. Personal computers are still prohibitively expensive for most Chinese and should remain an urban phenomenon for the medium term.

In an effort to control the flow of information over the Internet, the Chinese government has developed a hierarchical system of companies and organizations controlling access to the Internet. China's dominant Internet backbone, CHINANET, operates as a subsidiary of China Telecom. Construction of the backbone began in 1995. By June of the following year, CHINANET had been extended to all thirty provincial capitals. Three years later, it had been extended to all major cities in China making it the nation's most extensive network by a large margin. In most of the country, it is the only digital access available. Today, the network carries 82 percent of China's Internet traffic and is suitable for e-commerce.[23] The CHINANET backbone primarily supports China Telecom Internet traffic with excess capacity sold to a limited number of smaller ISPs. However, the monopolistic power of China Telecom has enabled the carrier to charge very high leasing fees, limiting the market share of competing service providers.

Portal sites have become popular, and the state-controlled China.com had an extremely successful IPO on the NASDAQ in late 1999. Other widely-visited portals include Sina, 8848, and Madeforchina. Most provide both Internet content and physical goods. Their content and operations, however, are subject to increasing state scrutiny.

1. Regulatory Factors

Regulatory Authority

In an attempt to control the Internet in China, the government has created an unwieldy regulatory environment. In 1998, the MII was formed to regulate Internet activities and spur the growth of the domestic Internet. Under the auspices of the MII, the government closely oversees telecommunications, multimedia, broadcasting, satellites and the Internet. The MII also manages licensing, security, content and access. Other government agencies are also involved in regulating ICPs and e-commerce activities.[24] Many observers believe this regulatory system will ultimately collapse under its own weight as providers and users proliferate and methods to circumvent government intervention become widely known. For the time being, however, the government has taken a heavy hand towards regulation.

Chinese ISP services are controlled by a few backbone service operators (e.g., China Telecom, China Unicom and JiTong Telecom) under licenses directly by the MII. ISPs must complete rigorous licensing procedures. Once licensed, the provider must register with communications and security agencies at both national and regional levels. New laws require providers to

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[23] U.S. & Foreign Commercial Service and U.S. Department of State, "China and E-Commerce", 1999.

[24] These other agencies include the Ministry of Public Security, the State Secrecy Bureau, the Ministry of Foreign Trade and Economic Cooperation, the China Securities Regulatory Commission, the State Encryption Management Commission and the State Administration for Industry and Commerce.

complete an additional licensing procedure with the Administration for Industry and Commerce, which then grants a logo that must be posted on the provider's web site.[25]

The process of securing licensing from the various agencies and departments responsible for Internet regulation is a complex process. For many companies interested in serving the Chinese market, simply obtaining a copy of all the applicable rules presents a significant entry barrier. The other primary impediment to licensing is the continued dominance by China Telecom, the country's incumbent telecom provider and primary ISP.

In addition to licensing, Beijing recently issued new rules requiring all Internet companies to register for government verification. Companies that handle online advertising, design or electronic commerce must list details such as their registered capital, address, server name and business range on a web site run by the Administration for Industry and Commerce. After confirming the information, the Administration will give companies a special electronic seal of approval that will appear on the companies' web sites. Every qualified online trading company is required to use the logo on its home page so consumers and other companies can decide whether to do business with the company.

In late January 2000, the government suddenly promulgated the Regulation of Commercial Encryption Codes, requiring all businesses using encryption technology to register their encryption software at the National Commission on Encryption Codes Regulations by January 31st. It also mandated that firms must eventually register the names and e-mail addresses of all users of encryption technology. In mid-March, China reversed this strict regulation that would surely have put a chill into foreign investment in China and hurt its prospects for WTO membership.

The Chinese government's ambivalent attitude toward the Internet as a whole is reflected in recent advances and retreats in regulation of foreign investment. While recognizing that the Internet can be a major engine of growth, perhaps quickly leveling the playing field with more developed economies, the government is concerned about maintaining control of the economy and of information. In September 1999, the government announced a ban on foreign investment in Internet Content Providers (ICPs), following an earlier ban on foreign investment in ISPs. A week after the MII promulgated the ban, however, the ICP Yahoo! launched its China service. In November 1999, the MII announced draft regulations that would allow direct foreign investment in e-commerce, but would prohibit ICPs from using content from non-Chinese sources. In January 2000, the government relaxed its ban on foreign ISP investment and announced that foreign firms would be allowed to invest in three cities. This is to expand to 14 additional cities next year and eventually to all cities and regions.

The effect of these changes in the regulatory environment is unclear. The Chinese government is either unwilling or unable to enforce fully many of the Internet and e-commerce regulations it has established. Barriers to foreign money in the IT sector were lowered upon the realization that growth would require at least some foreign investment. Data show that as much as US$100 million in foreign investment has poured into China’s Internet sector and that more than 50

[25] Financial Times, April 17, 2000, p.12.

percent of ICPs have foreign funding. Most popular Chinese-language portals, such as Sina.com, Netease.com and Sohu.com, have received substantial amounts of foreign capital investment.

China's policy on investment by foreigners as ISPs or ICPs should change with its accession to the WTO. According to the agreement between China and the United States, once China joins the WTO, it will allow foreign investment in China-based Internet companies. Foreign service suppliers will be able to provide a variety of services including electronic mail, voice mail, online information and data base retrieval, electronic data interchange, online information and data processing (including transaction processing), and paging services. Foreign service suppliers may hold 30 percent foreign equity share upon accession, 49 percent after one year, 50 percent after two years. Foreign service suppliers may provide services to designated cities and regions according a schedule which depends on the date of accession to the WTO. After two years, foreign service providers will be allowed to provide service to the entire country.

As part of its accession into the WTO, China has also pledged to sign the Information Technology Agreement (ITA). The agreement commits China to eliminate its tariffs, currently as high as 13 percent, on information technology products by 2005. The agreement will dramatically increase access to China's domestic market for goods and services and is expected to will spur competition, enhance service offerings, and reduce costs.

Despite the WTO agreement between China and the United States, however, the MII states that foreign investors still will need government approval and licenses to enter China's Internet market. The MII will be responsible for examining and approving foreign investment projects in the ISP sector. Content provided by ICPs will be reviewed by other agencies before MII approves it for public networks. An ICP licensing system will be established, the details of which have yet to be clarified.

In another move to control content, information and foreign investment, the government is restricting non-state-owned concerns from going public overseas and is developing state-owned Internet competitors. For instance, the state telecommunications regulator has set up the portal CCIDNET.com as a competitor to any independent portals serving the China market. With these bureaucratic hurdles blocking competition from the private sector, state-owned web sites will clearly be at the front of the line for some time in China.

There are several reasons why China's Internet policies are often self-contradictory. While certain laws may seem entirely clear on paper, in practice the government exercises considerable discretion in enforcement. Delineation between the operations of ICPs, ISPs, Application Services Providers (ASPs) and e-commerce ventures is not always clear, complicating government efforts to control discrete areas of Internet activity. Foreign investors avoid bans on investment by using moribund but listed Hong Kong enterprises as a front or using Chinese citizens educated and residing abroad to give the appearance of Chinese ownership. Not least of all, Internet regulation is subject to turf battles among various government agencies including the MII, which regulates ISPs; the State Bureau of Secrecy, which enforces the ban on transmission of state secrets; and the State Administration of Radio, Film and Television, which oversees content provision generally.

Until recently, Chinese Internet users were forced to rely on slow connections via the telephone system. A directive of September 1999 stipulated that the businesses of the telecommunications (currently providing Internet access) and cable TV companies (which can provide faster cable modem access) must remain separate. This effectively banned cable modems, but in January 2000 the city of Shanghai was given an exception, allowing the entry of cable modem technology into the market.

Soon thereafter, Legend, the state-backed PC maker, was given permission to market home systems that combine broadband Internet access and online investing, further eroding the 'convergence' ban. Now MeetChina, an e-commerce venture in cooperation with Legend and Motorola, is set to offer wireless e-commerce service, accessible to consumers using only a relatively cheap device such as Motorola's MobilePad. In contrast with its earlier attitude, the state seems increasingly willing to let the market decide what form Internet access technology will take.

Cost of Access

Access to the Internet remains a luxury for the privileged few. Users must obtain a permit to access the Internet. Once licensed, users face high access charges, which are set by the government. Recent restrictions on access to the Internet demonstrate the Chinese leadership's desire to exploit the Internet for business while constricting information it considers threatening to Communist Party rule.[26]

China Telecom is the only Internet backbone service provider and reseller of capacity to other ISPs. High access fees in the past have meant that many fledgling ISPs have not survived, and have also kept end-users' fees high, stunting Internet growth. For this reason, China Telecom made two major cuts in their rental rates to ISPs in 1999 as part of the MII attempt to expand the number of Internet users.

Labor and Immigration Policies

Research did not uncover any information.

Government Incentive Programs

Research did not uncover any information.

Content Control/Censorship

The government requires all web sites to undergo security checks by the government to prevent the release of sensitive national information to foreign nationals. The State Bureau of Secrecy closely monitors Internet activity to ensure that it is not jeopardizing state security. On January 25, 2000, the State Security Bureau issued the State Secrecy Protection Regulations for Computer Systems on the Internet, retroactive to January 1, 2000. The Bureau announced that "all organizations and individuals are forbidden from releasing, discussing, or transferring state secret information on bulletin boards, chat rooms, or in Internet news groups."[27]

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[26] San Jose Mercury News, January 26, 2000.

[27] Business Asia, February 11, 2000, v8 i2 p4.

The regulation concerns 'state secrets', defined in official government parlance so vaguely that it could mean any material not specifically authorized by the government for publication. Under previous laws, individuals posting such information on bulletin boards, chat rooms, or news groups were responsible for it. Under the new rules, however, any individual or company transmitting such information can be held responsible. This will, if enforced, effectively require ISPs and web sites to police the content passing through their domain, even that for which they have no original responsibility. To ensure compliance, information providers and transmitters will have to check any data published or disseminated with an appropriate government agency. Web sites and ISPs that do not remove offending information after one warning may be shut down.

Given the number of users, web sites and e-mails on the Internet, it will be virtually impossible to monitor all of the content that could contain 'state secrets' under the government's definition. But the new regulations stand as the first direct application of China's state secret laws to the Internet.[28]

In March, the MII established the Internet Information Management Bureau to restrict Internet content accessible by Chinese Internet users to prevent the "infiltration of harmful information on the internet."[29] The Ministry also barred the dissemination of foreign news on Chinese portals.

While governments around the globe wrestle with questions of Internet regulation, the Chinese government is exercising significantly broader control by exerting its ownership influence on content as well. To curb the flood of foreign media, the government has developed its own web sites.[30] Chinadotcom, a state-affiliated web portal, now dominates the domestic Internet market. Xinhua, the official Chinese news agency and one of Chinadotcom's shareholders, strictly censors the portal's content.[31] Other government-backed web sites, including Qianlong, which groups nine major media-companies, and CCIDNET.com, operated by the MII, supply state-approved content and receive preferential regulatory treatment. In addition, the Chinese government has set up a special police force to monitor activity on the Internet.

Many observers doubt whether China's plans to control the Internet will be effective. The government's own web sites are less popular than their private counterparts and Chinese web users are becoming more sophisticated in circumventing the censors, partly by using 'proxy' servers to retrieve blocked sites.[32]

2. Technical and Operational Factors

Registration of domain names in China is governed by the *Provisional Administrative Measures on Registration of China Internet Domain Names* (promulgated May 1997). In the market of

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28 San Jose Mercury News, January 26, 2000.

29 Wall Street Journal, April 24, 2000.

30 Financial Times, March 24, 2000.

31 Financial Times, April 18, 2000.

32 Financial Times, April 18, 2000.

Chinese-character domain names, two institutions register domains: the Singapore-based I-Dns, and China's own China Internet Network Information Center (CNNIC). CNNIC has been authorized to register '.cn' domain names and make rules governing the standards and management of Chinese domain names. Foreign companies are not permitted to register a domain name in China unless they use their Chinese subsidiaries or representative offices as the applicants. CNNIC itself currently is commercializing the domain name market in cooperation with a U.S. strategic partner.

Protocol Standards and Development
Research did not uncover any information.

Language Barriers
Research did not uncover any information.

Skilled Labor Force
Research did not uncover any information.

Government Incentive Programs
Research did not uncover any information.

D. E-COMMERCE IN CHINA

The emergence of electronic commerce has quickly caught the attention of Chinese regulators. Many view e-commerce as a necessary component of the country's plan for continued economic development. However, as with other aspects of the Internet, the Chinese government has taken a unique approach to regulation with regards to e-commerce.

In many ways, China seems suited for the rapid development of e-commerce. Driving forces that make e-commerce attractive includes the explosion of Internet use and the government's interest in developing e-commerc.

Current E-Commerce Activity in China
Along with growth in Internet users has come increased e-commerce revenues. There are now over 200 e-commerce web sites in China, employing over 5000 people. E-commerce revenues on the Chinese mainland grew from about US$8 million to US$24.2 million in 1999, according to the MII. Others estimate revenue could grow to US$96.7 million in 2000, and US$1.2 billion by the end of 2002.

China's e-commerce sector is still technologically unsophisticated, particularly in the areas of security of transactions. Sophisticated 'storefront' sites require that consumers have credit cards and trust the security of online ordering, neither of which is usually the case in China. Typical e-commerce transactions involve ordering a product online and paying cash on delivery. Changes in payment form may be on the way. There are already 100 million bank cards in China which accounted for US$100 million in purchases in 1998. Though credit card penetration is low, Visa International expects the number to grow to several million in the next few years.

Several Chinese web sites, including Sina.com, 8848, Focus, and A1B, have already begun e-commerce activities. Most of these are supporting business-to-business (B2B) e-commerce. Since 1998, however, business-to-consumer (B2C) e-commerce has emerged in industries ranging from book sales to airline tickets. A wider variety of products is becoming available as the e-commerce sector grows.

Most e-commerce is taking place in Chinese urban centers, particularly Shanghai. As the country's main financial center, Shanghai has become China's e-commerce hub. The city has the country's highest concentration of personal computers and Internet connections. Shanghai is also unique in the availability of electronic payments methods, another critical component of e-commerce. Shanghai currently has 10 million credit and debit card holders, 5,000 Point of Sale (POS) systems, and 2,600 Automatic Teller Machines (ATMs).[33]

In November, an e-commerce institute was established in Guanzhou at the South China University of Science and Technology in conjunction with Carnegie-Mellon University and the Chinese University of Hong Kong. This institute will advise government officials on how to foster electronic commerce and regulate online transactions.

Infrastructure for E-Commerce

China is rapidly deploying a network to accommodate electronic commerce. China began installing e-commerce servers in 1998. Since that time, the number of e-commerce servers has increased at an annual rate of more than 1,000 percent.[34]

In 1997, the China International Electronic Commerce Center was established within the Ministry of Foreign Trade and Economic Cooperation to build the necessary infrastructure to accommodate electronic commerce. They have successfully created the infrastructure to link companies and state agencies with the world, but developments within the organizations have not kept pace. According to the Chinese State Economic and Trade Commission, only 10 percent of China's state-run firms run computer networks that can be used for digital business.[35]

1. Regulatory Factors

Where most countries are adopting the U.S. model of a deregulated, decentralized Internet, China is trying to promote e-commerce while imposing the same type of regulation imposed on other facets of its economy.

Regulation of e-commerce is proving difficult. The Chinese leadership seems to be increasingly aware of the fact that sustained economic growth requires the reduction of the restrictions that have constrained the private sector of the economy.[36] For example, under the *PRC Contract Law* (promulgated March 1999), valid contracts can be formed through the exchange of "data messages." The contract law also contains provisions that are specifically tailored to e-

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33 China E-Commerce, U.S. Department of Commerce, March 1, 1999.

34 Ecommerce Asia Online, April 17, 2000.

35 InternetNews.com, March 30, 1999.

36 Permanent Normal Trade Relations With China, The Brookings Institution, May 2000.

commerce. Moreover, the 1994 *Law of the People's Republic of China Concerning Protection of the Rights and Interests of Consumers* sets forth a number of general principles applicable to the sale of goods and the provision of services in China applicable to all transactions, including electronic transactions. The manner of implementation of this law and the efforts to enforce it are yet to be determined.

Taxation

China has not yet developed full tax regulations for e-commerce and the Internet, but as most e-commerce takes place via cash-on-delivery transactions, existing laws should be sufficient to handle transactions conducted over the Internet. It is not yet clear how these laws will be implemented and enforced. The government has undertaken research on the matter. In March 2000, China National People's Congress started to consider legislation on taxation of e-commerce.

The classification of transactions goes to the heart of a turf war within the Chinese government. The Ministry of Information Industry oversees the provision of Internet access, while the State Administration of Radio, Film, and Television oversees content. No firm divisions have been established between service and content provision, and therefore there are no clear rules regarding which tax category a company's product may fall. The government is actively working on this issue.

Finally, tax evasion is a serious problem in China and the government is investigating ways of forcing foreign invested companies to pay more in taxes.

Privacy

Compared with Western countries, the Chinese government is less concerned with the protection of consumers' privacy on the Internet. No data protection legislation has been enacted. Customers have no rights to review data collected on them, to ask for correction of such data or to control to whom that data is made available.

Content

Research did not uncover any information.

Content - Intellectual Property Rights

China has joined the major international conventions on protecting intellectual property rights. Generally, intellectual property protection falls under the current, inadequate Copyright Law of 1990. The Copyright Law covers dissemination of copyrighted material through traditional means such as print media. It does not, however, cover new possibilities for intellectual property theft such as the unauthorized use of a web site's material by another web site or the publication on the Internet of material stolen from traditional sources.

Security – Encryption and Authentication

The problem of how to secure online transactions raises two main questions. What type of encryption technology should be used to encode transaction data? Who has the right to decide this and enforce its use among banks and vendors? Despite U.S. export restrictions, encryption technologies capable of supporting online payments are readily available to Chinese companies from international network security providers. However, citing concerns over the security of

financial information and the importance of developing domestic expertise, the Chinese government has declared its intention to develop its own encryption protocols.

Security – Payment Mechanisms
The Ministry of Information Industry and the People's Bank of China are currently establishing guidelines for the establishment of certificate authorities. Certificate authorities issue 'digital IDs' allowing vendors, buyers and financial institutions to identify each other online and verify authenticity of transactions. At the same time, without benefit of central guidance, a number of institutions, including MOFTEC, China Telecom, and several major commercial banks, are working to establish alternative certificate authorities.[37]

Development of financial mechanisms to support online transactions is another critical issue. Developing online payment systems for e-commerce requires reform of the most fundamental areas of China's financial and banking system. For example, some financial settlements between Chinese banks are conducted only once every few months, leaving plenty of time for fraud to take place. Moving banking onto the Internet could provide an even greater opportunity for fraud.

Participation in International Standards Development
Research did not uncover any information.

2. Technical and Operational Factors

Protocol (Standards) Making Process
Research did not uncover any information.

Product Restrictions
Research did not uncover any information.

Delivery Infrastructure
Research did not uncover any information.

Availability of Payment Mechanisms
The use of credit cards is not widespread in China. This limits much B2C e-commerce to transactions where ordering is online but payment is by traditional means such as cash on delivery or wire transfer. On the other hand, China has over 100 million debit cards that can be used as a form of payment for online transactions. This form is limited, however, by a lack of integration between financial institutions throughout the country. In contrast, the B2B sector, which does not rely on a credit card payment system, is expected to grow more rapidly than the B2C sector in the short-term. All e-commerce will be held back by China's lack of fully integrated computer networks, which makes it impossible to process transactions across different regions and between different banks.

[37] The Internet in China, a recent report by BDA (China) Ltd and The Strategis Group.

General Business Laws

China's legal system is not e-commerce-friendly. China has limited experience with drafting e-commerce legislation for issues such as transactional security, intellectual property rights protection and tax regulations. Regulations supporting areas critical to the development of e-commerce (such as privacy, consumer rights, validation of electronic contracts and recognition of digital signatures) have yet to be written. Such regulations are all the more important given the wide areas e-commerce cuts across. Government bodies involved in everything from telecommunications, finance and public security have a clear interest in its development. The potential for regulatory conflicts is therefore enormous.

Public Attitude to E-Commerce

China's consumer market is still too immature to make e-commerce attractive. Remote purchasing by consumers is rare in China. Internet users will approach e-commerce with little or no previous experience using mail-order catalogues, TV-shopping or similar systems. Since debit or credit card purchasing is still relatively new, consumers are even more sensitive to the possibility of fraud when purchasing online. But China's Internet users have, simply by using the Internet, already demonstrated that they are 'early adopters' open to new methods of interaction.

Business Attitude to E-Commerce

By contrast, China's large number of inefficient state-owned enterprises are unlikely adopters of new technology. Many state enterprises operate in protected markets where incentives to innovate are minimal. Many are also locked into a web of entrenched purchasing relationships that e-commerce threatens to upset.

But an even larger number of Chinese enterprises are eager to find more markets, particularly in export, for their products. However, they lack the resources to make large capital investments and are not yet equipped to accept online orders, let alone offer online payment facilities. For them, e-commerce may one day be an ideal solution.

E. CONCLUSION

The regulatory environment in China is strict and often contradictory. The government recognizes the value of building a modern telecommunications infrastructure but fears losing control of the sector and the information coming into and leaving China. China's accession to the WTO is supposed to encourage China to relax its regulatory restrictions and open its telecommunications and Internet markets. Some observers caution, however, that what China actually does in the way of liberalizing its markets remains to be seen.

Estimates for China's potential growth are staggering. These are generally based on a belief that the use of wireless devices to access the Internet will continue to spread, making access to the Internet and e-commerce easier and less expensive for businesses and the public. However, since the government controls the type of technology adopted throughout China through control of frequency and standards, the development of mobile telephony is likely to be limited. Also, mobile telephony and wireless access devices remain as expensive and as unattainable for the average Chinese as PCs.

Other major obstacles to e-commerce exist in China. The divergence in telecommunications infrastructure between urban and rural areas must be overcome to improve access and connectivity. The development of a telecommunications and Internet infrastructure will be limited by the ban on foreign direct investment and foreign ownership. China's e-commerce sector is technologically unsophisticated, particularly in terms of the security of transactions. The poorly developed infrastructure of railroads, ports and postal systems hinders access to equipment and reduces the efficiency of the e-commerce method of shopping.

China's legal system is at an immature stage. Legislation related to ICTs has not kept pace with the development of new technology and increased use. Enforcement of laws and regulations is unpredictable and subject to abrupt and often disquieting changes. To address these problems, MII said in early 2000 that it would promulgate a series of new regulations to provide a comprehensive regulatory framework for Internet-related activities including e-commerce. Until such new regulations are in place, B2C will remain a thing of the future in China.

The Chinese government continues its attempts to reconcile the decentralized, deregulated, dynamic and global nature of Internet commerce with its efforts to maintain tight control on information and communications within the country. The speed with which telecommunications technology is evolving, especially with regard to the convergence of traditional voice with datacommunications technology, is making it increasingly difficult to sustain this approach. China's accession to the WTO, expanded international trading partnerships, and increased Internet usage among Chinese consumers may also be factors forcing the government to relax its restrictions of the Internet. Until and unless the government does so, those restrictions are likely to strangle the development of a medium that many in China feel is critical to the country's continued economic development.