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THESIS

**THE EFFECTS OF CHINA ENTERING THE WORLD
TRADE ORGANIZATION ON THE UNITED STATES'
WIRELESS TELECOMMUNICATION INDUSTRY**

by

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December 2003

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**THE EFFECTS OF CHINA ENTERING THE WORLD TRADE ORGANIZATION
ON THE UNITED STATES' TELECOMMUNICATION INDUSTRY**

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ABSTRACT

This thesis investigates the effects of China entering the World Trade Organization on the United States' wireless telecommunication industry. This thesis explores whether the American wireless telecom industry will benefit from China's accession into the WTO. The working hypothesis of the thesis is that American wireless telecom companies will receive far-reaching economic benefit from China's entry into the WTO. Additionally, this thesis explores the effects the entry in the WTO will have on China's telecom policy toward allowing foreign companies to own and operate parts of the wireless telecom network.

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I. INTRODUCTION

A. BACKGROUND

China's fifteen-year effort to join the World Trade Organization (WTO) ended on December 11, 2001 when China became an official member of the WTO. China negotiated bilateral agreements with each existing member as a requirement to join the WTO. The long-awaited bilateral WTO agreement with the United States was finalized on 15 November 1999 and paved the way for Congress to grant permanent normal trade relations (formerly known as "most favored nation (MFN)" trading status) to China starting on 1 January 2002, which was another important step toward China's WTO accession.

Beginning with President's Nixon's visit to China in 1972 and Deng Xiaoping's push toward market economics in the 1980s, the WTO is the most important milestone in China's integration with the world and will have a profound impact on China's telecommunication (telecom) industry. China's entry into the WTO will no doubt alter current Chinese telecom policy against allowing foreign countries to own or operate parts of the telecom network in order to become compliant under WTO regulations.

Furthermore, American wireless telecom companies will likely benefit from China's entry in the WTO due to the lifting of tariffs imposed on the U.S. telecom products prior to China's entry into WTO. Additionally, current tariffs will be eliminated by 2005 under the bilateral agreement reached between the United States and China.

B. AREA OF RESEARCH

This thesis investigates the effects of China entering the WTO on the U.S. wireless telecom industry. Of particular interest, this thesis explores whether the U.S. wireless telecom industry will benefit from China's accession into the WTO. The working hypothesis of the thesis is that U.S. wireless telecom companies will receive far-reaching economic benefit from China's entry into the WTO. Additionally, this thesis explores the effects the entry in the WTO will have on China's telecom policy toward allowing foreign companies to own and operate parts of the network.

This thesis consists of five chapters, including this introduction. Chapter II provides background information on the WTO from its beginnings in the failed attempt to create an International Trade Organization to the five functions laid out in the WTO charter. This chapter then discusses why it took China 15 years to become part of the WTO. The third and most important section in this chapter looks at the telecom commitments China made as a precursor to joining the WTO. Particular emphasis is given to China's scheduled commitments on its mobile telecom industry. Lastly, Chapter II addresses what WTO accession means to China.

Chapter III surveys the historical evolution of Chinese telecom policy toward foreign involvement. It breaks down Chinese telecom policy into five time periods. Particular emphasis is given to the pre-1949 and post-1998 sections. The pre-1949 section recounts foreign companies' abuse of the Chinese telecom industry, which subsequently lead to a xenophobic stance and ban on foreign involvement. Lastly, the post-1998 section demonstrates the dramatic

change in Chinese telecom policy toward foreign involvement and the commitments China agreed to as part of the United States and China bilateral agreement in November 1999, which helped pave the way for China to join the World Trade Organization (WTO).

Chapter IV explores the impact China's joining the WTO has had on U.S. wireless telecom companies. Several of the U.S. telecom companies are examined with respect to what type and amount of contracts they are receiving in China. This chapter assesses whether the U.S. companies are truly benefiting from China entry into the WTO and whether the commitments China made as part of the WTO accession agreement are only superficial. Finally, Chapter V offers a summary of principal conclusions and considers the security implications for China by allowing foreign companies to own part of China's telecom network. Lastly, Chapter V will summarize the answers to the research questions.

C. SCOPE OF THESIS

This thesis attempts to limit the scope of this potentially broad topic by exploring the effects of China entering the WTO on the U.S. wireless telecommunication industry. It does not explore the effects on other countries' industries. Additionally, it focuses only on the wireless telecom industry and not other industries that might fall under the telecommunications realm or WTO. Lastly, this thesis examines the effects of China's telecommunication policy of allowing foreigners to own and operate part China's telecom infrastructure and the security implications associated with the change.

D. RESEARCH QUESTIONS

There is one primary and three secondary research questions this thesis addresses. The primary research question is whether the U.S. wireless telecom industry will benefit from China's accession into the WTO. Even though it has been less than two years since China entered the WTO and many future effects have not been realized, this thesis attempts to measure the benefit to U.S. telecom companies. The first of the secondary questions is what are the security implications of China allowing foreign companies to own part of its network? Another secondary question is whether accession into the WTO will change China telecom policy toward foreign involvement? The last secondary question asks which U.S. wireless telecom companies will be affected most by China's accession into the WTO?

II. CHINA AND THE WTO

A. INTRODUCTION

China's fifteen-year effort to join the World Trade Organization (WTO) ended on December 11, 2001 when China became an official member of the WTO.¹ No other country's accession into the WTO was as controversial or as prolonged. China negotiated bilateral agreements with each existing member as a requirement to join the WTO. The long-awaited bilateral WTO agreement between China and the United States was finalized on November 15, 1999² and paved the way for Congress to grant permanent normal trade relations (formally known as "most favored nation" trading status) to China starting in January 1, 2002³ which was another important step to China's WTO accession.

Perhaps the most remarkable breakthrough in the China WTO accession negotiations came with China's acceptance of substantial liberalization commitments in telecom services. It is important to point out just how much of a sticking point this aspect of the negotiations had been. As late as 1998, Chinese negotiators were indicating that it was unrealistic to expect China to make any significant commitments respecting market access to telecom services.⁴ Subsequently, China had shown a little flexibility in allowing some market access in a limited number of cities.

¹ The WTO Homepage,
http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm;
Internet; accessed 21 January 2002.

² The White House Homepage,
<http://www.whitehouse.gov/news/releases/2001/12/20011227-1.html>;
Internet; accessed 21 January 2002.

³ Ibid.

⁴ Ostry, Sylvia, China and the Long March to Global Trade: The accession of China to the World Trade Organization (New York, NY:Routledge, 2002), pg 80.

However, after Premier Zhu Rongji's visit to Washington in April 1999, China for the first time made significant commitments to open up its telecom industry, which allowed the bilateral agreement to become possible.⁵ Without concessions from the Chinese regarding the telecom industry, few people think the omni-important bilateral agreement between China and United States could have become reality.

This chapter first provides background information on the WTO from its beginnings in the failed attempt to create an International Trade Organization, to the five functions laid out in the WTO charter. Next, this chapter discusses why it took China 15 years to become part of the WTO. The third and most important section in this chapter looks at the telecom commitments China made as a precursor to joining the WTO. Particular emphasis is given to China's scheduled commitments on its mobile telecom industry. Lastly, this chapter addresses what WTO accession means to China.

B. THE WORLD TRADE ORGANIZATION

The World Trade Organization was created on 1 January 1995 and marked the biggest reform of international trade since Second World War.⁶ The WTO had its beginnings in the failed attempt to create an International Trade Organization (ITO) as part of the 1947 General Agreement on Tariffs and Trade (GATT).⁷ Up to 1994, the trading system

⁵ Ibid.

⁶ The WTO Homepage, http://www.wto.org/english/thewto_e/thewto_e.htm; Internet; accessed 21 January 2002.

⁷ Panitchpakdi, Supachai and Mark L. Clifford China and the WTO: Changing China, Changing World Trade (Singapore: John Wiley & Sons (Asia) Pte Ltd, 2002), pg 55.

came under GATT, which was salvaged from the aborted attempt to create the ITO.⁸

From 1948 to 1994, the General Agreement on Tariffs and Trade (GATT) provided the rules for much of world trade and saw some of the highest growth rates in international commerce during those periods.⁹ It seemed well established, but throughout those 47 years, it was only a temporary agreement. The original intention was to create a third institution handling international economic cooperation, paralleling the World Bank and the International Monetary Fund.¹⁰

The plan envisioned by over 50 countries was to create an International Trade Organization (ITO) as a specialized agency of the United Nations. However, the draft ITO Charter was too ambitious. It extended way beyond world trade disciplines to include rules on employment, commodity agreements, restrictive business practices, international investment, and services.¹¹ Even before the charter was finally approved, 23 of the 50 participants decided in 1946 to negotiate to reduce and bind customs tariffs.¹² With the Second World War only recently ended, they wanted to give an early boost to trade liberalization and to begin to correct the legacy of protectionist measures that remained in place from the early 1930s.

This first round of negotiations resulted in 45,000 tariff concessions affecting \$10 billion of trade, about

⁸ Ibid.

⁹ Ibid., pg 56.

¹⁰ Ibid.

¹¹ The WTO Homepage,
http://www.wto.org/english/thewto_e/thewto_e.htm; Internet; accessed 21 January 2002.

¹² Ibid.

one-fifth of the world's total.¹³ The 23 countries also agreed to accept some of the trade rules of the draft ITO Charter. They believed this should be done temporarily in order to protect the value of the tariff concessions they had negotiated.¹⁴ The combined package of trade rules and tariff concessions became known as the General Agreement on Tariffs and Trade signed in 1947, entered into effect in January 1948, while the ITO Charter was still being negotiated.¹⁵ The 23 participating members became founding GATT members, officially known as "contracting parties".¹⁶

Although the ITO Charter was finally endorsed at a UN Conference on Trade and Employment in Havana in March 1948, ratification in some national legislatures proved impossible.¹⁷ The most serious opposition was in the U.S. Congress, even though the U.S. government had been one of the driving forces. In 1950, the U.S. government announced that it would not seek Congressional ratification of the Havana Charter, and the ITO was effectively dead. Even though it was temporary, the GATT remained the only multilateral instrument governing international trade from 1948 until the WTO was established in 1995. The WTO currently has 146 members as of 4 April 2003 and has another 30 trying to get in.¹⁸

The principal objectives of the WTO include the raising standards of living, ensuring full employment, expanding production and trade, and allowing optimal use of

¹³ Ibid.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

the world's resources.¹⁹ Additionally, the WTO applies to production of and trade in services (GATT only spoke of goods) and it states the objective of sustainable development to "seek both to protect and preserve the environment."²⁰ Furthermore, the WTO recognizes the need for positive efforts to ensure that developing countries "secure a share in international trade commensurate with the needs of their economic development."²¹ The way the WTO achieves these objectives is similar to the way the GATT achieved them, through "reciprocal and mutually advantageous arrangements directed to the substantial reduction of tariffs and other barriers to trade and to the elimination of discriminatory treatment in international trade relations."²²

The WTO basically has five functions laid out in its charter. First, and most broad, is to "facilitate the implementation, administration, and operation, and further the objectives, of this Agreement and of the Multilateral Trade Agreements" and also to "provide the framework for the implementation, administration and operation of the Plurilateral Trade Agreements."²³ Second, the WTO is to be a negotiating forum. The third and fourth functions of the WTO are to administer the arrangements for the settlements of disputes that may arise between members of the WTO and for the review of trade policies.²⁴ Finally, the WTO is to co-operate with the International Monetary Fund and the

¹⁹ Ibid.

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

²³ Ibid.

²⁴ Ibid.

World Bank "with a view to achieving greater coherence in global economic policymaking."²⁵

The WTO Agreement provides for two ways of becoming a Member of the organization. The first "original membership" covers the situation of governments which were contracting parties to the old GATT.²⁶ However, the possibility by this route was available for only for a limited period. The second approach to membership is "accession" by negotiating the terms of membership with the governments that are already members of the WTO. The conditions for accession are not specified and are vaguely to be "on terms to be agreed between it and the WTO."²⁷

However, once membership has been achieved, "original members" of the WTO and "accession members" will be on the same footing, subject to any special terms of accession.²⁸ Additionally, membership requires all governments ensure the conformity of their laws, regulations and administrative procedures with their obligations under the WTO agreements. This is the primary reason why the WTO will cause major changes in China's telecom policy. China will need to reform many of its telecom laws and policies to become compliant under WTO rules and regulations.

C. WHY 15 YEARS FOR CHINA TO ENTER THE WTO?

China officially applied to the GATT in July 1986 to resume its status as an original "contracting member."²⁹ However, after the WTO replaced the GATT in 1995, China's

²⁵ Ibid.

²⁶ Fewsmith, Joseph, "China and the WTO: The Politics Behind the Agreement," *NBR Publications: NBR Analysis*, Vol. 10 No 5, December 1999, pg 5

²⁷ Ibid.

²⁸ Ibid.

²⁹ Panitchpakdi, Supachai and Mark L. Clifford, China and the WTO: Changing China, Changing World Trade (Singapore: John Wiley & Sons (Asia) Pte Ltd, 2002), pg 55.

application was to become an "accession member" of the global trade organization.³⁰ China was not officially granted membership until December 11, 2001, thereby taking over 15 years for China to become a member of the WTO, which was longer than any other member to date.

There are a variety of factors that contributed to the delay in membership negotiations. First, China's insistence in revitalizing its status as a former founding member of GATT slowed the process.³¹ Secondly, the question if and how China's "socialist market economy" could fit into the GATT/WTO system delayed China's accession.³² Given that the WTO was set up for free market economies, incorporating the largest command economy into the disciplines of free market was no easy task. Thirdly, the division of competences among Chinese ministries and institutions responsible for the process of accession slowed the process.³³ The huge bureaucratic system the Chinese government operates no doubt contributed to the delay. Fourthly, there was the difficult question of whether China should join the WTO as a developing or developed country.³⁴ The lower down on the economic development chain a country is, the better concessions it will receive in its accession accord. China will enjoy preferential conditions and arrangements, protection of and export subsidies for infant industries. China wanted to enter the WTO as a developing country, whereas the United

³⁰ Ibid., pg 56.

³¹ Yang, Yongzheng, "China's WTO accession: why has it taken so long?," *Asia Pacific School of Economics and Management Working Papers* (Asia Pacific Press, 2000), page 8.

³² Ibid.

³³ Ibid., pg 9.

³⁴ Drysdale, Peter and Ligang Song, China's Entry to the World Trade Organization: Strategic Issues and Quantitative Assessment (New York, NY: Routeledge, 2000), pg 25.

States wanted China to be entered as a developed country. Lastly, the negotiations with the United States over the bilateral WTO agreement and permanent normal trade relations (PNTR) status slowed the process.³⁵

From an American perspective, the suppression of student protests at Tiananmen Square in 1989 contributed to the substantial delay for China's accession.³⁶ After Tiananmen, the United States began to consider linking trade and economic issues with human right issues.

China had to negotiate bilateral agreements with each existing member or invoke Article 13 with the existing member as a requirement to join the WTO.³⁷ The long-awaited bilateral WTO agreement with the United States was finalized on November 15, 1999 under President Clinton.³⁸ However, the United States Congress still needed to grant China PNTR in order for the WTO agreement to become effective. After much debate, Congress granted PNTR to China, starting in January 1, 2002, with an 83-15 vote from the Senate and a 237-197 vote from the House of Representatives.³⁹

Prior to granting PNTR, Title IV of the Trade Act of 1974 to China, also known as the Jackson-Vanik amendment, the United States had to renew MFN trade status with China

³⁵ Ibid, page 24.

³⁶ Fewsmith, Joseph, "China and the WTO: The Politics Behind the Agreement," *NBR Publications: NBR Analysis*, Vol. 10 No 5, December 1999, pg 2

³⁷ Magarinos, Carlos, China in the WTO: The Birth of a Catching-Up Strategy (New York, NY: Palgrave MacMillan, 2002), pg 33.

³⁸ The White House Homepage, <http://www.whitehouse.gov/news/releases/2001/12/20011227-1.html>; Internet; accessed 21 January 2002.

³⁹ U.S. Department of State's Bureau of International Information Programs Homepage, <http://usinfo.state.gov/topical/pol/arms/stories/00091911.htm>; Internet; accessed 2 March 2002.

on a yearly basis. Because of the Jackson-Vanik amendment, the United States was not allowed to grant MFN status to non-market economies unless the President waived ineligibility. This amendment was originally directed at the Soviet Union because of restrictions on emigration of certain Soviet citizens. However, the Jackson-Vanik amendment applies to all non-market economies. Therefore, for the United States to enjoy WTO benefits with respect to China after PRC accession, Congress needed to amend or repeal Jackson-Vanik to permit extension of PNTR to China. Currently, over 160 countries have PNTR status with the United States.⁴⁰ The only countries the United States currently does not grant NTR are Afghanistan, Cuba, Laos, North Korea, Serbia/Montenegro, and Vietnam.⁴¹

Even if Congress failed to grant PNTR to China, it would not have stopped China from entering the WTO. Instead it would have given the European Union and Japan an advantage in trade with China. If the United States did not grant PNTR, then China would have invoked the WTO's Article 13, which permits China not to apply WTO benefits to the United States.⁴² Under WTO rules, the United States also may invoke Article 13. In either case, however, non-application of WTO benefits by either country would deny U.S. firms the greater access to China's markets that WTO accession would bring.

⁴⁰ The United States-China Business Council Homepage, <http://www.uschina.org/public/wto/ntrfacts.html>; Internet; accessed 13 February 2002.

⁴¹ Ibid.

⁴² United States General Accounting Office Report, World Trade Organization: Status of China's Trade Commitments to the United States and Other Members, May 2000, pg 7.

D. CHINA'S TELECOMMUNICATION COMMITMENTS

During the bilateral agreement negotiations between the United States and China, intense debate occurred over the tariff levels and foreign ownership percentages for several United States products including agriculture, financial services, and telecommunications.⁴³ The discussion on telecoms was one of the most intense. Nevertheless, both sides made concessions in the end which resulted in the November 15, 1999 signing of the WTO bilateral agreement by President Clinton.

There were three main commitments China made as part of the preliminary deal between the United States and China. These commitments marked China's first agreement to open its telecoms sector to direct foreign investment. Additionally, one of the key parts of the deal was tariffs on information technology products, such as computers, semiconductors and internet-related equipment will fall from the current 13.3 percent to zero by 2005.⁴⁴ Through these commitments, China will become a member of the Basic Telecoms Agreement, which was originally reached in Geneva in February 1997 among 69 countries to liberalize their telecom service markets for competition.⁴⁵

The first commitment involved regulatory principles. It stated that China agrees to implement the pro-competitive regulatory principles in the Basic Telecom Agreement and subsequent Annex A of the Reference Paper on

⁴³ Fewsmith, Joseph, "China and the WTO: The Politics Behind the Agreement," *NBR Publications: NBR Analysis*, Vol. 11 No 2, January 2000, pg 5

⁴⁴ Summary of the U.S. -China Bilateral WTO Agreement; available from: [Http://www.uschina.org/public/991115a.html](http://www.uschina.org/public/991115a.html); Internet; accessed 21 January 2002.

⁴⁵ Fan, Xing, Communication and Information in China: Regulatory Issues, Strategic Implications (Lanham, MD: University Press of America, 2001, pg 167.

Regulatory Principles⁴⁶, and agrees to technology-neutral scheduling which allowed foreign suppliers to use any technology they choose to provide telecom services.⁴⁷

The second commitment involved geographic scope of services. China will now phase out all geographic restrictions for mobile telecoms in five years. This was further reduced to three years in the EU bilateral agreement with China. Additionally, China's key telecoms services corridor in Beijing, Shanghai, and Guangzhou, which represents approximately 75 percent of all domestic traffic, will open immediately on accession in all telecom services.⁴⁸

The third and most important commitment involved investment. Prior to the agreement, China did not allow foreign investment in telecom services. However, according to the announced agreement, both parties agreed to set the foreign investment cap for operators at 49 percent for foreign ownership in mobile services within five years of accession into the WTO. This was also further reduced to three years in the EU bilateral agreement with China.⁴⁹ Furthermore, China and the United States agreed to 49 percent for foreign ownership in international and domestic land and sea (not mobile) services within six years and 49 percent in most other services upon accession. This would allow the Chinese government to maintain majority control.

⁴⁶ Annex A of the Reference Paper on Regulatory Principles can be accessed at http://www.itu.int/osg/spu/wtpf/wtpf98/sgreport/2_draft

⁴⁷ Summary of the U.S. -China Bilateral WTO Agreement; available from: <Http://www.uschina.org/public/991115a.html>; Internet; accessed 21 January 2002.

⁴⁸ Ibid.

⁴⁹ Ibid.

Lastly, the deal called for the cap to be raised to 50 percent after two years for value-added service and paging service.⁵⁰

E. CHINA'S WIRELESS TELECOM COMMITMENTS

More specifically, China made significant commitments toward its wireless telecom industry. This is important because China's rapidly growing wireless telecom industry recently passed the United States as the largest mobile market in the world with over 200 million users.⁵¹ Now, foreign companies will be able to provide all analogue and digital cellular services and personal communications services through joint venture enterprises.

Foreign companies were allowed to hold 25 percent foreign equity share when China first entered the WTO in December 2001.⁵² They were allowed 35 percent after one year and will be allowed 49 percent after three years.⁵³ This is two years faster than was provided for in the bilateral agreement between the U.S. and China because the European Union (EU) able to negotiate a two-year acceleration of this transition period.

Foreign companies were allowed to provide services in and between Beijing, Shanghai, and Guangzhou upon accession.⁵⁴ Additionally, the list was expanded to Chengdu, Chongqing, Dalian, Fuzhou, Hangzhou, Nanjing, Ningbo, Qingdao, Shenyang, Shenzhen, Xiamen, Xian, Taiyuan

⁵⁰ Ibid.

⁵¹ Cai, Yuanzhe, The Transitioning Chinese Telecom Market: A White Paper (Dallas, TX: Parks), pg 1; available from: <http://www.parksassociates.com>; Internet; accessed 15 June 2003.

⁵² Ostry, Sylvia, China and the Long March to Global Trade: The accession of China to the World Trade Organization (New York, NY:Routledge, 2002), pg 83.

⁵³ Ibid.

⁵⁴ *South China Morning Post Internet Edition*, "Beijing to Open Sector Earlier Than Promised," 6 January 2000.

and Wuhan after one year.⁵⁵ The area was further expanded nationwide after two years. Again, the EU was able to negotiate immediate access to the Beijing, Shanghai, and Guangzhou inter-city markets. The U.S. bilateral agreement had specified only access to the intra-city markets.

F. WHAT WTO ACCESSION MEANS FOR CHINA

Twenty-five years ago, the Chinese government initiated the step of introducing the market-based economy, allowing private enterprise to begin developing and making decisions on investment and production. China's international trade responded at once. By 1986, when China first applied to resume its membership in the GATT, exports had grown from 5 to 10 percent of China's GDP, and China accounted for about 1 percent of world exports.⁵⁶ Trade had become a key factor in China's further economic growth and development.

Nonetheless, the reform process was still at a relatively early stage. Unless China had been able in 1986 to undertake a massive transformation of its trade regime, it was doubtful that GATT membership at that time could have delivered its full economic benefits to China.⁵⁷ A more profound and deeper phase of trade reform was needed to allow the rules-based multilateral trading system to play its key roles of guaranteeing China non-discriminatory market access abroad and access to cheaper imports at home.

Since 1986, the process of trade reform has matured considerably, and China's trade performance has reflected this. China's exports today account for over 20 percent of

⁵⁵ Ibid.

⁵⁶ Eglin, Richard, "Challenges and Implications of China Joining the WTO," *Kluwer Law International*, June 2000, pg 2.

⁵⁷ Cheng, Leonard K., "China's Economic Benefits from Its WTO Membership," *Hong Kong University Center for Economic Development*, December 1999.

its GDP, and China has become an emerging giant in international trade, accounting for over 3 percent of world exports.⁵⁸ This trend is expected to rise in the future.

This truly impressive reform process had to come from within China. It could not have been imposed from the outside. The WTO does not have supranational power; however, it can assist members to maintain the process of trade reform once the political direction has been set. This is the first and perhaps most important benefit the WTO accession will bring China.

Additionally, accession will have a drastic impact on China's legal and administrative framework that protects private rights and private sector activity. The Trade-Related Aspects of Intellectual Property Rights (TRIPS) stipulate adequate protection to intellectual property rights so that the owners of these rights receive the benefits of their creativity and inventiveness. The TRIPS Agreement covers all seven of the main areas of intellectual property: copyright, trademarks, geographical indications, industrial designs, patents, layout designs of integrated circuits, trade secrets.⁵⁹ In each area, it sets minimum standards of protection and requires governments to provide procedures and remedies so that these standards can be enforced. Lastly, it provides an effective means of settling disputes between member governments.⁶⁰

Accession will also mean that China can replace the bilateral relationships it has used until now to shape its trade with major trading partners with a single,

⁵⁸ Ibid, page 2.

⁵⁹ The WTO Homepage,
http://www.wto.org/english/tratop_e/trips_e/intel2_e.htm; Internet;
accessed 21 January 2002.

⁶⁰ Ibid.

multilateral trade relationship with the rest of the world. Bilateral relationships can be inconsistent and uncertain, thereby increasing risk for producers and investors. It also requires a large amount of time, energy, and effort by government officials to negotiate and administer them. Therefore, the multilateral trade relationships will give China more stable access to foreign markets because it will reduce disruptions in foreign trade that are caused by unpredictable policy shifts. Given this, China will be in a better position to attract foreign investors who use China as their export platform. Additionally, it will also attract foreign investors who feel more secure about developing China's domestic market. Regardless of whether export-oriented or attracted by China's huge domestic market, foreign direct investment (FDI) not only brings in additional capital but, more importantly, technology, market information, and global production and distribution networks that link China more tightly to the other economies.⁶¹

The WTO rules will also protect China's rights against damaging protectionist policies in overseas markets. China's vulnerability to discriminatory protectionism in its major export markets has grown, along with China's success in increasing its exports over the past 20 years.⁶² Were this to continue, and even perhaps escalate in the future if world economic growth were to suffer a serious decline, it could prove a major set-back to China's economic growth a development. However, now that WTO

⁶¹ Eglin, Richard, "Challenges and Implications of China Joining the WTO," *Kluwer Law International*, June 2000, pg 3

⁶² Cass, Deborah Z., China and the World Trading System: Entering the New Millennium (United Kingdom: Cambridge University Press, 2003), pg 310.

accession is complete, China's exporters will more confidently be able to make long-term business decisions. The more open the Chinese economy becomes, the more China will benefit from the legal security of the rules-based trading system.

China's membership in the WTO will give it a very important voice in helping shape new WTO negotiations, to meet not only China's own needs for its future economic growth and development, but also the needs of other countries as well. Naturally, each WTO member pursues its own export interests as vigorously as possible in a trade negotiation; however, the glue which holds the system together is the realization of each member that its export markets can only grow if producers abroad can increase their exports too. Simply put, a country needs to open up its own market to higher imports if anything is ever to be gained. China can expect to bring to the next WTO negotiation and reforming attitude that will make it a very important partner in helping the liberal trading system move forward.

G. CONCLUSION

The WTO is one of the most important milestone in China's integration with the world and will have profound impact on China's telecom industry. The WTO guarantees globalization of the Chinese economy, the likes of which has never occurred in that country. Additionally, China hopes the WTO will create an environment of mutual interest that provides for peaceful development that will have positive and significant influence on the development of Sino-U.S. relations. With all the uncertainty of what the

WTO will bring to China, the one thing that is for sure is the WTO is going to have a large impact on China's wireless telecom industry.

China made some major commitments regarding its telecom industry and wireless telecom industry. These commitments marked China's first agreement to open its telecom sector to direct investment. Currently, the commitments allow foreign companies to be eligible to own 35 percent of the wireless telecom network nationwide. Starting in Dec 11, 2004, it will expand to 49 percent of the entire country. However, just because China has agreed to open its wireless telecom industry to foreigners, it still must change its national laws and telecom policy to reflect its WTO commitments.

The next chapter will look at China's telecom policy toward foreign involvement. It will breakdown the history of Chinese telecom policy into five time periods to show the background and evolution of Chinese telecom policy toward foreign involvement. It will display the dramatic and striking change in Chinese telecom policy from not allowing foreigners to invest in China's telecom to actively pursuing foreigners to invest in China telecom industry.

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III. CHINA'S TELECOM POLICY TOWARD FOREIGN INVOLVEMENT

A. INTRODUCTION

Since 1949, when the People's Republic of China was founded, China's telecom network ownership has been under strict control. For years, China's policy makers have been very cautious about information and communication. They have held a belief that telecom concerns the nation's security and sovereignty; consequently, it cannot be opened to the outside world. Therefore, direct foreign investment in telecom service had been explicitly prohibited. The regulation of the former Ministry of Posts and Telecommunications (MPT), now known as Ministry of Information Industry (MII) since April 1998, clearly states that foreign direct investment in telecom is strictly banned:

No organization and individuals outside China or solely foreign-funded enterprises, Sino-foreign joint ventures and cooperative businesses on the territory of China shall invest in, operate or participate in the operation of telecom services in China.⁶³

Additionally, the Chinese government has historically taken a conservative attitude toward foreign investment in telecom because Chinese sovereignty was viewed as vulnerable to outside challenge. Furthermore, China has experienced sovereignty disputes involving confrontation with foreign companies that established unpleasant historical precedents. These precedents cast a long shadow, greatly influencing policy of the Chinese government. The result has been that the Chinese

⁶³ Lin, Jintong and Xiongjian Liang, Telecommunications in China: Development and Prospects (Huntington, NY: Nova Science Publishers, 2001), pg 139.

government was reluctant for foreign companies to take any part in its telecom network.

However, the Chinese government began to liberalize its telecom industry starting in the 1990s.⁶⁴ Beijing knew it needed outside foreign investment in order to help finance the modernization and growth of China's telecom industry. A sweeping change to Chinese telecom policy toward foreign involvement came when China signed its 1999 bilateral WTO agreement with the United States, which cleared entry into the WTO for China in 2001.⁶⁵ Prior to that agreement, China severely restricted sales of telecom service and barred foreign investment. However, with this agreement, China will allow 49 percent foreign investment in all services, and allow 50 percent foreign ownership in other telecom services in as short as two years. This was a 180-degree turn from Chinese policy a decade earlier.

This chapter will now break down Chinese telecom policy into five time periods to show the background and evolution of Chinese telecom policy toward foreign involvement. Particular emphasis is given to the pre-1949 and post-1998 sections. The pre-1949 section demonstrates that foreign companies' abuse of the Chinese telecom industry subsequently led to a xenophobic stance and ban on foreign involvement. The post-1998 section demonstrates the dramatic change in Chinese telecom policy toward foreign involvement and the commitments China agreed to as part of the 1999 Sino-U.S. bilateral agreement.

⁶⁴ DeWoskin, Kenneth, "The WTO and the Telecommunications Sector in China, *The China Quarterly*, September 2001, pg 630.

⁶⁵ The White House Homepage,
<http://www.whitehouse.gov/news/releases/2001/12/20011227-1.html>;
Internet; accessed 21 January 2002.

B. PRE-1949

The 1870s marked the origin of telecommunications in China.⁶⁶ Foreign companies effectively dominated the telecom sector due in large part to the undeveloped economy of China and its weak military position at the time. These foreign companies effectively carved up China and divided the spoils amongst themselves. The Chinese government was repeatedly taken advantage of and received the short end of the stick.

In June 1871, the Danish Great Northern Telegraph Company (GNTC) constructed a 2,200-knot cable from Vladivostok via Nagasaki to Shanghai the first telegraph circuit in China.⁶⁷ According to an agreement between Denmark, Britain, and Russia, the GNTC and the British Eastern Extension Australia and China Telegraph Company (EEACT) shared the rights of telecommunications provision in China from 1873 to 1899.⁶⁸ Additionally, the coastal area north to Shanghai belonged to the GNTC, while the coastal area south to Hong Kong was under the control of the EEACT. Both companies jointly controlled the coastal area between Shanghai and Hong Kong. The GNTC and EEACT then attempted to restrict the rights of the Chinese government to establish its own submarine telegraph networks. The GNTC presented a proposal to the Qing Dynasty government that claimed exclusive rights for providing telegraph services in the territories where it had installed submarine and land cables when China was

⁶⁶ Yan, Xu and Douglas Pitt, Chinese Telecommunication Policy (Norwood, MA: Artech House, 2002), pg 9.

⁶⁷ Ibid.

⁶⁸ Baark, E., Lighting Wires: The Telegraph and China's Technological Modernization, Westport, CT: Greenwood Press, 1997, pg 186.

preparing to build such telegraph networks in June 1881.⁶⁹ Under the terms of this proposal, no other companies, including those from China, would be licensed to install cables in these areas in the ensuing twenty years.⁷⁰ A weak Chinese state was confronted by a strong company that pointed a gun to its head and had no other choice but to accept the proposal.

The GNTC and EEACT expanded their business in the name of repairing damaged circuits in 1900, when several Western countries raised arms against China to halt the Boxer Rebellion. The Chinese Directorate General of Telegraphs was forced to sign a contract to pay the bill for repairing the Chinese Yantai-Dagu-Shanghai submarine cable, which was twice the actual cost for the repair service it did not order, and to give up all its rights to the two companies for thirty years before the bill was paid with 5 percent interest.⁷¹ Additionally, all of the previous contracts between the Qing government and the two companies were automatically extended to the end of 1930.⁷²

The GNTC and EEACT also proposed to the Qing government and obtained approval to repair the damaged Tianjin-Beijing land cable and agreed to return it to China after a peace agreement was reached. The two companies, however, used this militarily important cable to bargain with the Qing government after the war and obtained the right to lease two other cables, namely the Beijing-Qiaketu cable to GNTC and the Beijing -Dagu cable to the EEACT,

⁶⁹ Ibid., pg 187.

⁷⁰ He, Z., Telecommunications and Development in China (Cresskill, NJ:Hampton Press, 1997), pg 65.

⁷¹ Ibid., pg 66.

⁷² Ibid., pg 70.

before it returned the Tianjin-Beijing cable to China.⁷³ In this way, China lost its control over international telecom, as the Beijing-Qiaketu cable was the gateway connecting China to Europe via Russia.

The foreign companies also began telephone service in China. The GNTC launched its telephone service in Shanghai on February 22, 1882.⁷⁴ A British company, Shanghai Mutual Telephone Association, followed two months later. Then in 1883, another British company, the China and Japan Telephone Company, bought the GNTC's network and consolidated it with that of the Mutual Telephone Association.⁷⁵ The new company provided telephone service in Shanghai for 18 years until it failed in bidding against the Shanghai Mutual Telephone Company in 1900.⁷⁶

The Qing government gradually realized the importance of telecom. The Qing government made efforts to the development of telegraph and telephone services. A military telegraph circuit connecting Gaoxiong, Taipei, and Jilong in Taiwan was built in 1877 and was the first telegraph that was built independently by China.⁷⁷ In 1879, a telegraph linking the office of the head of the Northern Navy in Tianjin with the Dagou and Beitang fortresses and the Tianjin weaponry factory was installed.⁷⁸ In 1881, a telegraph circuit between Shanghai and Tianjin was constructed, becoming the first one to provide a public

⁷³ Ibid., pg 71.

⁷⁴ Maier, John H., "Computer Science and Information Technology in the PRC: The Emergence of Connectivity," *Advances in Computers*, Vol. 27, 1988. pg 364.

⁷⁵ Ibid., pg 365.

⁷⁶ Yan, Xu and Douglas Pitt, Chinese Telecommunication Policy (Norwood, MA: Artech House, 2002), pg 10.

⁷⁷ Ibid.

⁷⁸ He, Z., Telecommunications and Development in China (Cresskill, NJ:Hampton Press, 1997), pg 71.

telegraph service.⁷⁹ By 1890, local telephone service was available in Beijing, Tianjin, and Nanjing.⁸⁰

Because of a lack of money, the Qing government adopted a policy of commercial operation under governmental supervision at the beginning of 1900. The government established the Ministry of Posts and Transportation on November 6, 1901 as the administrative regulator, and the ministry began to nationalize the telecom industry.⁸¹ The new ministry had bought up all the commercial operations by the end of 1908.⁸²

In 1911, the Qing Dynasty was overthrown and China entered an era of political instability which lasted until 1949, when the Chinese Communist Party acceded to power. The period from 1911 to 1949 began with fighting between the Chinese warlords, followed by an 8-year invasion and occupation by Japan. This was succeeded by civil wars between the Communist and Nationalist Parties. This was a destructive period for the development of telecom in China. For example, the total number of local telephone subscribers dropped from 55,683 in 1936 to 7,918 in 1944, while the total length of long-distance circuits dropped from 52,245 km to 4,085 km during the same period.⁸³

As the foregoing suggested, the dominance of foreign companies set an unfortunate historical precedent from the 1870s to 1949. The historical precedent led to a highly conservative telecom policy on the part of the People's Republic of China. Beijing viewed telecom as of critical

⁷⁹ Ibid.,

⁸⁰ Ibid., pg 75.

⁸¹ Harwit, Eric, "China's Telecommunications Industry: Development Patterns and Policies," *Pacific Affairs*, Summer 1988, pg 181.

⁸² He, Z., Telecommunications and Development in China (Cresskill, NJ:Hampton Press, 1997), pg 76.

⁸³ Ibid., pg 77.

governmental and military importance. The most important long-term policy consequence of the pre-1949 period of foreign domination was that it encouraged extreme reluctance to allow subsequent investment on the part of foreign companies. Early negative experiences with foreign companies taught the Chinese that such companies were exploitative and threatened the sovereignty of the Chinese telecom system.

C. 1949 TO 1978

When the People's Republic of China was founded in 1949, telecom facilities in China were outdated, and many had been damaged or destroyed during the war years. There were only 20,000 telephones and 2,800 trunks for long-distance telephone service throughout the entire country.⁸⁴ The infrastructure was also fragmented under the management of different interest groups. The telecom systems lacked interoperability and compatibility and the entire telecom network was in anarchy.

In November 1949, the Ministry of Posts and Telecommunications (MPT) was formally established and took over for the former Ministry of Posts and Transportation.⁸⁵ In September 1950, the MPT was restructured along the organizational model of the Soviet Union and existing facilities were repaired.⁸⁶ Considerable progress was made toward establishing a long-distance telephone wire network connecting Beijing to provincial capitals with Soviet assistance.

⁸⁴ Wan, S.D., "An Overview of Telecommunications in China," IEEE Communications Magazine, Vol. 31. No. 7, 1993, pg 15.

⁸⁵ Lin, Jintong and Xiongjian Liang, Telecommunications in China: Development and Prospects (Huntington, NY: Nova Science Publishers, 2001), pg 139.

⁸⁶ Ibid.

However, growth in telecom halted with the general economic collapse after the Great Leap Forward from 1958 to 1960, but it revived in the 1960s after the telephone network was expanded and improved equipment was introduced, which included imports of Western plants. Additionally, an important component of the fourth Five-Year Plan, which ran between 1971 and 1975 was a major development program for the telecom system. The program allotted top priority to scarce electronics and construction resources and dramatically improved all aspects of China's telecom capabilities.⁸⁷ During this period, all investment in telecom came mainly from the government. Nevertheless, with the limited amount of money, the entire investment in telecom for these 31 years was just 6.4 billion RMB.⁸⁸ Additionally, due to the highly centralized planned economy, the telecom sector was operated with very low efficiency, poor technology, and the lowest telephone penetration rate among all Asia countries at 0.43 percent.⁸⁹

D. 1978 TO 1993

Since the end of the Cultural Revolution in 1976, a considerable amount of economic reforms occurred in the telecom sector. The Third Plenum of the Eleventh Party Congress in December 1978 focused on the Four Modernizations (industry, agriculture, defense, and science/technology).⁹⁰ The MPT adopted a system to boost productivity and enterprise. In 1982, the Chinese

⁸⁷ Ibid.

⁸⁸ He, Xu, "Study of P&T Financing Policies in China," *Research Report of the Ministry of Posts and Telecommunications*, 1996, pg 23.

⁸⁹ Lin, Jintong and Xiongjian Liang, Telecommunications in China: Development and Prospects (Huntington, NY: Nova Science Publishers, 2001), pg 139.

⁹⁰ Yan, Xu and Douglas Pitt, Chinese Telecommunication Policy (Norwood, MA: Artech House, 2002), pg 18.

government designated the telecom sector as one having strategic economic significance and granted the MPT preferential treatment in several areas.

These preferential treatments subsidized the development of the MPT and the overall investment during this period reached 90.5 billion RMB.⁹¹ Financing during this period was diversified from previous years. Now sources of money consisted of internal funds, first installation fees, surcharges, and government investment.⁹² Lastly, financing was obtained from a series of loans and credits from the World Bank and Asia Development Bank that vastly helped overall investment.

E. 1994 TO 1998

The development of the Chinese telecom industry underwent drastic changes during this period. During this period, China saw several milestones in the liberalization and modernization of its telecom regulatory environment. First, there were great changes in taxation, fiscal and monetary regulations and the entire Chinese economy was developing into a market economy. Second, China United Telecommunications Corporation (China Unicom) was established on July 19, 1994 as the second telecom carrier in China, competing with the China Telecom in the MPT.⁹³ After its creation, China Unicom was also licensed for international long-distance service and for the operation of a GSM mobile network which had been formerly controlled by China Telecom. More importantly, it also gained the

⁹¹ He, Xu., "Study of P&T Financing Policies in China," *Research Report of the Ministry of Posts and Telecommunications*, 1996, pg 26.

⁹² Ibid.

⁹³ Yan, Xu and Douglas Pitt, Chinese Telecommunication Policy (Norwood, MA: Artech House, 2002), pg 49.

right to construct and operate the CDMA network in China.⁹⁴ Third, the Organization of Economic Cooperation and Development (OECD) declared that the Chinese telecom sector was economically viable and halted all international loans to China.⁹⁵ Fourth, external funds were diminishing and there was less and less regional investment. Now it was practically impossible to place surcharges on customers and installation fees were rapidly decreasing.⁹⁶ Lastly, a major reorganization occurred when the MEI and MPT were merged to form the Ministry of Information Industry (MII) in April 1998.⁹⁷ This helped provide a more complete separation of the regulatory function from the service provider. The main function of the MII is to make laws and regulations and to act as a regulator through licensing approval, tariff oversight, service quality, maintenance of fair competition, and supervision of interconnection.⁹⁸

Faced with these increasingly tough situations in financing telecom development, China Telecom and China Unicom had to find new solutions. Both companies looked for creative ways to bring in foreign investment. The government's restrictions on foreign direct ownership greatly hindered the ability to attract outside funds. One of the new strategies used by both of China's telecom operators was the use of deferred payment to vendors and leasing facilities. This method became popular in 1996 to

⁹⁴ Ostry, Sylvia, China and the Long March to Global Trade: The Accession of China to the WTO (New York, NY: Routledge, 2002), pg 69.

⁹⁵ Ibid.

⁹⁶ Ibid., pg 70.

⁹⁷ Chan, Jeanette K. and Charles F. Goldsmith, "The Regulatory Waiting Game," *The China Business Review*, May/June 1999, vol. 26, no,3, pg 16.

⁹⁸ Ibid.

1998.⁹⁹ However, this method was not enough to facilitate the rapid expansion of the network.

Therefore, in March 1997, China Telecom opened a branch in Hong Kong called China Telecom (HK).¹⁰⁰ Its main function was to absorb foreign investment and reinvest it in the Chinese telecom market. China Telecom (HK) was able to sell 2.6 billion shares in Asia, Europe, and North America, and was listed on the Hong Kong and New York stock markets.¹⁰¹ The capital collected was to be used for development of its mobile communications system in the coming years. However, China Telecom (HK) needed to restructure its capital structure and management system according to international norms in order to meet requirements to sell shares in the New York stock market. The sale was a great success and provided China Telecom with considerable experience with attracting additional foreign capital in the future.

China Unicom on the other hand chose a different approach to raise capital. Its strategy during this period was called the China-China-Foreign (CCF) joint investment system.¹⁰² According to this system, a company owned by the local government or one of China Unicom's shareholders established a joint venture with foreign companies. The objective of this joint venture was similar to the strategy of China Telecom (HK), which was to attract necessary investment funds. It reinvested in the building of its

⁹⁹ Fan, Xing, Communication and Information in China: Regulatory Issues, Strategic Implications (Lanham, MD: University Press of America, 2000), pg 143.

¹⁰⁰ Ostry, Sylvia, China and the Long March to Global Trade: The Accession of China to the WTO (New York, NY: Routledge, 2002), pg 69.

¹⁰¹ Ibid., pg 70.

¹⁰² Zhang, Bing, "Assessing the WTO Agreements on China's Telecommunication Regulatory Reform and Industrial Liberalization," *Telecommunications Policy*, vol. 25, no. 7, 2001, pg 473.

mobile communications infrastructure, leaving China Unicom responsible for operational management. Cash flows are shared between the joint-venture and China Unicom according to an agreed ratio reached at the beginning of the agreement. Therefore, China Unicom has bypassed the government restrictions on direct foreign ownership. Despite the formal ban, China Unicom has invested 1.5 billion U.S. dollars in around 40 projects through the CCF scheme by April 1998.¹⁰³

However, the MII conducted a review of the CCF of China Unicom, and this system was banned in late 1998.¹⁰⁴ Therefore, China Unicom turned to the Bank of China and received generous loans totaling 5 billion RMB.¹⁰⁵ This would solve the temporary cash requirement of China Unicom. However, its future development depended on whether or not the government would open the door for foreign investment.

During this time, there were clear foreign ambitions to enter the public telecom network because of its great potential for return on investment. The government's restriction of foreign direct ownership did not stop some foreign companies from trying. An example of this is an early trial involving foreign telecom firms involving the offering of call-back service to China.¹⁰⁶ The way the system worked was a resident of China would register his or her phone number with an overseas company. Then the

¹⁰³ Cass, Deborah Z., China and the World Trading System: Entering the New Millennium (United Kingdom: Cambridge University Press, 2003), pg 266.

¹⁰⁴ "Foreigners Prohibited From Operating Telecom Network," *Beijing Xinhua* (14 Sept 1999), translated by FBIS-FTS19990914000198, 14 September 1999.

¹⁰⁵ Mueller, Milton, *China in the Information Age: Telecommunication and the Dilemmas of Reform* (Westport, CT: Praeger Publishers, 1997), pg 113.

¹⁰⁶ Yan, Xu, *Chinese Telecommunication Policy*, Norwood, MA: Artech House, 2002, pg 54.

resident would call the company, but only allow the phone to ring a few seconds, when the user wished to make an international call. The company would then call the user back according to the caller's identity code, and the user would call the user back according to the caller's identity code and inform the company of the number with which he wished to be connected. Since the call originated from foreign liberalized markets, the customer would save money. In this way, operators could make profits by exploiting the rate difference between MPT and key foreign firms, thereby competing with MPT through by-passing MPT's international network.¹⁰⁷ However, this service met with a vigorous response from the MPT. In May 1995, the Department of Telecommunications Administration of the MPT issued a statement banning call-back services. The MPT announcement read:

According to the policy of the Chinese government, international telecommunication service (in China) can only be provided by the MPT. No individual or organization, including the reseller, can participate in international telecommunications service provision in any form. Recently, we found that certain foreign companies are advertising in China to provide call-back service. This is a severe violation of China's regulations regarding international telecom services. We solemnly announce that all resale of international service must stop. Users of call back service should stop using that service immediately. Otherwise, we will take necessary measures.¹⁰⁸

The MPT has successfully prevented foreign direct involvement in its telecom network. One of the rationales to defend this policy, according to Wu Jichuan, former

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

Minister of the MII, was the fact that the "posts and telecommunications service is closely connected with the country's political and social activities. It is, therefore, related to the sovereign right of the state, and has to be centrally controlled."¹⁰⁹

F. POST-1998

However, since 1999, opportunities for foreign direct investment have significantly changed in China. China has realized it can no longer go about the same path of restricting direct foreign investment because it can longer burden the expense of modernizing its telecom sector alone. Therefore, on 15 November 1999, after more than 13 years of negotiations, China and the United States signed a bilateral agreement which helped pave the way for China to join the WTO.¹¹⁰

There were three main commitments China made as part of the preliminary deal between the United States and China. These commitments marked China's first agreement to open its telecom sector to direct investment. Additionally, through these commitments, China will become a member of the Basic Telecommunications Agreement (BTA), which was originally reached in Geneva in February 1997 by 69 countries to liberalize their telecom service markets for competition.¹¹¹ Tariffs on information technology

¹⁰⁹ "Telecommunication Policy," *China Daily*, August 26, 1997.

¹¹⁰ The White House Homepage, <http://www.whitehouse.gov/news/releases/2001/12/20011227-1.html>; Internet; accessed 21 Jan 2002.

¹¹¹ Fan, Xing, Communication and Information in China: Regulatory Issues, Strategic Implications, (Lanham, MD: University Press of America, 2001, pg 167.

products, such as computers, semiconductors and internet-related equipment, will fall from the current 13.3 percent to zero by 2005.¹¹²

The first commitment involved regulatory principles. It stated China agreed to implement the pro-competitive regulatory principles in the Basic Telecommunication Agreement and subsequent Annex A of the Reference Paper on Regulatory Principles¹¹³, and it agreed to technology-neutral scheduling which allowed foreign suppliers to use any technology they choose to provide telecom services.¹¹⁴

The second commitment involved the geographic scope of services. China will now phase out all geographic restrictions for mobile telecom in three years. Additionally, China's key telecom services corridor in Beijing, Shanghai, and Guangzhou, which represents approximately 75 percent of all domestic traffic, will open immediately on accession in all telecom services.¹¹⁵

The third and most important commitment involved investment. Prior to the agreement, China did not allow foreign investment in telecom services. However, according to the announced agreement, both parties agreed to set the foreign investment cap for operators at 49 percent for foreign ownership in mobile services within five years of accession into the WTO and further reduced to three years

¹¹² Summary of the U.S. -China Bilateral WTO Agreement; available from: [Http://www.uschina.org/public/991115a.html](http://www.uschina.org/public/991115a.html); Internet; accessed 21 Jan 2002.

¹¹³ Annex A of the Reference Paper on Regulatory Principles can be accessed at http://www.itu.int/osg/spu/wtpf/wtpf98/sgreport/2_draft/002v2e.html

¹¹⁴ Summary of the U.S. -China Bilateral WTO Agreement; available from: [Http://www.uschina.org/public/991115a.html](http://www.uschina.org/public/991115a.html); Internet; accessed 21 Jan 2002.

¹¹⁵ Ibid.

with the E.U. bilateral agreement with China.¹¹⁶ Furthermore, China and the United States agreed to 49 percent for foreign ownership in international and domestic land and sea (not mobile) services within six years and 49 percent in most other services upon accession. This would allow the Chinese government to maintain majority control. Lastly, the deal called for the cap to be raised to 50 percent after two years for value-added service and paging service.¹¹⁷

China's entry into the WTO on December 11, 2001 has significant implications for the telecom sector. First, and foremost, China now has the opportunity to receive plenty of investment for the telecom sector which is in drastic need of foreign direct investment. The Chinese government will now be partly relieved of the heavy burden of investing in this capital-intensive industry. It makes sense for the Chinese government to allow private and foreign investors to help pay for upgrading its telecom on this promising industry instead of continuously injecting billions of dollars which could be used elsewhere.

Secondly, Chinese customers will benefit from enhanced competition in a variety of services. So far, customers have already benefited by competition between China Telecom and China Unicom in the wireless telecom industry. As a result, customers will enjoy more efficient and more economic services with the freedom to make choices. Foreign companies will further increase competition in the wireless telecom industry.

Thirdly, China's commitment to the WTO's General Agreement on Trade in Service (GATS), which was discussed

¹¹⁶ Ibid.

¹¹⁷ Ibid.

in the last chapter, will put the Chinese telecom regulatory system on the right track. China recently published its first blanket provision over network interconnection. It is very similar to the principles of the GATS and Reference Paper of the WTO which is based on the experience of such countries as the United Kingdom and the United States.¹¹⁸

However, China's regulations and telecom policy were still not in line with the new commitments it was obligated to under WTO rules. Therefore, China's MII, the country's key telecom regulatory body, submitted to the State Council the Telecommunications Regulation of the People's Republic of China, which contain 11 chapters and 82 articles of regulation.¹¹⁹ Once the State Council approved them on September 20, 2000, they became China's first comprehensive set of telecom regulations. MII drafted the regulations with the goal to making them compatible with the rules of the WTO.

Now, for the first time, foreign participation in China's telecom services market is allowed under Chinese regulations. Foreign investors have to set up joint ventures with Chinese companies and can only be a minority party in the joint venture, according to a separate but related document drafted by MII entitled "Regulations on Foreign Invested Telecommunications Enterprises."¹²⁰ The chairman of the Board of Directors must be appointed and

¹¹⁸ Zhang, Bing and Mike W. Pegg, "Telecom competition, post-WTO style," *The China Business Review*, May/June 2000, vol 27, no. 3, pg 12.

¹¹⁹ Horsley, Jamie P., "PRC Regulation of Foreign Telecom Equipment and the WTO," *The China Business Review*, Sept/Oct 2001, vol. 28, no 5, pg 66.

¹²⁰ Horsley, Jamie P., "China's New Telecommunications Regulations and the WTO," *The China Business Review*, July/ August 2001, vol. 28, no 4, pg 34.

the general manager must be recommended by the Chinese investor. Foreign companies must also demonstrate "sound performance and experience in the industry," which will give Chinese authorities great flexibility in deciding which company should receive licenses.¹²¹

Unbelievably, despite the recent regulations from the MII, the National People's Congress has yet to pass a comprehensive and workable telecom law. China has been working on a telecom law for over 20 years.¹²² Bureaucratic competition among the various companies in China's telecom industry has stalled efforts to finalize a draft. As a result, China's telecom industry has been governed by pieced-together administrative regulations.

MI and China's legislators should gain valuable experience through the implementation of the previous Telecom Regulations. This will allow the adoption of a comprehensive and workable telecom law by the National People's Congress. The MI stated in March 2001 that the law should be available within two to four years.¹²³ Most likely, the long-awaited telecom law will likely be based heavily on the Telecom Regulations.

G. CONCLUSION

Chinese telecom policy toward foreign involvement has changed considerably in recent years. Clearly, China's telecom policy has come a long way, from not allowing foreign investment to allowing up to 50 percent foreign investment in some areas. Chinese telecom policy mirrors

¹²¹ Ibid.

¹²² Ibid, pg 41.

¹²³ Ibid.

developments in the wider society, and telecom policy outcomes reflect the huge liberalizing changes coming from within the society.

Increased demand for telecom services and the need to modernize its outdated infrastructure drove China to rethink the policy of allowing foreign investors own part of the telecom network. However, in the end, the increased financing, investment and the new technology China would gain from the new policy outweighed the disadvantages. However, there are still many Chinese who are still skeptical about the change for national security reasons, especially because of the history China has had with mistreatment and subjugation by foreign powers.

The question now is, who will take advantage of this change in telecom policy? China's 1.3 billion population has appeared to be a lucrative market for U.S. investors. There will no doubt be intense competition to see who will eventually become the industry leader in the wireless telecom industry. The next chapter will address which U.S. companies will be affected most and will explore if the American wireless telecom industry will benefit from China's accession into the WTO.

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IV. EFFECTS ON U.S. WIRELESS TELECOM INDUSTRY

A. INTRODUCTION

In 2002, China passed the United States to become the largest wireless telephone industry in the world, with over 200 million mobile phone subscribers among a population of over 1.3 billion.¹²⁴ Today, there are over 230 million mobile phone subscribers in China¹²⁵, and analysts predict that China's wireless telephone industry will eventually be twice the size of those in Europe and the United States combined. Additionally, China's Ministry of Information Industry predicts that China will have over 400 million subscribers by the end of 2005.¹²⁶

Studies have also shown that the number of mobile phone subscribers will exceed that of fixed-line telephone users sometime before 2004.¹²⁷ Wireless networks have been successful in China, as other parts of Asia and other developing countries, because of the fact that they can be installed more quickly and at a lower price per subscriber than fixed-line systems. Additionally, an estimated 40 percent of Chinese villages are not connected by the country's fixed-line network.¹²⁸

The question that remains is who will capitalize on China's vast opportunity in the wireless telecom industry? Since, China became a full member of the WTO in December

¹²⁴ Lin-Liu, Jen, "Who will get China's 3G dowry," *IEEE Spectrum*, April 2003, vol. 40, issue 4, pg 16.

¹²⁵ The MII Homepage, <http://www.mii.gov.cn>; Internet; accessed 15 Aug 03.

¹²⁶ Leopold, George, "Wireless Vendors Eye China's Market," *Electronic Engineering Times*, 11 March 2002, issue 1209, pg 4.

¹²⁷ Cai, Michael, "The Chinese Telecom Market Still Promises Tremendous Opportunities," Parks Associates, April 2003, pg 1.

¹²⁸ "Mobile-Phone Companies See Vast Opportunity in China," *Evening Standard* (U.K.) 23 January 2002.

2001 and opened its telecom industry up to the rest of the world it has seen dramatic changes. There are several U.S. wireless telecom companies which attempting to benefit from a more open China with respect to its telecom industry.

This chapter first provides some background information on China's four wireless companies that have a license from the Chinese government to operate mobile telephones. Next, this chapter discusses the different third generation (3G) technologies that the MII is looking to employ in China's wireless telecom future. This will have a major impact on which United States companies, if any, will benefit from the important future decision. The last section of this chapter explores which U.S. companies have been receiving contracts and making joint ventures with China's wireless telecom companies in the period from December 2001 to June 2003.

B. BACKGROUND ON CHINA'S WIRELESS COMPANIES

There are currently four wireless companies that have a license to operate a wireless telephone network from the Chinese government: China Mobile Communication Corporation (China Mobile), China United Telecommunication Corp (China Unicom), China Telecommunications Corporation (China Telecom), China Netcom Group.¹²⁹ China Mobile recently dethroned United Kingdom's wireless giant Vodafone as the world's largest mobile phone carrier in September 2002, with over 123 million users.¹³⁰ China Unicom is currently the world's third largest mobile phone carrier, with over

¹²⁹ Statham, Jack, "Breakup of China State Telecom Monopolies Signals Major Restructuring," *Sunday Business* 19 May 2002, London edition.

¹³⁰ Pringle, David, "Vodafone's Gent Puts Successor on the Line," *Wall Street Journal* 31 July 2003, Eastern edition: pg B3.

107 million users.¹³¹ China Telecom, once the nation's monopoly provider of fixed-line local and long distance phone service, now operates mobile phone networks in 21 provinces in the south and west. Lastly, its newly created competitor, China Netcom, operates mobile networks in 10 provinces in northern China.

In 1999, the Chinese government decided to split the state-owned monopoly telecom service provider China Telecom into four pieces to promote greater competition in the domestic telecom sector and prepare its telecom industry for the impact of China's entry into the WTO. Each of the four companies was chartered to concentrate on a different telecom sector. The first company kept the name China Telecom and concentrated on the fixed-line telephone industry. China Mobile, the second company, concentrated on the wireless telecom industry. China Satellite Transmission (ChinaSat) and Guoxin Paging were the last two companies created and concentrated on the satellite and paging industry, respectively.

Therefore, China Mobile, formerly a subsidiary and the most profitable arm of China Telecom, was officially introduced to the world as its own entity in 1999. The GSM (Global System for Mobile Communications) technology that was first developed in Europe in the early 1980s was the primary standard it used for its mobile phone telecoms. China Mobile currently boasts more than 123 million users that represent over 70 percent of the Chinese wireless telecom industry, which not only makes it China's largest wireless telecom provider but also the world's largest

¹³¹ The MII Homepage, <http://www.mii.gov.cn>; Internet; accessed 15 Aug 03.

wireless operator.¹³² Ironically, Vodafone purchased a 2.1 percent stake in China Mobile in Oct 2000 for \$3.7 billion.¹³³

China Unicom was established in 1994 by the former Ministry of Electronics (MoE), the Ministry of Electronic Power and the Ministry of Railway as a competitor to China Telecom, which was then owned by the former Ministry of Posts and Telecommunications (MPT). Currently, China Unicom is the second largest wireless telecom operator in China with over 107 million users that represent a little under 30 percent of the Chinese wireless telecom industry.¹³⁴

China Unicom offers a full range of telecommunication services, such as wireless, paging, long distance, satellite, and data and Internet services. However, it receives its primary revenue from the wireless telecom industry. China Unicom announced in late 2001 that it started a new wireless network based on code division multiple access (CDMA) technology.¹³⁵ This was in addition to its other wireless network based on GSM technology. The CDMA network was an attempt to bring a higher quality signal to China and to take wireless phone subscribers away from bigger rival China Mobile.¹³⁶ It has been successful and has allowed China Unicom to cut into China Mobile's market share in the last couple of years. Additionally,

¹³² Ibid.

¹³³ Pringle, David, "Vodafone's Gent Puts Successor on the Line," Wall Street Journal 31 July 2000, Eastern edition: pg B3.

¹³⁴ The MII Homepage, <http://www.mii.gov.cn>; Internet; accessed 15 Aug 03.

¹³⁵ "China Unicom to Begin New Wireless Network Next Week," *Business Daily Update* 24 December 2001.

¹³⁶ Gesteland, Lester J., "China Unicom signs US\$1.5B in CDMA equipment deals with foreign, local suppliers," *ChinaOnline* 15 May 2001.

China Unicom enjoys a preferential policy that enables it to charge 10 percent less than China Mobile for its services.¹³⁷ The price advantage also helped attract many new GSM subscribers away from China Mobile. China Unicom aims to have 150 million mobile subscribers by 2005, with over half of these users anticipated to be CDMA users.¹³⁸

China Telecom was again split in May 2002 along geographic lines. In 1999, the Chinese government stripped away the wireless, paging, and satellite business from Telecom and made the company primarily a monopoly of fixed-line telephone networks and services. This time 30 percent of its network resources and ten subsidiaries in northern China were merged into China Netcom Group.¹³⁹ The remaining 21 subsidiaries in southern China retained 70 percent of the networks and formed the new China Telecom Group.¹⁴⁰ Though the primary charter for China Netcom and China Telecom is to operate fixed-line telephones in China, the Chinese government has also granted both companies licenses to operate wireless networks in China to further increase the competition.

Both China Telecom and China Netcom have been using a wireless technology developed by UTStarcom, based in Alameda, California, called personal access system (PAS) to extend their services.¹⁴¹ The technology was primarily introduced into China's rural area as a supplement to

¹³⁷ Lin, Albert, "Navigating China's Unpredictable Telecom Waves," *Wireless Data News*, 9 April 2003, vol. 11, issue 7, pg 1.

¹³⁸ Dickie, Mure, "3G means it's getting crowded in paradise," *Financial Times* 8 August 2003, London Edition: pg 29.

¹³⁹ Statham, Jack, "Breakup of China State Telecom Monopolies Signals Major Restructuring," *Sunday Business* 19 May 2002, London edition.

¹⁴⁰ Ibid.

¹⁴¹ "UTStarcom Mines China Market," *Communications Today* 28 March 2002.

fixed-line systems. Marketed as a low-cost investment option for wireless local telephone service, the PAS system features advanced voice and data services within a flexible network architecture that can be seamlessly integrated with future 3G and broadband technologies. With this technology, China Telecom and China Netcom have signed up over 13 million Chinese consumers.¹⁴²

C. THIRD GENERATION (3G) STANDARDS

3G stands for third generation and is a wireless industry term for a collection of international standards and technologies aimed at increasing efficiency and improving the performance of mobile wireless networks. 3G wireless services offer enhancements to current applications, including greater data speeds, increased capacity for voice and data, and the advent of packet data networks versus today's switched networks. As second-generation (2G) wireless networks evolve into third-generation systems around the globe, operators are working hard to enable 2G and 3G compatibility.

3G is a generic term covering a range of future wireless network technologies. There are several 3G technologies available, but the most popular and the ones China is looking to employ include WCDMA, CDMA2000, and TD-SCDMA.¹⁴³ Despite any benefits that either system has over the other, the author does not foresee any major service provider of GSM switching to CDMA2000 or an IS-95 provider switching to TD-SCMA or WCDMA. The cost of installing or replacing an entire base station is too much, considering that most base stations are relatively new. More than

¹⁴² Ibid.

¹⁴³ Krikke, Jan, "Fortunes Changing in Asia," *Wireless Week* 19 August 2002, available from <http://www.wirelessweek.com>; Internet; accessed 14 August 2003.

likely, the service provider will chose a 3G cellular system that provides some backward compatibility for their current customers and equipment.

The current hot topic in China's wireless industry is 3G licenses. The Chinese government remains undecided regarding which 3G technology it will adopt as a national standard.¹⁴⁴ China will not start issuing 3G mobile licenses until 2004 or 2005 because the industry and network standards are still immature.¹⁴⁵ 3G mobile networks would not start replacing existing mobile communications until 2006.¹⁴⁶

There are three 3G standards China is currently looking to employ. The first is wideband CDMA (W-CDMA, a GSM development), which is a version developed and primarily used in Europe. The second is CDMA2000, which is a version developed in the United States by San Diego based Qualcomm. Lastly, the China Academy of Telecommunications Technology (CATT) forged a joint venture with Germany's Siemens and developed a domestic 3G digital mobile network based on time division-synchronous CDMA (TD-SCDMA) technology.

CATT officials argue that the country should adopt TD-SCDMA as the national 3G standard to avoid becoming a battlefield for overseas companies.¹⁴⁷ Furthermore, TD-SCDMA adheres to international standards and has been approved by the International Telecommunications Union.

¹⁴⁴ Lens, Michel, "3G in China Awaits Government Decisions; Another Golden Egg?," *Global Wireless* 22 November 2002; pg 1.

¹⁴⁵ Lin, Albert, "Navigating China's Unpredictable Telecom Waves," *Wireless Data News*, 9 April 2003, vol. 11, issue 7, pg 1.

¹⁴⁶ Ibid.

¹⁴⁷ McCall, Margo, "China: Land of Dwindling Opportunity," *Wireless Week* 4 February 2002, available from <http://www.wirelessweek.com>; Internet; accessed 14 August 2003.

The Chinese government, conscious of its huge market and loath to pay royalties to foreign companies, continues to invest in TD-SCDMA technology and will continue to aggressively promote its use as the future 3G standard for China.

Chinese officials responsible for planning the release of 3G wireless networks in China have submitted three options to Beijing for consideration. The first proposal would allow operators total freedom to deploy any 3G standard. The second recommendation would see China Telecom and China Netcom being awarded licenses for the Chinese TD-SCDMA technology. China Mobile would then deploy W-CDMA and China Unicom to implement CDMA2000. In the final option, China Telecom and China Netcom are restricted to just one standard but would still need to deploy TD-SCDMA in certain districts as the main network system.¹⁴⁸

However, the first option is not expected to be chosen, since the Chinese have already invested over \$55 million in developing the domestic TD-SCDMA standard and would want some operators to adopt the technology.¹⁴⁹ China Mobile has already indicated plans to migrate from GSM to W-CDMA.¹⁵⁰ The company plans on rolling out its W-CDMA network as soon as 3G licenses are awarded. China Unicom has also chosen not to adopt the TD-SCDMA standard and has

¹⁴⁸ "Chinese propose three options for the adoption of 3G," available from: http://www.3gnewsroom.com/3g_news/jan_03/news_2978.shtml; Internet; accessed 17 August 2003.

¹⁴⁹ Chakraborty, Pradeep, "3G Operators Will Find It Hard To Ignore TD-SCDMA," *Wireless Week* 2 December 2001, available from <http://www.wirelessweek.com>; Internet; accessed 14 August 2003.

¹⁵⁰ "China: GSM Spending Continues Downward," *Wireless Week* 15 February 2003, available from <http://www.wirelessweek.com>; Internet; accessed 14 August 2003.

chosen to upgrade its CDMA network to a CDMA 2000 network, instead.¹⁵¹ Therefore, most likely China Telecom and China Netcom will be forced to deploy the TD-SCDMA in some capacity. The MII is expected to provide some financial incentives for the licensed companies to build their TD-SCDMA networks.

D. WIRELESS CONTRACTS WITH AMERICAN COMPANIES

China has become an extremely competitive market for the world's largest telecommunication companies. There are over 50 foreign companies that are involved in some form with telecommunication operations in China. However, this thesis concentrates only on the United States companies involved in some form in China's wireless telecommunications.

Demand for wireless telecom equipment exceeds China's production capabilities, resulting in increasing demand for imports and foreign investment in manufacturing. Until recently, profits have largely been limited to fees rather than revenues. However, since China joined the WTO, foreign companies can now form joint ventures with Chinese companies.

There have been several joint ventures established between United States companies and the four Chinese companies that have licenses to operate wireless telephones. A complete list of contacts, joint ventures, and agreements signed between United States companies and Chinese companies from Jan 2002 to July 2003 is appended as Table 1 at the end of this chapter. There have been a total of 39 contracts, joint ventures, or agreements signed with United States companies during that time frame, valued

¹⁵¹ "Lucent Technologies Signs Second Phase CDMA Wireless Contract with China Unicom," Lucent Press Release 21 October 2002, available from <http://www.lucent.com/press/1002/021021.nsa.html>.

over \$2 billion. However, in reality, there were probably some contracts that were not made public, and so the total value of the contracts could be double the above value since some of the contracts did not disclose or estimate a value of the contract. Additionally, these contracts only represent only a fraction of the contracts awarded worldwide. Alcatel, Ericsson, Hauwei, NEC, Nokia, Nortel, Samsung, Siemens, and many other foreign companies have all received substantial contracts from China Mobile, China Unicom, China Netcom, and China Telecom.

The U.S. company that has probably benefited the most from the new WTO regulations allowing joint ventures is Qualcomm Incorporated, based in San Diego, California. The company pioneered the commercialization of the CDMA technology used in wireless communications equipment.¹⁵² The company owns many patents to CDMA technology. It not only makes money on the sale of its wireless phone chips and CDMA equipment, but it also gets royalty revenue any time its technology is used.¹⁵³

Qualcomm and China Unicom formed a 50:50 joint venture that would foster growth of Qualcomm's Binary Runtime Environment for Wireless (BREW) platform in China. The companies said that the joint venture would "capitalize on the technical advantages of BREW technology, the competitive advantages of CDMA in wireless data and the versatile operating capabilities of China Unicom."¹⁵⁴ There was no public dollar amount placed on the value of the

¹⁵² Davies, Jennifer, "San Diego-Based Qualcomm Gets By Despite Industry Woes," *The San Diego Union-Tribune* 10 November 2002.

¹⁵³ Davies, Jennifer, "Qualcomm Technology Key Part of China Deals," *The San Diego Union-Tribune* 22 October 2002.

¹⁵⁴ "Qualcomm brews Chinese joint venture," *Electronic Engineering Times*, 3 March 2003, issue 1259, pg 22.

joint venture, but it could earn millions of dollars for Qualcomm in the future if the technology proves successful.

The first joint venture between an American company and a Chinese company after China officially joined the WTO came on May 28, 2002, with a joint venture between Openwave Systems and China Unicom.¹⁵⁵ The modest joint venture between the companies was to develop mobile communications technology software and was estimated to be worth \$10 million. American 3 Com and Chinese Huawei Technologies also signed a 49:51 joint venture on March 20, 2003 worth an estimated \$19.3 million.¹⁵⁶ 3 Com was to help manufacture wireless data communications equipment in Hong Kong and Hangzhou. The most recent joint venture was a 49:51 wireless collaboration project between American LCC International and Chinese Bright Oceans for an undisclosed amount for a wireless collaboration project on July 24, 2004.¹⁵⁷

However, one of the most lucrative joint ventures is between Alameda, California-based UTStarcom and Chinese Datang Mobile.¹⁵⁸ Datang Mobile was incorporated as a limited liability company under the laws of China in February 2002 and aspires to become a leading supplier of TD-SCDMA technology and network solutions in China and throughout the world. There was not any estimated value given for the joint venture, but both companies are to collaborate to provide a TD-SCDMA solution using an IP-

¹⁵⁵ "China: Joint Ventures, Contract, MoUs & Other Agreements," *The Economist Intelligence Unit*, 10 June 2002.

¹⁵⁶ "China: Joint Ventures, Contract, MoUs & Other Agreements," *The Economist Intelligence Unit*, 31 March 2003.

¹⁵⁷ "China: Joint Ventures, Contract, MoUs & Other Agreements," *The Economist Intelligence Unit*, 4 Aug 2003.

¹⁵⁸ "UTStarcom Mines China Market," *Communications Today* 28 March 2002.

based core network. If China decides to use the TD-SCDMA technology as the future of its 3G technology, then UTStarcom would benefit greatly from this joint venture.

UTStarcom demonstrates that a company does not have to deal in CDMA or GSM technologies to capitalize on the wireless growth in China. It has been awarded over \$432.8 million in supply and equipment contracts between Jan 2002 to July 2003.¹⁵⁹ The contacts have been with fixed-line operators China Telecom and China Netcom to deploy its Personal Access System (PAS) Internet protocol (IP) based wireless technology. China Telecom and China Netcom are using the PAS to extend, in a manner similar to wireless local loops, voice and data services from their fix-line infrastructures to mobile and desktop devices. This technology has been especially successful in rural areas in China where China Mobile and China Unicom's wireless service does not have coverage. The service has allowed China Netcom and China Unicom to cut into China Mobile and China Unicom new subscribers by offering a wireless service at drastically lower prices than the traditional wireless telephone companies.

Motorola is another American company that has done well in China's wireless telecommunications industry. Although it has not establish any joint ventures during the year and half following China's entry into the WTO, it had already established several joint ventures with Chinese companies to produce cell phones, CDMA equipment, semiconductors, and other wireless high-tech products. Currently, Motorola's facilities in China include a wholly-owned company, a holding company, nine joint ventures and

¹⁵⁹ See Table 1.

24 subsidiaries.¹⁶⁰ Additionally, it currently employs more than 12,000 employees in China. Motorola's nine joint ventures in China include: Guangzhou Jinteng Cellular Systems Company, Shanghai Motorola Telecom Products Company, Beijing Huamin Smartcard System Manufacturing Company, Hangzhou Eastcom Cellular Phone Company, Leshan-Phoenix Semiconductor Company, Huamin Smartcard Systems Company, Hangzhou Eastcom Cellular Equipment Company, Shanghai Zhongmei Automotive Electronics Company, Motorola Qiangxin (Tianjin) IC Design Company.¹⁶¹

Motorola entered the Chinese market in 1987 when it opened a representative office in Beijing. In 1992, Motorola (China) Electronics Ltd, was established in Tianjin, where it primarily manufactures mobile phones and wireless communications equipment for the Chinese market and other markets in the world. Motorola is China's largest foreign investor, with more than \$3.45 billion in cumulative investment in China. Additionally, Motorola has stated that it is going to invest an additional \$6.6 billion in China over the next five years and double the annual production of its Chinese subsidiary and joint ventures.¹⁶² Recently, Motorola announced that it is going to back the Chinese TD-SCDMA mobile standard and invest heavily in the technology to give it a foothold in the market if the Chinese government decides to use it for its 3G standard.¹⁶³ Over the period of Jan 2002 to July 2003,

¹⁶⁰ Motorola Homepage, <http://www.motorola.com.cn>; Internet; accessed 15 August 03.

¹⁶¹ Ibid.

¹⁶² Ibid.

¹⁶³ "Motorola to invest in Chinese TD-SCDMA 3G Standard," available from: http://www.3gnewsroom.com/3g_news/jan_03/news_2926.shtml; Internet; accessed 17 August 2003.

Motorola received over \$616.8 million in equipment contracts to expand and upgrade China's GSM wireless networks.¹⁶⁴

Lucent Technologies is another giant in China's wireless telecommunication industry. Currently, it has seven regional offices, six joint ventures, three wholly-owned companies, two Bell Labs branches (Beijing and Shanghai), and four R&D centers.¹⁶⁵ Additionally, it currently employs more than 4,000 employees in China. Lucent's six joint ventures in China include: Guoxin Lucent Technologies Network Technologies Company (Shanghai), Lucent Technologies Qingdao Telecommunications System Company, Lucent Technologies Qingdao Telecommunications Systems Services Company, Lucent Technologies Optical Networks (Shanghai), Lucent Technologies Information and Communications of Shanghai Company, Lucent Technologies Qingdao Telecom Enterprise.¹⁶⁶

Lucent made a significant entry in China in 1993 when it signed a memorandum of understanding with the State Development Planning Commission for long-term, multi-field cooperation in China. Lucent's strongest areas in China include long-haul transmission and wireless infrastructure markets. Over the period of Jan 2002 and July 2003, Lucent received over \$400 million in equipment contracts to provide CDMA equipment upgrades in China.¹⁶⁷

There are several other American companies that would like to enter the Chinese wireless telecommunications market. Software vendors like IBM, Microsoft, and Hewlett

¹⁶⁴ See Table 1.

¹⁶⁵ Lucent Homepage, <http://www.lucent.com>; Internet; accessed 16 August 03.

¹⁶⁶ Email from Eric Xu from Lucent Technologies dated 8 September 2003.

¹⁶⁷ See Table 1.

Packard have all been trying to gain entry into China's wireless industry in some form.¹⁶⁸ Microsoft has stated that it is willing to invest for years without reward to win over China. Currently, Microsoft is competing with Britain's Symbian to become the standard software used in new wireless phones. China's second largest mobile handset maker, TCL Mobile, started using Microsoft's mobile software standard in its mobile phones in May 2002.¹⁶⁹ TCL is one of China's fastest growing handset makers and has been steadily winning market share over other mobile handset makers the past several years.

Compaq, Intel, AsiaInfo, Calypso Wireless, Tectronix, and LCC International have all signed significant wireless supply and equipment contracts with Chinese companies the past several years.¹⁷⁰ Contracts were made for providing software and services for wireless IP network expansion. Other contracts were for developing wireless local area network hotspots in urban public areas. Additionally, collaborating in various wireless projects and developing TD-SCDMA technology proved to be popular types of contracts. Whatever the contract, joint venture, or agreement, there seems to be no end in sight to the billions of dollars Chinese companies are willing to give foreign companies to help upgrade China's wireless telecommunications.

¹⁶⁸ Omatseye, Sam, "China: Land of Opportunity," *RCR Wireless News* 7 January 2002: pg 1.

¹⁶⁹ Greenberg, Jonah, "Microsoft tackles China's mobile-phone market," *Toronto Star* 18 May 2002, Saturday Ontario Edition: pg D4.

¹⁷⁰ Carlson Carl, "China Gets WTO Head Start - Country Turns to Western Vendors to Satisfy Growing Need for Wireless and Broadband Services," *eWeek*, 1 January 2001, vol. 18, no. 1, pg 23.

E. CONCLUSION

Qualcomm, UTStarcom, Motorola, and Lucent Technologies are the American wireless telecom companies that have benefited the most from China joining the WTO. This analysis is based on supply and equipment contracts, along with joint ventures, that the companies made with Chinese wireless companies. Additionally, Openwave Systems, 3 Com, and LCC International have all entered into joint ventures with Chinese wireless firms that will prove to be beneficial in the future.

However, it is surprising that more American wireless telecom companies have not entered into more joint ventures with Chinese firms. Less than two years after China's admission to the WTO, the widely anticipated "foreign invasion" has not happened due partly to the severe downturn in the telecom industry and concerns over Chinese regulations and returns for foreign investment. There were only five joint ventures between American wireless companies and Chinese firms from January 2002 to July 2003. Additionally, even though Motorola and Lucent already had several joint ventures in place before China joined the WTO, both companies have not established any new joint ventures since.

Many American wireless companies are waiting to see which direction China is heading for its future 3G wireless standard. An announcement is expected by the end of this year or early next year which 3G wireless standard China is going to use. However, most likely, the Chinese government will issue licenses for three different 3G standards. China Unicom with most likely adopt CDMA2000 as its future 3G standard due to backward compatibility issues. Additionally, China Mobile will probably adopt W-CDMA for

the same reasons. Nevertheless, the Chinese government has invested millions of dollars into its own domestic 3G standard, TD-SCDMA; therefore, some Chinese wireless company will likely receive a license to operate it.

China has the world's largest cellular networks market in the world and continues to increase its lead. Additionally, only 16.2 percent of the population owns a wireless phone, so there is still plenty of room for growth.¹⁷¹ During 2002, an average of five million new wireless subscribers were added monthly.¹⁷² There is no wonder why so many foreign wireless companies want to try and enter this promising market.

¹⁷¹ The MII Homepage, <http://www.mii.gov.cn>; Internet; accessed 15 August 03.

¹⁷² Cai, Michael, "The Chinese Telecom Market Still Promises Tremendous Opportunities," Parks Associates, April 2003, pg 2.

<u>Date</u>	<u>Type</u>	<u>U.S. Company</u>	<u>Chinese Company</u>	<u>Amount</u>	<u>Description</u>
4-Mar-02	Equipment contract	AsiaInfo	China Mobile	\$3.9m	Provide Software and Services for wireless IP network expansion
6-Mar-02	Equipment contract	Motorola	China Unicom	\$260m	Expand and upgrade GSM wireless networks in five provinces.
28-Mar-02	Supply Contract	UTStarcom	China Telecom	\$115m	Deploy Personal Access System (PAS) IP based wireless technology around China
17-May-02	Equipment contract	AsiaInfo	China Mobile	\$1.5m	Provide Software and Services for wireless IP network expansion
28-May-02	Joint Venture	Openwave Systems	China Unicom	\$10m	JV to develop mobile comm technology software
19-Jun-02	Equipment contract	Motorola	China Mobile	\$100.8m	Expand and upgrade GSM wireless networks in Hubei, Yunnan, Beijing and Tianjin
11-Jul-02	Supply Contract	P-Com	Shanghai Datang Mobile	\$100m	Provide spread spectrum, point-to-point & point-to-multipoint products
24-Jul-02	Equipment contract	UTStarcom	China Netcom	\$18.7m	Provide IP-based wireless access system
2-Aug-02	Equipment contract	Motorola	China Mobile	\$108m	Expand and upgrade GSM wireless networks in Hubei, Yunnan, Beijing and Tianjin
5-Aug-02	Equipment contract	AsiaInfo	China Unicom	#	Expand and upgrade wireless data networks in Ningxia and Qinghai provinces, & Hainan and Beijing
24-Sep-02	Supply Contract	UTStarcom	China Telecom	\$22m	Provide IP-based wireless access system in Southern China
26-Sep-02	Letter of Intent	INTAC International	China Unicom	#	Become authorized reseller of wireless mobile services in Chengdu branch of China Unicom
4-Oct-02	Supply Contract	AsiaInfo	China Telecom	#	Build metropolitan area wireless network in Beijing
21-Oct-02	Equipment contract	Lucent Technologies	China Unicom	\$400m	Provide CDMA 1x equipment upgrade
15-Nov-02	Equipment contract	Motorola	China Mobile	\$68m	Upgrade GSM and GPRS networks
19-Nov-02	Supply Contract	Motorola	TCL Mobile Comms	#	Provide platforms for developing next-generation handsets in Qingdao
21-Nov-02	Supply Contract	UTStarcom	China Netcom	\$61m	Provide IP-based wireless access system in Northern China
26-Nov-02	Supply Contract	UTStarcom	China Telecom	\$31.7m	Provide IP-based wireless access system in Jiangsu
29-Nov-02	Joint Venture	UTStarcom	Datang Mobile	#	Provide a TD-SCDMA solution using IP-based core network
8-Feb-03	Supply Contract	Calypso Wireless	China Telecom	\$500m	Delivery of broadband video mobiles phones over three years
13-Feb-03	Supply Contract	UTStarcom	China Telecom	\$26.50	Supply PAS gear for local wireless service

<u>Date</u>	<u>Type</u>	<u>U.S. Company</u>	<u>Chinese Company</u>	<u>Amount</u>	<u>Description</u>
3-Mar-03	Joint Venture (50:50)	Qualcomm	China Unicom	#	JV to develop CDMA services in China using Qualcomm's BREW tech
5-Mar-03	Equipment contract	Lucent Technologies	China Telecom	#	Build city wireless system networks in Jiangsu province
10-Mar-03	Equipment Contract	Lucent Technologies	China Telecom	#	Build city wireless system networks in Fujian province
10-Mar-03	Supply Contract	UTStarcom	China Netcom	\$50m	Supply PAS gear for local wireless service in Northern China
10-Mar-03	Agreement Signed	Intel	China Netcom/Mobile	#	Develop wireless local area network hotspots in urban public areas
14-Mar-03	Supply Contract	UTStarcom	China Telecom	\$30m	Supply PAS gear for local wireless service in Guizhou
19-Mar-03	Agreement Signed	Tectronix	Datang Telecom Tech	#	Collaborate in developing TD-SCDMA technology
20-Mar-03	Supply Contract	UTStarcom	China Netcom	#	Provide IP-DSLAM multimedia mobile platform in Shandong and Shanxi
20-Mar-03	Joint Venture (49:51)	3Com	Huawei Technologies	\$19.3m	JV to manufacture data comm equipment in Hong Kong and Hangzhou
22-May-03	Supply Contract	UTStarcom	China Telecom	\$20m	Supply PAS gear in Guangdong
23-May-03	Supply Contract	UTStarcom	China Netcom	\$57.9m	Provide PAS equipment in Beijing
28-May-03	Supply Contract	Lucent Technologies	China Unicom	#	Provide support software long-haul wireless switch network
15-Jun-03	Equipment contract	Lucent Technologies	Hunan Unicom	#	Provincial back-bone transport network for its mobile network
15-Jun-03	Agreement Signed	Lucent Technologies	Unicom Horizon Mobile	#	Technical Services
15-Jul-03	Equipment contract	Motorola	China Unicom	\$80m	Phase 3 expansion of CDMA2000 network
16-Jul-03	Supply Contract	SnapTrack/Motorola	China Unicom	#	Supply Wireless Gear
23-Jul-03	Supply Contract	UTStarcom	China Telecom	#	Supply PAS gear for local wireless service in China
24-Jul-03	Joint Venture (49:51)	LCC International	Bright Oceans	#	Wireless Collaboration Project
Total	39 Contracts, JV, or Agreements Signed			2,084.3 m	
				# = Undisclosed Value (in millions)	

Sources: The Economist Intelligence Unit Ltd, rcnews.com, and various newspaper and magazine articles

Table 1. Contracts, Joint Ventures, and Agreements signed between China and U.S. wireless companies from 1 January 02 to 30 July 03.

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V. CONCLUSION AND SECURITY IMPLICATIONS

A. SUMMARY OF PRINCIPAL CONCLUSIONS

This thesis first covered China's long entry into the WTO. It showed that the WTO is one of the most important milestones in China's integration with the world and will have profound impact on China's wireless telecom industry. The WTO guarantees globalization of the Chinese economy, the likes of which has never occurred in that country. Additionally, China hopes the WTO will create an environment of mutual interest that provides for peaceful development and that will also have positive and significant influence on the development of Sino-U.S. relations. With all the uncertainty over what the WTO will bring to China, the one thing for sure is that the WTO is going to have a large impact on China's wireless telecom industry.

China has made some major commitments regarding its telecom industry and wireless telecom industry. These commitments marked China's first agreement to open its telecom sector to direct investment. Foreign companies were allowed to hold 25 percent foreign equity share when China first entered the WTO in December 2001. They were allowed 35 percent after one year and will be allowed 49 percent after three years. This is two years faster than was provided for in the bilateral agreement between the U.S. and China because the European Union (EU) able to negotiate a two-year acceleration of this transition period.

Additionally, Chinese telecom policy toward foreign involvement has changed considerably in recent years to

reflect its WTO commitments. Clearly, China's telecom policy has come a long way, from not allowing foreign investment to allowing up to 50 percent foreign investment in some areas. Chinese telecom policy mirrors developments in the wider society, and telecom policy outcomes reflect the huge liberalizing changes coming from within the society.

Increased demand for telecom services and the need to modernize its outdated infrastructure drove China to rethink the policy of allowing foreign investors own part of the telecom network. However, in the end, the increased financing, investment and the new technology China would gain from the new policy outweighed the disadvantages. However, there are still many Chinese who remain skeptical about the change for national security reasons, especially because of the history China has had with mistreatment and subjugation by foreign powers.

B. SECURITY IMPLICATIONS

There are many people in China who have concerns that China's national security might be threatened by allowing foreign direct investment in their network. That is, foreign ownership of telecommunications facilities might allow state secrets to leak out of China. Additionally, the telecommunications infrastructure might escape national control during a national emergency, such as a war.

However, concerns that national security will be threatened by foreign direct investment are greatly exaggerated. First, no foreign company will be able to own its own independent wireless telecommunication network in China. It simply is not cost effective for a foreign company to develop its own infrastructure to operate its own telecommunication network in China. Therefore, the

best a foreign company can do is establish joint ventures with Chinese companies. Yet, by Chinese regulations, foreign companies can only control a maximum of 50 percent in those joint ventures, and can only be a minority party in those operations.

Additionally, experience in the United States shows ownership of telecommunications infrastructure is not a foolproof method of safeguarding state secrets. In Section 310(b) of the Telecommunications Act of 1934, foreign ownership and operation of the American radio systems were strictly controlled. However, it did not stop Japanese diplomats from transmitting encoded messages about the imminent attack on Pearl Harbor in 1941 from the United States to Tokyo over facilities operated by American-owned telegraph carriers. The most effective way to protect national secrets is to properly protect the information resource rather than the transmission instrument. Therefore, encrypting the data is a much more effective way to protect national security.

C. RESEARCH ANSWERS

The primary research question of this thesis is whether the U.S. wireless telecom industry has benefited from China entering the WTO. Even though it has been less than two years since China joined the WTO, it is safe to say that both China and the United States have benefited. China is updating and expanding its wireless telecommunication networks and is very much benefiting from the advanced technology it is receiving from foreign companies. The United States is receiving supply and equipment contracts worth billions of dollars. Additionally, the United States has received several lucrative joint ventures with Chinese companies since

China's accession into the WTO and many more will be made once China decides on its future 3G standard. This translates directly into jobs for the American economy. The market in China now accounts for over a quarter of total revenue for some American companies, and some American companies would not be able to survive without it.

The first secondary question about the security implications of China allowing foreign companies to own part of its network has also been answered. The most effective way to protect national secrets is to properly protect the information resource rather than the transmission instrument. Therefore, if China has national secrets it does not want foreign countries to hear, then encrypting the data is the most effective way to protect national security. Experience in the United States shows ownership of telecommunications infrastructure is not a foolproof method of safeguarding state secrets and concerns that national security will be threatened by foreign direct investment are greatly exaggerated.

The second secondary question about whether accession into the WTO will change China telecom policy toward foreign involvement has also been answered. Chinese telecom policy toward foreign involvement has changed considerably in recent years to reflect its WTO commitments. China went from not allowing foreign companies to allowing up to 50 percent foreign investment in some areas. China will also further strengthen those regulations and policies with actual laws in the near future. China's new telecommunication laws are due out in the very near future.

Finally, the last secondary question about which U.S. wireless telecom companies will be affected most by China's

accession into the WTO has been answered. Qualcomm, UTStarcom, Motorola, and Lucent Technologies are the American wireless telecom companies that have benefited the most from China joining the WTO. This analysis is based on supply and equipment contracts, along with joint ventures, that the companies made with Chinese wireless companies. Additionally, Openwave Systems, 3 Com, and LCC International have all entered into joint ventures with Chinese wireless firms that will prove to be beneficial in the future.

However, it is surprising more American wireless telecom companies have not entered into more joint ventures with Chinese firms. Less than two years after China's admission to the WTO, the widely anticipated "foreign invasion" did not happen due partly to the severe downturn in the telecom industry and concerns over Chinese regulations and returns for foreign investment. There have been only five joint ventures between American wireless companies and Chinese firms from January 2002 to July 2003. Additionally, even though Motorola and Lucent already had several joint ventures in place before China joined the WTO, both companies have not established any new joint ventures since.

Many American wireless companies are waiting to see which direction China is heading for its future 3G wireless standard. An announcement is expected by the end of this year or early next year which 3G wireless standard China is going to use. However, most likely, the Chinese government will issue licenses for three different 3G standards. China Unicom with most likely adopt CDMA2000 as its future 3G standard due to backward compatibility issues. Additionally, China Mobile will probably adopt W-CDMA for

the same reasons. Nevertheless, the Chinese government has invested millions of dollars into its domestic 3G standard, TD-SCDMA; therefore, some Chinese wireless company will likely receive a license to operate it.

China has the largest cellular networks market in the world and continues to increase its lead. Currently, there are over 230 million mobile phone subscribers in China but only a 16.2 percent penetration rate. Analysts therefore predict that China will eventually be twice the size of the industries in Europe and the United States combined. There is no doubt plenty of room for American wireless telecommunication companies to get a piece of the lucrative Chinese wireless telecommunication pie.

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