

**WTO and E-commerce Diffusion
in Developing Countries:
The Case of China's Coastal Urban Area**

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DECLARATION

I certify that this thesis is my own original work. It does not contain any material previously published or written by another person where due reference is not made in the text.

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ABSTRACT

The increasing use of Internet and the potential of e-commerce give rise to important policy issues relating to both national economic policy and multilateral rules of international trade. Motivated by the argument that the liberalization commitments made at the World Trade Organization (WTO) may have a major impact on the e-commerce development, this research aims to investigate the relationship between WTO commitments and e-commerce diffusion in developing countries by using China's coastal urban area as a case study.

Taking critical realism as the underlying philosophy, the research develops two process models to answer the research questions. The model at the lower level focuses on the single process of how the WTO commitments can affect an individual infrastructural sector related to e-commerce. It was developed by analyzing the four most important e-commerce input sectors: telecommunications, banking, logistics and express delivery, and information technology (IT). The model at the higher level is a network combining the processes at the lower level, examining the overall effects of WTO commitments on e-commerce diffusion. Nine propositions were made from the higher-level model.

Conclusions are drawn from outcomes in verifying these propositions. The WTO commitments are found to have indirect effects on liberalization in telecommunications, banking, and logistics and express delivery services. Improvements in these sectors have made information infrastructure and commercial services less important barriers to e-commerce than other issues. In addition, the WTO commitments have directly boosted Chinese enterprises' interest in e-commerce adoption and positively affected the taxation policy on e-commerce. All these have positively influenced e-commerce diffusion in China, while the effects of the WTO commitments on IT product imports, computer and related services, intellectual property rights (IPRs) protection, and educational services have not been evident.

This research is the first study to use a specific case to examine the WTO rules in the context of e-commerce diffusion. It has implications for both research and practice. First, by examining the interactions between the external pressure from multilateral agreements and internal forces of domestic institutions, the research investigates the actual process of how the impacts of the WTO rules can be materialized. Second, the thesis confirms the argument that while the socio-economic challenges to e-commerce are difficult to surmount, the path to reducing regulatory barriers is clearer and the benefits quicker to observe. Government action is critical to removing these impediments to electronic commerce.

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LIST OF ABBREVIATIONS

3G:	third generation
3PL:	third party logistics
ABC:	The Agricultural Bank of China
ADBC:	The Agricultural Development Bank of China
ADFA:	The Australian Defense Force Academy
ADSL:	asymmetric digital subscriber line
AN:	access network
ANU:	The Australian National University
APA-FT:	Australian Public Affairs – Full Text
AQSIQ:	The General Administration for Quality Supervision Inspection and Quarantine (of China)
ARPU:	average revenue per user
ATM:	automatic teller machine
B2B:	business-to-business
B2C:	business-to-consumer
B/L:	bill of lading
BOC:	The Bank of China
BOCOM:	The Bank of Communications (of China)
CA:	certificate authorization
CAAC:	The Civil Aviation Administration of China
CAE:	China Air Express
CATV:	cable television
CBRC:	The China Banking Regulatory Commission
CCB:	China Construction Bank
CCF:	Chinese-Chinese-foreign
CD:	compact disc
CDB:	China Development Bank
CDMA:	code division multiple access
CMB:	China Merchants Bank
CNNIC:	The China Internet Network Information Center
COSCO:	China Ocean Shipping Corporation
CRE:	China Rail Express
CRM:	customer relationship management
DSB:	The Dispute Settlement Body
DSU:	The Understanding on the Dispute Settlement
EJV:	equity joint venture
EMS:	express mail service
ERP:	enterprise resources planning

EU:	The European Union
FDI:	foreign direct investments
FIE:	foreign investment enterprise
FITE:	foreign-invested telecommunications enterprise
GAO:	(The United States) General Accounting Office
GATS:	The General Agreement on Trade in Services
GATT:	The General Agreement on Tariffs and Trade
GDB:	Guangdong Development Bank
GDP:	gross domestic product
GPRS:	general packet radio service
GSM:	global system for mobile communications
HP:	Hewlett-Packard
HREC:	The Human Research Ethics Committee
HS Code:	Harmonized System Code
IBSS:	International Bibliography of Social Sciences
IC:	integrated circuit
ICBC:	The Industrial and Commercial Bank of China
ICT:	information and telecommunications technology
IDC:	International Data Corporation
IDN:	Internet domain name
ILO:	The International Labor Organization
IN:	interconnecting network
IP:	Internet protocol
IPR:	intellectual property right
IS:	information system
ISDN:	integrated services digital network
ISP:	Internet service provider
IT:	information technology
ITA:	The Information Technology Agreement
ITU:	The International Telecommunication Union
JV:	joint venture
LAN:	local area network
L/C:	letter of credit
MEI:	The Ministry of Electronics Industry (of China)
MEP:	The Ministry of Electrical Power (of China)
MFN:	most favored nation
MII:	The Ministry of Information Industry (of China)
MOC:	The Ministry of Communications (of China)
MOFCOM:	The Ministry of Commerce (of China)
MOFTEC:	The Ministry of Foreign Trade and Economic Cooperation (of China)
MOR:	The Ministry of Railways (of China)
MPT:	The Ministry of Post and Telecommunications (of China)
NCD:	(The United States) National Council on Disability

NPL:	non-performing loan
NSP:	network service provider
OCS:	Overseas Courier Service (of Japan)
OECD:	The Organization for Economic Cooperation and Development
PBC:	The People's Bank of China
PC:	personal computer
PHS:	personal handy phone system
POS:	points of sale
PTO:	public telecommunications office
PTTNS:	public telecommunications transport networks and services
R&D:	research and development
RMB:	Renminbi (Chinese currency, or yuan)
SAFE:	The State Administration of Foreign Exchange (of China)
SARS:	The Severe Acute Respiratory Syndrome
SCM:	supply chain management
SDB:	Shenzhen Development Bank
SEZ:	special economic zone
SIC:	(China) State Information Centre
Sinotrans:	China National Foreign Trade Transportation Corporation
SME:	small- and medium-sized enterprise
SOE:	state-owned enterprise
TPRM:	The Trade Policy Review Mechanism
TRIPS:	The Agreement on Trade-Related Intellectual Property Rights
UNCTAD:	The United Nations Conference on Trade and Development
USAID:	The United States Agency for International Development
USDOC:	The United States Department of Commerce
USITC:	The United States International Trade Commission
USTR:	The United States Trade Representative
VAT:	value-added tax
VIP:	very important person
VoIP:	Voice over Internet Protocol
VSAT:	very small aperture terminal
WAP:	wireless application protocol
WIPO:	The World Intellectual Property Organization
WOFE:	wholly-owned foreign enterprise
WTO:	The World Trade Organization

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Chapter 1 Introduction

Diffusion is a kind of social change, defined as the process by which alteration occurs in the structure and function of a social system. When new ideas are invented, diffused, and are adopted or rejected, leading to certain consequences, social change occurs.

Rogers, 1985, p.6

I. Motivation and research questions

“Electronic commerce” is a shorthand term that encompasses a complex of technologies, infrastructures, processes, and products. It brings together whole industries and narrow applications, producers and users, information exchange and economic activity into a global marketplace called the Internet (Mann and Knight, 2000).

The increasing use of Internet and the potential of e-commerce (the short form for “electronic commerce”) give rise to important policy issues relating to both national economic policy and multilateral rules of international trade. At the national level, countries must decide which policies will best improve the provision of Internet services and facilitate commercial transactions through this medium. The developing countries interested in promoting this medium may have to speed up their efforts to build the telecommunications industry and to improve financial and other services necessary for electronic transactions. While these infrastructural elements are taken for granted in developed countries, they do not exist in most emerging economies (Haley, 2002; Hempel and Kwong, 2001). They may also find it necessary to relax the rules governing foreign direct investment (Panagariya, 2000). At the multilateral level, as an important international organization aiming at trade and investment liberalization, the World Trade Organization (WTO) is argued to be an appropriate

forum for an e-commerce initiative, as existing treaties and actions of the WTO have constituted an important framework for harvesting the benefits of the e-potential (Hauser and Wunsch-Vincent, 2001).

Focusing on the beneficial effects of foreign participation in the domestic service sectors relating to e-commerce realization, one argument is that the liberalization commitments made at the WTO may have a major impact on the e-commerce development in developing countries. Such remarks were frequently heard when China became an official member of the WTO in 2001. The most representative can be found in *E-commerce and Development Report 2001* published by the United Nations Conference on Trade and Development (UNCTAD).

China's commitments in the WTO will spur e-commerce

The initial commitments which China made to progressively liberalize its telecommunication services upon accession to the WTO may create a competitive environment that will substantially reduce access cost and spur the growth of electronic commerce ... The committed liberalization of financial services will also have a major impact on electronic commerce.

UNCTAD, 2001, p.xi

Motivated by this argument, this study aims to investigate the relationship between WTO commitments and e-commerce diffusion in developing countries by using China's coastal urban area as a case study. The general research questions are: what are the essential conditions for e-commerce diffusion in China's coastal urban area? How can the WTO commitments influence the liberalization of e-commerce-related sectors and thus help the diffusion of e-commerce in this area?

II. Definition of "e-commerce"

E-commerce has been defined in various ways, but it generally can be classified

into two main streams. In its widest context, e-commerce is defined as doing business electronically through the exploitation of information technology to improve commerce. This broad interpretation covers all kinds of online business dealings, including Internet, electronic data interchange, telephone (particularly WAP phone), facsimile and electronic mail (Dunt and Harper, 2002; Mitchell, 2001).

However, a more narrow definition is also possible. In a strict sense, e-commerce can be limited to all business dealings or transactions processed via the World Wide Web, excluding other electronic devices such as telephone, WAP (wireless application protocol) phone and facsimile. For example, the Organization for Economic Cooperation and Development (OECD) defines e-commerce as:

Business occurring over networks which use non-proprietary protocols that are established through an open standard setting process such as the Internet ... the term 'business' broadly means all activity that generates value both within a firm (internally) and with suppliers and customers (externally). In this sense it would include internal networks (e.g., intranets) as well as networks that extend to a limited number of participants (e.g., extranets).

OECD, 1999b, p.28

In order to focus the discussion, this thesis concentrates on the recent conceptualization, that is, the buying and selling of goods and services on the Internet. Two categories of e-commerce are covered by this definition: "indirect e-commerce", corresponds to the creation of an electronic marketplace on the network, within which demand and supply are matched, even though the goods and services traded are ultimately delivered physically to a customer; and purely electronic "direct e-commerce", where the goods or services traded are themselves electronic and delivered over a network (Bar, 2001). This scope allows us to have an in-depth look at the e-commerce infrastructure framework.

E-commerce is carried on by and between three types of entities: enterprises, governments and consumers or individuals (Lefebvre and Lefebvre, 2000). One way to classify e-commerce is to put it into a 3×3 matrix appearing in Table 1.1, depicting

the interaction between the economic agents of “business”, “consumer”, and “government” (Murillo, 2001). Among these nine forms of e-commerce, probably the most sophisticated and the one needs the most developed institutional, commercial, technological, and transportation infrastructure, is that in which the interacting direction goes from business to business, or B2B, and from business to consumer, or B2C (Murillo, 2001). As the infrastructural conditions for e-commerce is the interest of the research, this study will focus on these two forms of e-commerce.

Table 1.1 Classification of e-commerce

	Business	Consumer	Government
Business	B2B Supply chain, Wholesalers	B2C Retailers (Goods or services)	B2G Contract bidding, Privatization
Consumer	C2B Public bidding marketplaces, Auctioneers	C2C Public flea markets	C2G Public government auctions
Government	G2B Tax and fees collection	G2C Tax and fees collection	G2G Budget allocation

Source: Murillo, 2001, p.371

III. WTO and its role in e-commerce

The World Trade Organization (WTO) came into being in 1995. One of the youngest of the international organizations, the WTO is the successor to the General Agreement on Tariffs and Trade (GATT) established in the wake of the Second World War. While the WTO is still young, the multilateral trading system that was originally set up under the GATT is well over 50 years old.

The system was developed through a series of trade negotiations, or rounds, held

under the GATT. The first several rounds dealt mainly with tariff reductions but later negotiations included other areas such as anti-dumping and non-tariff measures. The last round – the 1986-94 Uruguay Round – led to the WTO's creation.

The WTO's rules – the agreements – are the result of negotiations between the members. The current set were the outcome of the 1986-94 Uruguay Round negotiations which included a major revision of the original GATT. The GATT is now the WTO's principal rule-book for trade in goods. Some other crucial agreements include: the General Agreement on Trade in Services (GATS), the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), the Understanding on Dispute Settlement (DSU), and the Trade Policy Review Mechanism (TPRM). In addition, there are a number of ministerial decisions and declarations that supplement the agreements reached. Through these agreements, WTO members operate a non-discriminatory trading system that spells out their rights and their obligations. Each country receives guarantees that its exports will be treated fairly and consistently in other countries' markets. Each promises to do the same for imports into its own market. The system also gives developing countries some flexibility in implementing their commitments. The WTO's procedure for resolving trade quarrels under the Dispute Settlement Understanding is vital for enforcing the WTO rules. In case a member government is found by the Dispute Settlement Body (DSB) violating an agreement or a commitment it made in the WTO, it can face the most severe penalty as trade sanctions.

The WTO now has nearly 150 members, accounting for over 97% of world trade. Around 30 others are negotiating members (WTO, 2005). After years of hard negotiations, China finally acceded to the World Trade Organization on 11 December 2001.

Issues directly related to e-commerce first appeared at the First WTO Ministerial Conference, held in Singapore in 1996, where the Information Technology Agreement (ITA) was adopted, providing for the liberalization of international trade with regard to a number of products essential for e-commerce by the year 2000.

A Declaration on Global Electronic Commerce was adopted at the Second WTO

Ministerial Conference, held in Geneva in 1998. Two major points were made in the Declaration. First, the WTO members agreed to continue the duty-free moratorium on electronically delivered transaction. Second, the WTO members initiated a work program that asked each of the WTO Councils (Trade in Goods, Trade in Services, Trade-Related Aspects of Intellectual Property, Trade and Development) to examine the impact of e-commerce on the WTO agreements.

In 1998, the WTO Secretariat published a special study on *Electronic Commerce and the Role of the WTO* (WTO, 1998). The study concludes that, the role of the WTO, within its areas of competence, is to foster an environment conducive to international electronic transactions. Liberalization of the telecommunications and information technology sectors will help to provide infrastructure access at low cost to a rapidly increasing number of suppliers and users, thereby spreading the potential benefits from electronic commerce to rich and poor alike. Commitments on service trade liberalization make a valuable contribution to the development of electronic commerce. The benefits from trade liberalization commitments can be further magnified by the use of the Internet for easier and more competitive public procurement and for trade and customs administration. The protection and proper management of intellectual property rights is critical for future electronic commerce. Finally, least-trade-distortive regulation and liberal market access would also help in reaping the full benefits from lower costs and more competition (WTO, 1998).

IV. Why the coastal urban area of China?

There are two reasons for selecting China as the locus for this study:

First, the bilateral negotiations and protocol for China's accession to the WTO demand a much wider opening of domestic markets than those for members who joined the organization in the GATT era (Tao, 2001; Lardy, 2002) and China's GATS commitments represent the most radical services reform program negotiated in the

WTO (Mattoo, 2003). Article XII of the Marrakesh Agreement establishing the World Trade Organization in 1995 indicates that any state or separate customs territory possessing full autonomy in external commercial relations may accede to this Agreement, on terms agreed between it and the WTO. But it gives no guidance on the “terms to be agreed”, these being left to the negotiations between the WTO members and the applicant. Since the conclusion of the Uruguay Round of trade negotiation in 1994, the scope and depth of demands for entrants into the WTO have increased substantially. The General Agreement on Trade in Services (GATS) of the Uruguay Round and the following agreements on telecommunications, information technologies, and financial services have expanded the negotiation for WTO membership to those areas that traditionally were off limits for foreign firms. In 2001 China finally became a member of the WTO after going through the toughest services negotiations undertaken in the WTO (Mattoo, 2003; 2004). “Whereas most WTO members have merely bound the policy status quo or even less, China agreed to significant liberalization to be implemented either immediately or in the near future” (Mattoo, 2003, p.305).

Second, China now has the largest Internet population among developing countries and the second largest in the world (USTR, 2003; 2004a). With the world’s largest population, a growing economy, and newly-obtained membership in the WTO, China is on the verge of becoming a major player in the global Internet economy (Trappey and Trappey, 2001; Stylianou et al., 2003). Study of e-commerce development in China has particular importance.

Due to these two reasons, China can be considered as the most critical and information-rich case for the current research topic (Patton, 1990).

It is difficult to make an investigation in such a huge country as China, as regional characteristics vary in terms of ecological conditions, natural resources, and accessibility to international markets. Economic inequality has long existed across regions and between rural and urban areas in China. The disparity has even increased since China adopted the reform and opening up policies in 1978 (Shi, 1996; Chen,

2002).

Figure 1.1 China's administrative regions and major cities



Source: Website of the Canada-China Business Association. Retrieved 22 September 2005 from World Wide Web: <http://www.ccba.bc.ca/>.

There are three macro regions in China, and each consists of a number of provinces and cities. These three regions are the eastern (coastal) region, the central (inland) region and the western (mountainous) region. A careful examination at China's WTO commitments has made this study to focus on the coastal urban area of China, as this area has always been China's first place open to foreign enterprises, and consequently the first to feel the influence of China's WTO commitments in service sectors.

Table 1.2 Geographic restrictions in China's WTO commitments in service sectors

Sector	Pre-WTO entry	Upon WTO entry	Within 1 year after WTO entry	Within 2 years after WTO entry
Telecommunications (value-added services)		<u>Shanghai</u> , <u>Guangzhou</u> , <u>Beijing</u>	Expand to Chengdu, Chongqing, <i>Dalian</i> , Fuzhou, <u>Hangzhou</u> , <i>Nanjing</i> , Ningbo, <i>Qingdao</i> , Shenyang, <u>Shenzhen</u> , Xiamen, Xi'an, Taiyuan, <i>Wuhan</i>	No geographic restrictions
Banking (local currency business)	32 foreign banks in <u>Shanghai</u> (24) and <u>Shenzhen</u> (8)	<u>Shanghai</u> , <u>Shenzhen</u> , <i>Dalian</i> , <u>Tianjin</u>	Expand to <u>Guangzhou</u> , Zhuhai, <i>Qingdao</i> , <i>Nanjing</i> , <i>Wuhan</i>	Expand to Ji'nan, Fuzhou, Chengdu, Chongqing
Transport/Distribution		No geographic restrictions		

Source: Constructed by the author on the basis of Baker & McKenzie, 2002. Places underlined are the cities where interview informants were selected.

In China's WTO market access commitments for the service sectors (see Table 1.2), for example, among the sectors closely related to e-commerce, in telecommunications and Internet sector, minority-owned joint ventures are allowed upon China's accession in and between Shanghai, Guangzhou and Beijing (all are large cities in the coastal region); then expand to 14 other cities (most are located in the coastal region) one year after accession; and no geographic restriction within two-to-six years. The same for banking services: the local currency business is restricted to Shanghai, Shenzhen, Dalian and Tianjin (all are coastal cities) upon accession; expand to five other cities (four are in coastal region) within one year; four more cities (two in coastal region) within two years; and no geographic restriction within five years after accession. As only a little more than three years have passed since China became an official WTO member in December 2001, most of China's WTO commitments in service sectors have only been fulfilled in major large cities, and the possible changes brought by the WTO accession is a phenomenon observed only in some early open cities (most in coastal region).

In addition, most Chinese Internet users live in big cities, such as Beijing, Guangzhou and Shanghai, and other places in the eastern coastal region (UNCTAD, 2001; Zhao, 2002). Current e-commerce activities in China are also concentrated in this area. Most existing surveys and studies on China's e-commerce also focus only on this area (Tan and Ouyang, 2004).

This is consistent with the argument of "digital divide" literature that the digital economy to date has been predominantly an urban phenomenon (Grimes, 2003). It is recognized that the rise of the IT and multimedia industry has increased the domination of metropolitan areas which can provide the firms with, not only broadband digital networks, but also a fertile and creative environment, including access to venture capital and talent (Moriset, 2003). Large "global" cities, especially, are of disproportionate importance in driving all aspects of ICT (information and telecommunications technology) investment and innovation (Graham and Marvin, 1996). This is because of the speed, complexity, dynamism, mobility of cities and urban settlements. It is also because of cities' culture of modernization, their

concentrations of capital, their relatively high disposable incomes and their high concentrations of internationally oriented firms and institutions (Graham, 2002).

Due to these reasons, considering the exploratory nature of the research, it is believed that using China's coastal urban area as the focus of this study is appropriate and does not impair theoretical importance of the study.

V. Methodology

The philosophical assumption underlying this thesis is critical realism. Critical realism has become an important perspective in modern philosophy and social science in recent years (Archer et al., 1998; Robson, 2002). The core of realist epistemology is a search for causal mechanisms rather than empirical regularities. In realist view, to ask for the cause of something is to ask what “makes it happen”, what “produces”, “generates”, “creates” or “determines” it, or more weakly, what “enables” or “leads to” it (Sayer, 1992). Realist social researchers place considerable emphasis on the context dependence of causal explanation. Pawson and Tilley (1997) sum up this position in their formula “mechanism + context = outcome” (p.xv). They maintain that “the relationship between causal mechanisms and their effects is not fixed, but contingent” (p.69); it depends on the context within which the mechanism operates.

The case study research strategy is adopted for this thesis, as very few previous studies could be found on the topic and an exploratory research design is necessary at this stage. The research addresses a contemporary phenomenon, which the researcher has no control over; and it addresses a “how” question. A major strength of case study data collection is the opportunity to use many different sources of evidence (Yin, 2003). Qualitatively sampled key informant interviews, documents, archival records are the main sources of evidence for this thesis.

Chapter 3 “Methodology” gives a more detailed discussion on various methodological issues and answers the question of how the inquiry is conducted in this thesis.

VI. Significance of the study

One reason why there is so much interest in the diffusion of innovations is because getting a new idea adopted, even when it has obvious advantages, is often very difficult. Many innovations require a lengthy period, often of some years, from the time when they become available to the time when they are widely adopted. Therefore, a common problem is how to speed up the rate of diffusion of an innovation (Rogers, 1995).

E-commerce is a segment of the economy that first developed in countries with sufficient economic and technological resources. Countries that are less developed in this respect follow at distance and at various paces (Ein-Dor et al., 2000; Petrazzini and Kibati, 1999). The reality gap is reflected in the literature on e-commerce: while the literature of early adopter countries is voluminous and diverse, the literature on developing countries is still rather scarce and anecdotal (Travica, 2002).

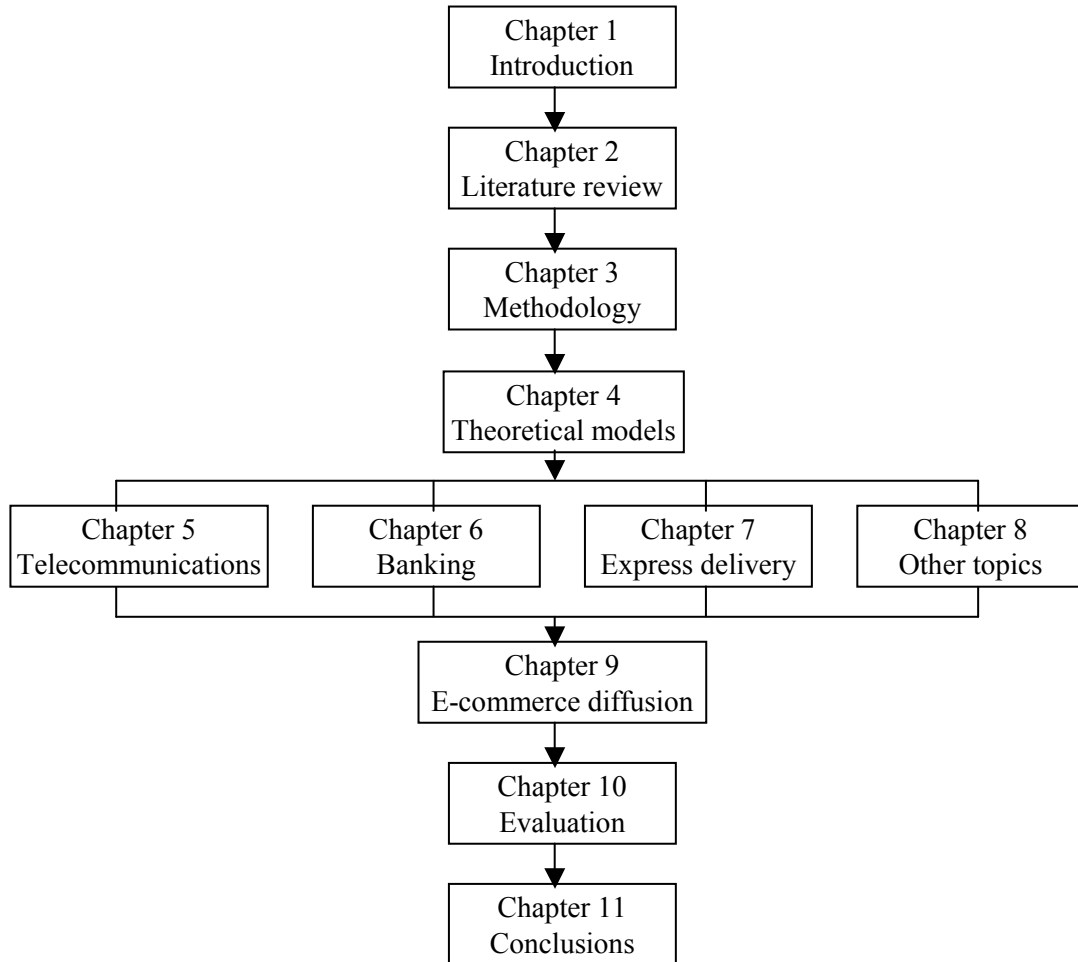
The literature on the WTO and e-commerce is particularly limited. Previous studies mainly focus on examination of existing WTO rules in the context of e-commerce. But the discussions in these studies are only at the theoretical level and their arguments have not been applied and examined in any specific case. Thus the actual processes of how the WTO influence is materialized and how the interactions between the external pressure from multilateral agreements and internal forces of domestic institutions work are far from being understood. It is expected that this study will fill this gap.

VII. Structure of the thesis

Perry (1998) suggests that a thesis using the case study research strategy can be structured like traditional theses. The data analysis of this thesis consists of five chapters from Chapter 5 to Chapter 9. Before conclusions are drawn one chapter is

devoted to evaluation of the thesis, as Lee et al. (1995) made a call “to discuss explicitly the criteria for judging qualitative, case and interpretive research in information systems” (p.367). Thus this thesis is totally composed of 11 chapters (see Figure 1.2).

Figure 1.2 Structure of the thesis



Chapter 1 “Introduction” provides a general introduction to the study, discussing topics such as motivation of the study, the research questions that guided the study, the methodology that was employed, and the significance of the study.

Chapter 2 “Literature review” first discusses two theories relevant to the research topic: Rogers’ (1983; 1995) innovation diffusion theory and Teece’s (1986) complementary assets theory. It then introduces a literature survey on e-commerce adoption/diffusion at the societal level and existing studies on e-commerce and the

WTO, based on which an initial conceptual framework was built.

Chapter 3 “Methodology” answers the question of how the inquiry is conducted in this thesis. Issues discussed include research philosophy, research approach, research strategy, time horizons, data collection methods, data analysis, research ethics and suggested evaluation criteria.

Chapter 4 “Overview on theoretical models” introduces the theoretical models and the realist view of explanation and evaluation appeared in this thesis.

Chapter 5 “Telecommunication services” investigates how the WTO commitments can influence the telecommunication services in China’s costal urban area and helps facilitate e-commerce diffusion.

Chapter 6 “Banking services” investigates how the WTO commitments can influence the banking services in China’s costal urban area and helps facilitate e-commerce diffusion.

Chapter 7 “Logistics and express delivery services” investigates how the WTO commitments can influence the logistics and express delivery services in China’s costal urban area and helps facilitate e-commerce diffusion.

Chapter 8 “Other WTO-related topics” discusses the remaining WTO-related topics: The Information Technology Agreement (ITA), computer and related services, intellectual property rights (IPRs) protection, educational services, taxation of e-commerce, and business desire.

Chapter 9 “E-commerce diffusion” summarizes the overall effects of WTO commitments on e-commerce diffusion.

Chapter 10 “Evaluation” assesses the credibility of this thesis against two evaluation criteria: (1) conventional criteria for judging the rigor of inquiries; and (2) criteria for judging validity and reliability of qualitative research within the realism paradigm.

Chapter 11 “Conclusions” summarize the findings of this research, discuss contributions, implications, and limitations of the research, and give recommendations for future research.

Chapter 2 Literature review

Determining the questions that are most significant for a topic and gaining some precision in formulating these questions requires much preparation. One way is to review the literature on the topic (Cooper, 1984).

A key feature of e-commerce research as a distinct discipline is its multidisciplinary perspective. By its nature, the scope of e-commerce research is broad and encompassing (Shaw et al., 1997; Shaw, 1999). Shaw (1999) argues that e-commerce must be viewed from the following dimensional perspectives: (1) technology, (2) marketing and “new consumer process”, (3) economics, (4) electronic linkage, (5) information value-adding, (6) market-making, (7) service infrastructure, and (8) legal, privacy, and public policy. In terms of e-commerce adoption or diffusion, a rough literature review has found that most existing studies have taken the perspective of either consumer behavior or enterprise strategy. This is consistent with what Vessey et al. (2002) have found in their empirical study on diversity of information systems (IS) research – the majority of articles were positioned at organization and individual levels.

Using the classification system adopted by Vessey et al. (2002), the level of analysis for this research can be classified as at society level, as this category “captures papers that examine IS issues at regional, national, international, or societal levels that have no organizational context” (Vessey et al., 2002, p.138). Two theories – the innovation diffusion theory (Rogers, 1983; 1995) and the complementary assets theory (Teece, 1986) – are found relevant to e-commerce adoption or diffusion at this level. Then a literature survey is undertaken to find from previous literature all the key factors for e-commerce adoption or diffusion at the societal level. Finally existing studies on WTO and e-commerce are reviewed to form an initial conceptual framework for the case study.

I. Innovation diffusion theory

IS research has already made extensive use of one particular technological innovation research tradition: research on the adoption and diffusion of innovations (Allen, 2000). Theories of innovation have been used to explain the adoption patterns of information technologies ranging from personal computers (e.g., Bretschneider and Wittmer, 1993), spreadsheets (e.g., Brancheau and Wetherbe, 1990), business computing (e.g., Attewell, 1992), inter-organizational systems such as electronic data interchange (e.g., Bouchard, 1993), and recently to e-commerce (e.g., Gregor and Jones, 1999).

One of the widely used theories of the adoption and diffusion approach to technological innovation is Rogers' (1983; 1995) innovation diffusion theory. According to Rogers, an innovation can be defined as "an idea, practice, or object perceived as new by an individual" (Rogers, 1983, p.11). The main elements of the process of innovation diffusion have been described by Rogers (1983) as: an innovation, which is communicated through certain channels, over time, among the members of a social system.

1. Innovation characteristics

One branch of diffusion research that is used to predict or explain the adoption of innovations involves individuals' perceptions of the properties or characteristics of an innovation itself. The basic "attributes of innovation" that can be used to predict or explain diffusion include: relative advantage, compatibility, complexity, observability, and trialability. Except complexity, all the other four characteristics have a positive relationship with adoption (Rogers, 1983).

The benefits of electronic commerce fit well into the attribute of innovation framework (Esrock, 1999). The availability of additional information in interactive forms can be viewed as a relative advantage that would help to explain the diffusion

of online shopping. Likewise the potential economic benefits of lower prices and higher quality provide a relative advantage over the way that consumers have traditionally shopped. The potential for online trial of products and services fits into the trialability attribute category.

Similarly, the attribute categories also help to explain the potential obstacles to online shopping. Failure to own hardware and software can be viewed as a compatibility problem in that these are technologies that one must own and be comfortable using before making purchases online. The ease of use problem fits into the complexity factor, while risk issues and security/privacy embody the relative advantage variable. Some Internet users may perceive that electronic commerce is no better than traditional ways of shopping because they have to give up something (beyond money) in the process of conducting online transactions: their own sense of security and attendant feelings of a threat to personal privacy (Esrock, 1999).

2. Social system

The diffusion theory literature assumes that diffusion occurs within the boundaries of a social system. One area of diffusion research involves how the social system affects diffusion (Rogers and Scott, 1997; Gatignon and Robertson, 1985). Rogers (1983) also differentiates the adoption process from the diffusion process in that the diffusion process occurs within society; whereas, the adoption process pertains to an individual.

Rogers defines a social system as “a set of interrelated units that are engaged in joint problem solving to accomplish a common goal” (Rogers, 1983, p.23). The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems. Diffusion is affected by the nature of the social system, its norms, the role of opinion leaders and change agents, and types of innovation decisions. The values and norms of a system are basic characteristics which determine the size of the group of potential adopters. The innovation’s degree of compatibility with these values and norms determines the speed of diffusion

(Rogers, 1983).

In a study on the locus of global e-commerce, Kshetri (2001) identifies the following forces of a social system influencing the distribution and forms of global e-commerce: economic factors, political factors, cultural factors and supranational institutions.

Economic factors mainly influence perceived relative advantage of Internet use whereas political and cultural factors influence the compatibility of the Internet with a society. Economic factors such as income, availability and price structures of ICT products, bandwidth and supporting infrastructures, and availability of credit influence relative advantages of Internet and e-commerce. The Internet's degree of compatibility with the values and norms of a social system determines its diffusion in the system, purpose of its use, site visited, purchase decision, and also type of the product likely to be bought and sold. Internet adoption in some countries is hampered by political and legal factors such as the governments' concern about the free flow of information on the Internet, tariff and non-tariff barriers to ICT products, regulations in telecommunications and courier markets, absence of appropriate e-commerce laws, and concern about the outflow of foreign currency (Kshetri, 2001).

Supranational institutions' initiatives are influencing the price, quality and availability of ICT products and services, mainly in developing countries, thereby increasing relative advantage of Internet use. Moreover international institutions are influencing laws, regulations and policies in developing countries, making them more compatible with Internet use (Kshetri, 2001).

It might be thought by some researchers that Rogers' theory is more at the individual level. However, Rogers (1976) argues that the overwhelming focus on the individual as the unit of analysis in diffusion research is often due to the assumption that the individual, as the unit of response, must consequently be the unit of analysis. In Rogers' opinion, "the research designs, concepts, and measurement procedures of diffusion research have been very stereotyped. This similarity has facilitated the synthesis of diffusion findings... in fact, all diffusion studies look a good deal alike.

But such standardization of research approaches has also greatly limited the contribution of diffusion research to more effective social programs and to furthering the scientific understanding of communication and human behaviour change.” (Rogers, 1976, p.299)

II. Complementary assets theory

The theory of complementary assets (Teece, 1986) helps in the situational and feasibility analysis of e-commerce development in a society. The theory states that no matter how competitive a given product or technology is, it will fail in the marketplace unless its commercialization is supported by an array of supportive products and activities. It may be proposed that if the array itself is defective or poorly designed, the product or service may also fail in the marketplace. These supportive products and activities are called complementary assets (Teece, 1986).

Prior research indicates that complementary assets positively affect the technology adoption process (Rogers 1995; Tripsas 1998). Personal computers initially diffused more rapidly among consumers and firms that had prior experience with mainframes or minicomputers than among those that did not. Tripsas (1998) finds that specialized complementary assets buffer incumbents from the effects of destruction by invading radical technologies. In some sense, this is very similar to the compatibility attribute in Rogers’ innovation diffusion theory.

The idea can be readily applied to a new paradigm being rapidly adopted by the international economy, like that of the Internet and e-commerce. E-commerce, hence, necessitates some key complementary assets. Among those assets, besides telephones, must be included computers, cables, satellites, and semiconductors. The efficient acquisition of such assets and technology can take several forms, from expensive direct importation of the assets in question, with its consequent balance-of-payments difficulties, to the other, and equally expensive, extreme of a fully indigenous development of such technology (Murillo, 2001).

Consistent with the complementary assets theory, within the new negotiations launched by the WTO on trade in services under the GATS, some of the OECD countries have proposed a cluster approach to the negotiation of input services conditional for e-commerce. For an e-commerce input services cluster, examining the supply/value chain for a common type of electronic commercial transaction may lead to “drawing the line” at the following essential input services: telecommunications, financial, computer and related, and delivery (postal and courier) services (OECD, 2001a).

III. Key factors for e-commerce development at the societal level:

A literature survey

The diffusion of e-commerce in a country or region is an evolutionary, path-dependent process affected by a wide range of socio-economic environmental factors (Rogers, 1995; Kraemer et al., 1992; Musmann and Kennedy, 1989; Kautz and Priesheje, 1996). Some of these factors are likely to facilitate the diffusion process, while others will act as impediments (Wong, 2003). To obtain a comprehensive picture of these factors, a full literature survey of all the articles on e-commerce adoption or diffusion at the societal level was undertaken by searching six major library databases for social science research.

1. Article selection

It is hard to identify the publishing outlets for e-commerce. Ngai and Wat (2002) did a literature review and classification of e-commerce research from articles found from eight IS journals and one journal specifically designated to e-commerce – *International Journal of Electronic Commerce*. However, they admit that publishing an e-commerce article is possible through a variety of avenues, largely due to the multidisciplinary nature of e-commerce research. This is especially true for

e-commerce research at the level of analysis chosen for this study, as e-commerce adoption or diffusion at societal level often needs to consider a wide range of economic, public policy, legal, and socio-cultural factors. To guarantee the quality of the articles to be included and obtain a comparatively comprehensive collection of relevant studies, this literature survey used six major online databases available at the Australian National University's (ANU) library homepage as the sources of article collection. They are:

- ProQuest 5000 International;
- Web of Knowledge;
- International Bibliography of Social Sciences (IBSS);
- Australian Public Affairs – Full Text (APA-FT);
- Science Direct; and
- J-STOR.

Reasons for choosing these six databases are: they focus on scholarly journals; and they are recommended for doing social science research by librarians from two major universities in Canberra – the ANU and the Australian Defense Force Academy (ADFA). The ProQuest 5000 International provides full text retrieval of the articles in approximately 3,500 journals or magazines. The Web of Knowledge provides for more than 7,500 international journals covering all disciplines. The IBSS is one of the largest and most comprehensive social science databases in the world, containing over two million records from approximately 2,000 journals. The APA-FT has an access to an online full-text collection from over 200 Australian journals relevant to the disciplines within social sciences and humanities. Using the Science Direct, a researcher can access the full text of over 1,200 peer-reviewed academic journals published by the Elsevier Press. The J-STOR is a reliable and comprehensive electronic archive of important scholarly journal literature (ANU Library, 2003; ADFA Library, 2002).

Following the study by Ngai and Wat (2002), the year of 1993 was chosen as the starting date of the literature search. According to Zwass (1996), it was then that the

first popular Web browser – NCSA Mosaic was introduced. This browser began to bring people and businesses to the Web. Therefore, this year may be considered the starting point of e-commerce (Ngai and Wat, 2002).

Altogether 12 combinations of key words were used searching each database. These keywords were “electronic commerce” or “e-commerce” plus one among “adoption”, “diffusion”, “society”, “country”, “nation”, “economy”, “readiness”, “environment”, “region”, “urban”, “rural”, and “city”. After the initial results were obtained, the abstract and very often the full text of each article was reviewed to make sure that only those articles at the societal level and about general conditions for e-commerce development be included. For the purpose of this study, articles at other levels, articles only focusing on one aspect of e-commerce, or not really related to the topic were all eliminated. Table 2.1 lists the results of the search: totally 31 articles were selected from the six databases; 14 from the ProQuest 5000 International; 12 from the Web of Knowledge; 4 from the IBSS; 1 from the Science Direct; and none from the APA-FT and the J-STOR. During the survey the databases were used one after another in the order they are listed in Table 2.1. If an article appeared in more than one database, it was counted only in the first database it appeared. This might be the reason why few articles were selected from the IBSS and the Science Direct. The reasons that no articles were selected from the APA-FT and the J-STOR might be that the APA-FT is only focused on Australian journals and the J-STOR does not include current issues (ANU Library, 2003). The advanced search option of the ProQuest 5000 International can combine the search using “electronic commerce” and that using “e-commerce” into one search, so there were only 12 search results from the ProQuest 5000 International.

In comparison with the nine journals used by Ngai and Wat (2002) in their literature review and classification of e-commerce research, only one journal – *International Journal of Electronic Commerce* was not covered by the six databases used for this literature survey. Thus a manual search was done to review all the articles published in *International Journal of Electronic Commerce* since its inauguration in 1996, but no article was selected for the purpose of this literature

survey.

As supplements to the above search, two other sources – the official websites of the Organization for Economic Cooperation and Development (OECD) and the United Nations Conference on Trade and Development (UNCTAD) were also used, as these two international organizations are well involved in global e-commerce growth (Iyer et al., 2002). They have done a wide range of research on developing and pursuing e-commerce strategies, many of which are quoted in academic papers (for example, Dunt and Harper, 2002; Lefebvre and Lefebvre, 2002; Kshetri, 2001).

At the OECD official website (<http://www.oecd.org/>), a search was undertaken using “electronic commerce” and “e-commerce” as keywords in all the OECD working papers, publications, and reports. Three articles were selected from the 13 results searching working papers, 1 article from the 41 results of publications, and 3 articles from the 209 results of reports. At the UNCTAD official website (<http://www.unctad.org/>), 69 documents were found using “electronic commerce” or “e-commerce” as keywords and 3 were selected (see Table 2.2).

In total, 41 articles were selected for further analysis. A complete list of the articles is in Table 2.3.

2. Factor identification and analysis

All the articles selected were carefully reviewed to identify the e-commerce adoption or diffusion factors at the societal level. Any term mentioned in these articles as e-commerce determinants was selected; no matter it was categorized as a driver, facilitator, barrier, or impediment. The nature of the term was neither strictly distinguished at this stage. The term could be as general as “physical infrastructure” or as specific as “trust in electronic payment”. Some factors were mentioned using different terms, but may be the same in nature. Altogether 128 factors/terms were initially identified.

Table 2.1 Article search results from the six library databases

Key words used for searching	ProQuest 5000 International		Web of Knowledge		IBSS		APA-FT		Science Direct		J-STOR	
	Articles retrieved	Articles selected	Articles retrieved	Articles selected	Articles retrieved	Articles selected	Articles retrieved	Articles selected	Articles retrieved	Articles selected	Articles retrieved	Articles selected
"electronic commerce" and adoption	80	0	82	0	23	0	3	0	33	0	23	0
"e-commerce" and adoption			62	1	9	0	9	0	33	0	2	0
"electronic commerce" and diffusion	22	0	33	2	12	0	0	0	14	0	17	0
"e-commerce" and diffusion			21	2	4	0	2	0	5	0	3	0
"electronic commerce" and society	51	0	28	0	41	0	4	0	13	0	38	0
"e-commerce" and society			45	0	13	1	0	0	12	0	8	0
"electronic commerce" and country	82	12	9	3	17	3	1	0	16	1	27	0
"e-commerce" and country			10	2	9	0	3	0	22	0	6	0
"electronic commerce" and nation	31	1	6	0	2	0	1	0	6	0	24	0
"e-commerce" and nation			6	1	0	0	6	0	5	0	11	0
"electronic commerce" and economy	140	0	51	0	121	0	12	0	15	0	31	0
"e-commerce" and economy			73	1	26	0	54	0	26	0	13	0
"electronic commerce" and readiness	10	0	4	0	5	0	0	0	2	0	4	0
"e-commerce" and readiness			4	0	1	0	1	0	0	0	0	0
"electronic commerce" and environment	195	0	160	0	38	0	0	0	69	0	38	0
"e-commerce" and environment			120	0	17	0	8	0	62	0	9	0
"electronic commerce" and region	11	1	9	0	6	0	0	0	6	0	15	0
"e-commerce" and region			5	0	3	0	2	0	6	0	3	0
"electronic commerce" and urban	4	0	0	0	35	0	0	0	0	0	5	0
"e-commerce" and urban			2	0	9	0	1	0	1	0	5	0
"electronic commerce" and rural	8	0	1	0	7	0	3	0	0	0	2	0
"e-commerce" and rural			4	0	1	0	27	0	2	0	1	0
"electronic commerce" and city	13	0	4	0	6	0	0	0	1	0	15	0
"e-commerce" and city			5	0	2	0	3	0	3	0	9	0
Total		14		12		4		0		1		0

Table 2.2 Article search results from the two websites

	Articles retrieved	Articles selected
OECD		
Working papers:	13	3
Publications:	41	1
Reports:	209	3
Total		7
UNCTAD	69	3

Table 2.3 Literature survey results

Article Source	Articles Selected	References
ProQuest 5000 International	14	Bhatnagar, 1999; Bin et al., 2003; Chen and Ning, 2002; Futla et al., 2002; Javalgi and Ramsey, 2001; Kamel and Hussein, 2001; Kamel and Hussein, 2002; Le and Koh, 2002; Mansell, 2001; Murillo, 2001; Okoli and Mbarika, 2003; Oxley and Yeung, 2001; Trappey and Trappey, 2001; Travica, 2002
Web of Knowledge	12	Andersen et al., 2003; Brousseau, 2003; Efendioglu and Yip, 2004; Farhoomand et al., 2000; Gibbs et al., 2003; Hempel and Kwong, 2001; Johnston, 1998; Kardaras and Karakostas, 2001; Ndubizu and Arinze, 2002; Palacios, 2003; Tigre, 2003; Wong, 2003
IBSS	4	Buhalis and Deimezi, 2003; Kshetri, 2001; Kshetri and Dholakia, 2002; Singh, 2001
APA-FT	0	
Science Direct	1	Lefebvre and Lefebvre, 2002
J-STOR	0	
OECD	7	OECD, 1997; OECD, 1999a; OECD, 1999b; OECD, 2000a; OECD, 2000b; OECD, 2001a; OECD, 2002
UNCTAD	3	UNCTAD, 2000; UNCTAD, 2001; UNCTAD, 2002
Total	41	

Then importance for each factor was calculated as in how many articles of the 41 studies selected this factor/term appeared, with the lowest score as 1 and the highest 41. So long as a factor/term was mentioned in an article, one mark was given to that factor, no matter how many times it appeared in the same article. Finally a total mark was calculated to indicate its importance. Table 2.4 shows the result of this importance calculation for the factors found. Among the 128 factors found, the highest score was 29; the lowest was 1; and the mean was 7.41. Table 2.5 reveals the distribution of these factors in the articles selected. Among the 41 articles, averagely 23.15 factors were found in one article, with the highest of 62 factors and the lowest of 8 factors.

Table 2.4 Descriptive statistics of the “importance” of the factors

<i>Column1</i>	
Mean	7.414063
Median	6
Mode	1
Standard Deviation	6.389617
Kurtosis	1.042225
Skewness	1.225992
Range	28
Minimum	1
Maximum	29
Sum	949
Count	128

Table 2.5 Distribution of the factors in the articles

<i>Row1</i>	
Mean	23.14634
Median	20
Mode	17
Standard Deviation	12.2077
Kurtosis	1.548947
Skewness	1.249098
Range	54
Minimum	8
Maximum	62
Sum	949
Count	41

The next step was to do some data cleaning. The factors different in terms but meaning the same were combined into one factor. This reduced the total number of factors into 102. After a careful review, the classification systems used in two previous studies – OECD (1997) and Javalgi and Ramsey (2001) – were chosen to categorize the remaining 102 factors/terms into five major issues: information infrastructure, commercial services, trust, legal and regulatory frameworks, and social and cultural issues.

Except 5 general factors/terms were used as names for the major issues, 83 factors were put under these five categories. The rest 14 factors/terms (see Table 2.6) were excluded from further analysis. This was because all of them had a very low importance score (lower than 5). Among the 14 factors/terms, over half of them were mentioned only once in all the articles selected. The others were either factors at the organizational level or related to the globalization trend.

Table 2.6 Factors deleted

Factors/terms	Importance score
Global production networks	4
Multinational corporation (MNC) strategies	5
Organizational issues	1
Organizational environment of firms	1
Corporate culture	2
Organizational readiness	3
Firm size	4
Industry structure	4
Market technology development	1
Inflation rate	1
Monetary and fiscal policies	1
Interest rates	1
Corruption and nepotism	1
Use of e-mail	1

Among the five major issues (see the first two columns of Table 2.7), 22 factors were categorized under information infrastructure. Using the mean 7.41 of importance score as a benchmark, 13 of these 22 factors were classified as important, with network availability and quality, telecommunications liberalization, Internet-related costs, personal computers, hardware, and software among the top six. Among the 14 factors categorized under commercial services, 8 factors were classified as important, with the top five as: credit cards, electronic payment systems, banking and financial service, delivery, and transport. The most important of the 10 factors categorized

under trust were: security, privacy, authentication/certification, and consumer protection. Among the 21 factors categorized under legal and regulatory frameworks, 8 were classified as important, with taxation/customs, intellectual property protection, e-commerce legislation, government promotion, and trade and investment liberalization/WTO as the top five. Income/wealth/GDP per capita, IT professionals, education, language, IT training, awareness/business desire, habits of trading/consumer preference, and beliefs and values were the most important among the 16 factors categorized under social and cultural issues.

3. Five major issues

Following OECD (1997) and Javalgi and Ramsey (2001), the e-commerce adoption or diffusion factors at the societal level found from the literature survey were categorized into five major issues: information infrastructure, commercial services, trust, legal and regulatory frameworks, and social and cultural issues.

(1) Information infrastructure

Before users can engage in online commercial transactions, they must be able to access and use the network infrastructure. This includes access to information technologies such as computers, servers and software, as well as to the network itself, which is composed of a number of different infrastructures: fixed-line communications, cellular mobile networks, Internet service providers (ISPs), and even electricity distribution networks (EU, 1997).

The development of e-commerce is dependent on the availability and deployment of information infrastructure and universal and affordable access to markets and services appropriate for user-friendly e-commerce applications. Effective competition in telecommunications markets is crucial, and this in turn depends on appropriate telecommunications policies and regulatory framework (Lopez-Bassols and Vickery, 2001).

Table 2.7 An initial conceptual framework: E-commerce adoption/diffusion factors at the societal level and effects of WTO commitments

Factors		Importance score (Max: 41)	WTO Agreements	Effects	Weakness
Information infrastructure					
1	Network availability and quality	29	The GATS, related to telecommunications liberalization	Commitments under GATS on the liberalization of trade in basic telecommunication services ensure better access to the essential infrastructure for e-commerce	The extent of market access commitments to e-commerce services is often uncertain in members' GATS Schedules. The sector-specific commitments in the GATS country schedules are not yet liberalized enough. Many developing countries made very limited GATS commitments.
2	Telecommunications liberalization	27	GATS Article VIII on monopolies and exclusive service suppliers, GATS Annex on Telecommunications, and the Reference Paper		69 countries made specific commitments in the basic telecommunications sector. Of these, 10 countries made specific commitments with respect to Internet access providers.
3	Internet-related cost	23	Related to telecommunications liberalization		
4	Personal computers	20	Covered in the ITA		
5	Hardware	18	Covered in the ITA		
6	Software	18	Covered in the ITA		
7	Phone lines	15	Related to telecommunications liberalization		

8	Internet service providers (ISPs)	12	Basic telecommunication services / The GATS; the WTO Annex on Telecommunications	The WTO Annex on Telecommunications guarantees access to and use of public telecommunications transport networks and services (PTTNS)	It is not always clear from Members' GATS schedules how far market access and national treatment commitments cover the supply of Internet access services.
9	ICT industry	10			
10	CATV	9			
11	Mobile phones	8	Covered in the ITA		
12	Import liberalization/ tariff and non-tariff barriers	8	The Information Technology Agreement (ITA)	Elimination of customs duties in four stages, with the final stage being completed no later than 1 January 2000. Some countries were granted extended staging beyond 2000, but in no case later than 2005.	Currently there are 61 participants. Product coverage needs to be updated. Non-tariff barriers are not covered.
13	Standardization	8			
14	Broadband connections	7			
15	Internet technologies	6	Covered in the ITA		
16	Internet users	5			
17	Internet hosts/servers	4			
18	Power supply	4			
19	Tax incentives	3			
20	Television	3			
21	Satellite	2			
22	Information content providers (ICPs)	1	Value-added telecommunication services / the GATS		
Commercial services					
1	Credit cards	22	Related to banking and financial services		
2	Electronic payment systems	21	Related to banking and financial		

			services		
3	Banking and financial services	17	The GATS	Many market access restrictions have been relaxed as a result of the negotiations as well as through bilateral and regional agreements in the sector.	97 WTO members have commitments in financial services under the GATS.
4	Delivery	12	Related to postal system, courier		
5	Transport	11	The GATS		21 countries have made commitments on road transport, 37 on rail transport, air transport is excluded from the GATS
6	Investment/ venture capital	10			
7	Distribution	9	The GATS		
8	Postal system	8	The GATS		Only 6 countries made commitments
9	Logistics	6	Related to transport, delivery, courier		
10	Debit cards	4	Related to banking and financial services		
11	Courier	2	The GATS		33 countries made commitments
12	Market research and consulting firms	2	The GATS		
13	Marketing and advertising	2			
14	Traditional retail networks	2	The GATS		
Trust					
1	Security	25			
2	Privacy	17			
3	Authentication / certification	13			
4	Consumer protection	11			
5	Trust in electronic payment	10			

6	Digital signature	9			
7	Trust in products and merchants	8			
8	Enforcement against computer misuse	6			
9	Confidentiality	5			
10	Database protection	4			
Legal and regulatory frameworks					
1	Taxation/ customs	20	The WTO ministers approved a temporary duty-free moratorium on electronically delivered transactions		The moratorium should be converted into a permanent formal agreement.
2	Intellectual property protection	19	The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)	The TRIPS sets out the minimum standards of protection to be provided by each Member, lays down requirements for national procedures and remedies for the enforcement of these intellectual property rights (IPRs)	
3	E-commerce legislation	18			
4	Government promotion	16			
5	Trade and investment liberalization/ WTO	11	The GATT, the GATS	The growth of e-commerce depends on continued liberalization of infrastructural elements of e-commerce, many of which are already part of WTO commitments. New rules are not necessary if liberalizing commitments embodied in GATT, GATS, TRIPS, and other WTO agreements are honored.	The weaknesses of GATS.
6	Internet content regulation	10			

7	Legal system for commercial transactions	8			
8	Free flow of information	8			
9	Government policies on supporting industries (IT)	7			
10	E-government	7			
11	Rules of international trade	7	The GATT, the GATS		
12	R & D	6			
13	“Rule of law”	6			
14	International organizations	6			
15	Copyrights	6	Covered in the TRIPS		
16	Foreign exchange control	5			
17	Internet domain names (IDNs)	4	Related to the TRIPS		
18	Patents	2	Covered in the TRIPS		
19	Trademarks	2	Covered in the TRIPS		
20	Regulatory transparency	1			
21	Interagency coordination	1			
Social and cultural issues					
1	Income/ wealth/ GDP per capita	20			
2	IT professionals	17	Related to education		
3	Education	16	The GATS		Only 20 countries made commitments
4	Awareness/ business desire	13			
5	Language	12			
6	IT training	10	Related to education		
7	Habits of trading/ consumer preference	10			
8	Beliefs and values	10			

9	Level of economic development	9			
10	IT literacy	8	Related to education		
11	Useful content/ website	8			
12	Other demographic factors	7			
13	Market size (population)	7			
14	Creativity/ business innovation/ resistance to change	6			
15	Distribution of wealth	4			
16	Political stability	4			

Note: Factors in shade are considered not important as their importance score is lower than the mean value of 7.41.

Empirical and anecdotal research demonstrates that privatizing public telecommunications offices (PTOs), introducing fixed-line as well as wireless competition, and creating an independent telecommunications regulatory body can significantly improve the telecommunications sector (Mann et al., 2000). Such policies are strongly correlated with increases in per capita telephone mainlines, public payphones, and connection capacity, with decreases in the price of a local telephone call. These policies also promote a telecommunications sector that is more technologically up-to-date, including greater network digitization and higher service quality (Petrazzini, 1996).

(2) Commercial services

The growth of e-commerce and its potential economic impact could be limited by a number of problems relating to two necessary elements of any commercial transactions: payment and delivery. For e-commerce to thrive, secure and simple electronic payment systems must be in place. Furthermore, efficient and low-cost distribution channels are needed for physical delivery of goods ordered electronically (EU, 1997).

By definition, transactions that occur electronically do not involve cash payments, or typically any direct transfers of funds between buyer and seller. Instead, e-commerce transactions rely upon the intermediary role of banks, credit card companies, and other financial institutions, which must therefore be thoroughly interconnected to the communications and data processing web underlying virtually every deal. The banking and payment systems need to be able to process transactions in real time, both domestically and in multiple currencies on international markets. One way to jump start this internally is to encourage participation in the local market by foreign financial institutions that already have this capability. The technology and knowledge transfers are important to improve domestic activities (Mann et al., 2000).

Where e-commerce is applied to the production and distribution of tangible goods, a close relationship exists between the electronic and the non-electronic components

of the commercial infrastructure. E-commerce cannot function on its own. Costly and inefficient systems for the physical transportation of goods could slow down the development of the electronic marketplace. Governments have a major role to play in ensuring that physical transportation infrastructures are developed in coherent, coordinated ways, such that they complement the transaction efficiencies generated by e-commerce and do not interfere with speedy process. Privatization, competition, and independent regulation together can reduce shipping costs and increase services (Mann et al., 2000)

(3) Trust

Among the main differences between e-commerce and traditional commerce is the fact that electronic transactions are far more impersonal, anonymous, and automated than transactions made between flesh-and-blood persons in a store, at a bank, or even over the telephone. This dehumanization of business relations is accompanied by a quantum increase in the technical means and opportunity for fraud and abuse of both individual consumers and large corporations alike. For all these reasons, a healthy sense of caution, if not outright distrust, has prevailed in the evolution of many aspects of e-commerce (ITU, 1999).

Consequently, for these new, globally impersonal technologies to advance to a more universal level of acceptance, business and government institutions must build trust in these new forms of doing business. Trust implies confidence that electronically-based purchases, funds transfers, and business deals will be as valid as traditional activities; that personal information and finances will be secure; that consumers will be protected from fraud and mistreatment; and that the world of online information and communication will be at least as accountable for the quality, reliability, and legality of products and services as is the in-person world.

Many topics are covered in this category and they are closely linked to one another. Security ties in with privacy protection and both of these concerns relate to consumer protection and redress mechanism, as well as to ensuring the integrity of business and government online activities.

(4) Legal and regulatory frameworks

Associated with the issue of trust is general uncertainty about how existing regulatory and legal frameworks will be applied or updated, and new regulations drafted, for this new realm. Confidence and trust in e-commerce can be strengthened by ensuring that the framework of policies, regulations and organizational practices is consistent with the characteristics of global electronic trading environments and local cultural conditions (OECD, 2001b).

Legal and statutory factors such as regulation of transactions, privacy protection, security, intellectual property protection, taxes on e-commerce transactions, and government policies such as promotion of IT production and use can enable or inhibit e-commerce. However, most of the legal and regulatory mechanisms currently being applied by governments to commercial activity were conceived in an era before the advent of advanced electronic communication systems. Frameworks of commercial policy, law and regulation are still oriented overwhelmingly to trade tangible goods. Consumers and businesses are looking to governments to ensure that the rules of the game are equivalent to those of the physical world to the extent possible, and – where it is absolutely necessary to introduce new or changed rules – to ensure that these are transparent and predictable (Lopez-Bassols and Vickery, 2001).

(5) Social and cultural issues

Commercial relationships are shaped to a considerable extent by social conditions and cultural attitudes. Diffusion of the benefits and opportunities of e-commerce could be limited by factors such as income, language, consumer preferences, and social attitudes.

According to the UNCTAD (2002), policies related to awareness building, training and education are by far the most important elements of national e-commerce strategies. Most policy makers agree that unless businesses and consumers are educated about the opportunities and benefits offered by ICT, and unless they are trained to use the Internet, e-commerce will not take off. While access to computers

and the Internet is essential, it is not enough; it is equally essential to create a demand for the new technologies and for e-commerce. Some have even argued that education, and not connectivity, is the main challenge for most developing countries seeking to participate in the digital economy (ILO, 2001).

IV. E-commerce and the WTO

As the last component of the literature review, arguments in six existing studies on e-commerce and the WTO – Hauser and Wunsch-Vincent (2001), Mann and Knight (2000), Mitchell (2001), OECD (2001a), Panagariya (2000), and WTO (1998) are presented here. As discussed earlier, none of these studies have applied their arguments in any specific case, but they provide a good theoretical foundation for the current research. In Table 2.7, a careful analysis is undertaken on the relationship between relevant WTO agreements, their effects and weaknesses (columns 3-5) and the e-commerce adoption or diffusion factors identified earlier. A more detailed discussion is provided as follows.

Trade and investment liberalization plays an important role in facilitating access to the infrastructure, goods and services necessary for e-commerce by encouraging the availability of affordable telecommunication, financial, delivery and other services (OECD, 2001a). A good example is the telecommunications liberalization in OECD countries. The liberalization of telecommunications markets and rigorous implementation of competition in OECD countries have stimulated new investment and increased demand for communications access and services through falling prices and the offer of new innovative products (OECD, 2001a).

E-commerce has developed its dynamism only after the completion of the Uruguay Round. Consequently, the WTO treaties do not contain specific clauses for e-commerce. Nevertheless, there are a substantial number of WTO elements of significant relevance (Hauser and Wunsch-Vincent, 2001). In the study entitled *Electronic Commerce in the WTO*, Mann and Knight (2000) argue that while there are

currently no explicit trade barriers on e-commerce, the infrastructural elements that make e-commerce possible are still burdened by myriad of trade and investment barriers. The growth of e-commerce depends on continued liberalization of these elements, many of which are already part of WTO commitments. Most important are computers and other information technology products (covered by the Information Technology Agreement – ITA), telecommunication, financial, distribution and delivery services (relevant to the GATS).

While the electronic world poses certain challenges to the current trade policy framework, traditional WTO principles of non-discrimination, transparency, neutrality, and market openness remain valid and should be applied to e-commerce. New rules are not necessary if liberalizing commitments embodied in the GATT, GATS, TRIPS, and other WTO agreements are honored (Mann and Knight, 2000).

1. The Information Technology Agreement (ITA) of the GATT framework

The availability of technical infrastructure is crucial for the development of e-commerce. This logic assigns a particular significance to the so-called Information Technology Agreement (ITA). At the WTO Ministerial Conference in 1996 the Ministers agreed to a common position with regard to trade in IT goods. Afterwards the signatory countries committed themselves to reduce their tariffs on IT goods in four steps of 25% to reach a tariff-free policy by the year 2000. Some countries were granted extended staging beyond 2000, but in no case later than 2005. This obligation pertains to a common list of IT products that was decided upon by the member countries. Together, the above declaration, the worked-out product list and the country-specific tariff concessions regarding the commonly chosen IT products constitute the ITA (WTO, 1998; Hauser and Wunsch-Vincent, 2001).

Due to the fact that the 61 signatory countries are responsible for more than 95% of world trade in IT goods (computer, telecommunication apparatus, semi-conductors, software, etc.), the WTO has laid the ground stone for more intensive trade and the distribution of IT infrastructure necessary for e-commerce (Hauser and

Wunsch-Vincent, 2001).

The main weaknesses of the ITA are: many developing countries are not ITA participants yet; the product coverage of the ITA needs to be updated; and non-tariff barriers are not covered by the ITA.

2. E-commerce and the General Agreement on Trade in Services (GATS)

The GATS is of particular significance to e-commerce for three reasons: first, the telecommunication service which provides access to e-commerce fall under the GATS. Second, the execution of an electronic transaction necessitates infrastructure services (financial, computer, and delivery services) whose liberalization equally falls under the GATS. Finally online commerce mainly takes place in services. The liberalization of content-services (i.e. medical, legal, consulting, finance, etc.) is a crucial prerequisite for the exploitation of e-potential (Hauser and Wunsch-Vincent, 2001).

(1) The General Agreement on Trade in Services (GATS)

The General Agreement on Trade in Services (GATS), negotiated in the Uruguay Round, is the first multilateral trade agreement on services. The GATS covers all services except services supplied in the exercise of governmental authority. The sectoral classification generally used to schedule commitments under the GATS contains 11 main services sectors and one residual “other” category. They are business, communication, construction, distribution, educational, environmental, financial, health-related and social, tourism and travel-related, recreational cultural and sporting, and transport services.

Trade in services is defined by the GATS in terms of four modes of supply: cross-border supply, consumption abroad, commercial presence, and movement of natural persons.

The GATS aims at negotiating a legally binding set of commitments to enhance predictability and provide transparency under the principle of progressive liberalization. The GATS framework consists of: (i) rules and obligations laid down in

the GATS; (ii) annexes on specific sectors and subjects including an annex on telecommunication services; and (iii) national schedules of market access and national treatment commitments and lists of most-favored-nation (MFN) exemptions.

The general obligations applying to all services sectors are: the MFN principle (with the possibility of temporarily limited exceptions) and the commitment to transparency. Of the general obligations which apply only to the sectors where country-specific commitments have been made the following points are especially relevant to e-commerce: the requirement of reasonable, objective and impartial application of national regulations (Article VI), behavioral constraints for monopolistic suppliers (Article VIII), prohibition of constraints on payments related to service transactions (Article XI), and the obligations imposed by the Telecommunications Annex (Hauser and Wunsch-Vincent, 2001).

Bar (2001) argues that commercial activities, whether conventional or electronic, involve four basic levels: communication infrastructure, marketplace, transaction and payment mechanisms, and deliverables. The WTO recognizes that commercial transactions can be broken into three stages: the advertising and searching stage, the ordering and payment stage, and the delivery stage (Mitchell, 2001). Examining the supply/value chain for a common type of e-commerce transaction, several are identified as essential e-commerce input services: telecommunication, financial, computer and related, and delivery (postal and courier) services (OECD, 2001a). The analysis on e-commerce and the GATS is therefore focused on these four services.

(2) Telecommunication services

The importance of telecommunications for commercial activities and economic growth and development is widely recognized (OECD, 2001a). Access to networks and a variety of telecommunication services, as well as to new innovations is crucial for meaningful participation in the benefits of an increasingly information-based global economy. Technological development and the opening up of the sector to private participation underlie these changes and contribute to the creation of new

services and markets.

Telecommunication services, a sub-sector of communication services in the GATS Services Sectoral Classification is sub-divided into two broad headings: basic telecommunication services (such as voice telephone, telegraph, and facsimile services) and value-added services (such as electronic mail, online information and database retrieval, and electronic data interchange – EDI) (WTO, 1998).

There are three principal WTO provisions that govern access to communication network: GATS Article VIII on monopolies and exclusive service suppliers, GATS Annex on Telecommunications, and the Reference Paper on regulatory principles in the Agreement on Basic Telecommunications. In addition, specific commitments on national treatment and market access made by countries in the basic telecommunications sector have implications for access to Internet.

GATS Article VIII and the Annex apply to all WTO members uniformly. The Reference Paper applies to approximately 60 countries that incorporated it into their specific commitments in the agreement on basic telecommunication services. A total of 69 countries made specific commitments in the basic telecommunications sector. Of these, ten countries made specific commitments with respect to Internet access providers (Panagariya, 2000).

(3) Financial services

As with telecommunication services, the financial service sector was one of which negotiations continued after the Uruguay Round was completed. The classification system adopted for this purpose defines a financial service as “any service of a financial nature offered by a financial service supplier of member” (Article V, *Annex on Financial Services*). These services are sub-divided into two broad categories: insurance and insurance-related services, and banking and other financial services. It is this second sub-category, and in particular payment and funds transfer services, that are essential inputs to e-commerce.

Concluded in December 1997, the Financial Services Agreement resulted in an enlarged legal framework for the sector, covering the 2nd and 5th protocols to the

GATS, the decision for the adoption of the protocol and the memorandum of understanding on commitments in financial services, acceptance of the latter being optional for members (OECD, 2001a). Seventy members participated in the 1997 financial services negotiations. At present, 97 WTO members have commitments in financial services under the GATS.

Many market access restrictions have been relaxed as a result of the negotiations as well as through bilateral and regional agreements in the sector. The most common forms of market access limitations are restrictions on the type of legal entity, and limitations on foreign capital, restrictions on the number of licenses granted, either through numerical quotas or economic needs tests. National treatment limitations include limitations on land ownership, nationality and residency requirements for board members and subsidies.

Banking services are the most related to the e-commerce. As the result of financial services liberalization, previous literature has found that foreign banks may (i) improve the quality and availability of financial services in the domestic financial market by increasing bank competition and enabling the application of more modern banking skills and technology; (ii) serve to stimulate the development of the underlying banking supervisory and legal framework; and (iii) enhance a country's access to international capital (Levine, 1996). Openness to foreign competition puts pressure on domestic financial firms to improve their productivity and services, thus providing consumers with better, more appropriate and cheaper services. It also gives financial firms access to new technologies and ideas to help them raise efficiency (Claessens and Glaessner, 1998).

(4) Computer and related services

Computer and related services are a sub-sector of the Business Services chapter, and comprise the following five sub-sectors: (i) consultancy services related to installation of computer hardware; (ii) software implementation services; (iii) data processing; (iv) database services; and (v) other.

Over 62 members in the Uruguay Round made commitments on computer and

related services, the majority of them making commitments in the first four sub-sectors, and about half making commitments for the fifth “other” sub-sector (OECD, 2001a).

The computer services sector is not generally highly regulated. In effect, regulations in other related sectors are often more likely to affect the computer and related services industry. Government policies in relation to research and development, labor, education and training, protection of intellectual property, tariffs on computer equipment, government procurement have a large influence on the computer and related services sector. As e-commerce develops and online supply of computer services becomes more commonplace, policies towards general e-commerce issues such as privacy, encryption and consumer protection will have an effect on the computer services sector. Again, the sector is not only one that can benefit from online service supply, but it is equally responsible for creating the enabling software that permits online supply.

(5) Delivery (postal and courier) services

Postal and courier services are classified in the GATS Sectoral Classification List as sub-sectors of communication services. This classification, which also includes, as noted above, telecommunication services, reflects the traditional market structure of postal and telecommunication services supplied by a single state monopoly. Trends towards privatization and regulatory reform have for the most part resulted in a separation of the two sectors, with competition being introduced for aspects of both, but more so in the telecommunications sector than for postal services (OECD, 2001a).

Postal services remain a public monopoly in most countries. Only 6 countries have made commitments under GATS on postal services, all of which are small developing countries. The somewhat more liberal regime with respect to courier services is reflected in the fact that a larger number of countries (33) have made commitments (WTO, 1998).

State postal service suppliers, with some exceptions, tend to have retained their monopoly over letter post and most other types of mail services, up to a certain weight.

Courier services – usually parcel delivery and express letter delivery, are generally no longer reserved for the monopoly provider. Increasingly, private sector operators are seeking to expand their activities towards other segments of the postal market, such as business-to-consumer bulk mailings and direct mail advertising.

The increasing popularity of home shopping by electronic means contributes to steady growth prospects for the delivery of parcels. Indeed, the success of much online e-commerce depends largely upon efficient delivery services. The convenience advantage of Internet shopping is significantly diminished if the purchase is not backed up by quick and cost-effective delivery systems. Many traditional retailers who have commercialized their products online have been confronted with this reality.

A unique feature of the GATS is that WTO members only have market access obligations in relation to the particular commitments listed in their schedule. Members cannot, *inter alia*, maintain measures that impose various quantitative restrictions where market access commitments are included in their schedule unless such measures are specified in the schedule. Members must accord services and service providers of any other member no less favorable treatment than specified in their Schedule. Unfortunately the extent of market access commitments to e-commerce services is often uncertain in members' GATS schedules (Mitchell, 2001). Hoekman (1996) finds that many developing countries made very limited commitments. Hauser and Wunsch-Vincent (2001) admit that the sector-specific commitments in the GATS country schedules are not yet liberalized enough and their trade promoting effect is limited. The WTO members clearly need to broaden and deepen their market access commitments to better facilitate e-commerce (Mitchell, 2001).

3. E-commerce and the Trade Related Aspects of Intellectual Property Rights (TRIPS)

Two issues in the broad area of intellectual property rights are of great importance for the future development of e-commerce: (i) the protection of copyrights and related

rights, and (ii) the protection of trademarks and domain names (WTO, 1998).

Next to the GATT and GATS, the TRIPS is one of the three pillars of the WTO order. It integrates the existing World Intellectual Property Organization (WIPO) agreements into international trade law, extends the scope of the related rights, formulates minimum standards and obliges the member countries to introduce an independent judicial appeal system. Besides these demands to enforce the property rights of immaterial goods by the individual states, the treaty contains two important multilateral reinforcements. The two central WTO principles of MFN treatment and national treatment equally apply to the TRIPS. Furthermore the dispute settlement process of the WTO can be invoked in case a member violates its TRIPS obligations.

The TRIPS Agreement is an integral part of the WTO Agreement, and it is binding on each member of the WTO from the date the WTO Agreement becomes effective for it.

4. The moratorium on customs duties for digitized products

The WTO has done a substantial amount of work with regard to e-commerce, but the crosscutting and rapidly evolving environment of e-commerce poses a true challenge to the organizing structure of the WTO (Mann and Knight, 2000).

The initial approach taken at the 1998 Geneva Ministerial Conference distinguished between the physical and the electronic delivery of products purchased via the Internet. But the rapid evolution of the Internet marketplace, particularly in the greater use of digitized information, soon blurred the traditional distinction between goods and services. On the one hand, products purchased electronically but delivered physically would appear to be subject to existing WTO rules on trade in goods. On the other hand, an architectural blueprint delivered electronically would likely be a kind of service. In order to allow further time to examine the issue, WTO members agreed at their second ministerial conference in Geneva in May 1998 not to impose customs duties on products derived over the Internet until the next ministerial conference, at which time members could vote on an extended moratorium (Mann and Knight,

2000).

The Doha Ministerial Declaration, issued on 14 November 2001, called for the reinvigoration of its e-commerce work program and declared that WTO members would maintain their current practice of not imposing customs duties on electronic transmissions.

In conclusion, as Table 2.7 shows, a country's WTO commitments under the ITA and the GATS may play an important role in improving a country's information infrastructure and the commercial services necessary for online transactions, thus helping the e-commerce adoption or diffusion in that country, but the actual effects depend on the country's GATS schedule and whether it is a member of the ITA. The TRIPS may help a new WTO member improve its intellectual property protection. Electronically delivered products are free from customs duties temporarily among WTO member countries. However, the WTO commitments have little to do with two other important categories of e-commerce adoption or diffusion factors – trust, and social and cultural issues. The WTO also has limited effects in establishing adequate legal and regulatory frameworks for e-commerce.

V. Summary

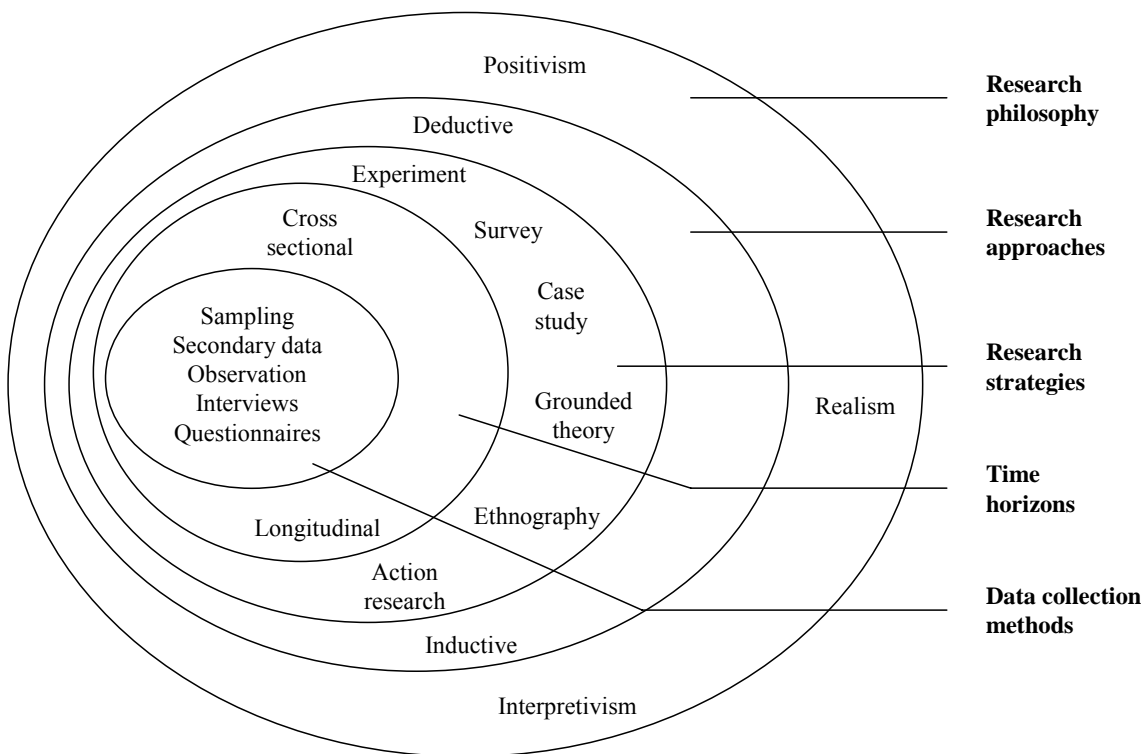
This chapter first discusses two theories related to the thesis topic: Roger's (1983; 1995) innovation diffusion theory and Teece's (1986) complementary assets theory. It then presents a literature survey on e-commerce adoption/diffusion at the societal level by using the ANU library online databases. Finally six existing studies on e-commerce and the WTO are reviewed. None of these studies have applied their arguments in any specific case, but they provide a good theoretical foundation for this thesis. Based on the literature, an initial conceptual framework on e-commerce adoption/diffusion factors at the societal level and effects of WTO commitments is constructed in Table 2.7.

Chapter 3 Methodology

Laudan (1986) says, “science is a form of inquiry, not the only form to be sure, but probably its most impressive” (p.349). Methodology is the study of how to conduct inquiry effectively. The methodology of science is the study of how to conduct scientific inquiry (Laudan, 1986).

Miles and Huberman (1994) also note (p.5), “to us it seems clear that research is actually more a craft than a slavish adherence to a standard methodology; each one calls for the researcher to bend the methodology to the peculiarities of the setting.”

Figure 3.1 The research process “onion”



Source: Saunders et al., 2003, p.83.

Saunders et al. (2003) depict the issues underlying the choice in which a researcher collects data to answer his or her research question as a research process

“onion” (see Figure 3.1). By adopting this approach, the way inquiry has been conducted in this thesis is presented in this chapter.

The first of the onion’s layers raises the question of the research philosophy adopted. The second considers the subject of the research approach that flows from that research philosophy. Third, the research strategy is examined, and the fourth layer refers to the time horizons applied to the research. The last layer is about data collection methods (Saunders et al., 2003). In addition, three other important issues – data analysis, research ethics and suggested evaluation criteria are also discussed.

I. Research philosophy

1. Research paradigms

All research, whether quantitative or qualitative, is based on some underlying assumptions about what constitutes “valid” research and which research methods are appropriate. Garcia and Quek (1997) argue from within the information systems area (p.444):

The starting point of a researcher’s methodological choice within information systems, is not so much a problem of how many methods we employ or if those are of a quantitative or qualitative nature, but the ability to identify the philosophical and theoretical assumptions that lead to the choice of appropriate methodology.

Rowland (1995) argues that any research study reflects a particular worldview composed of at least three philosophical layers – ontological beliefs, epistemological assumptions and methodological choices.

The net that contains the researcher’s ontological, epistemological, and methodological premises may be termed a paradigm, or an interpretive framework, a “basic set of beliefs that guides action” (Guba, 1990, p.17).

Table 3.1 Basic belief systems of alternative inquiry paradigms

	Positivism	Realism	Critical theory	Constructivism
Ontology	Naïve realism – reality is real and apprehensible	Critical realism – reality is ‘real’ but only imperfectly and probabilistically apprehensible and so triangulation from many sources is required to try to know it	Historical realism – ‘virtual’ reality shaped by social, economic, ethnic, political, cultural, and gender values, crystallized over time	Critical relativism – multiple local and specific ‘constructed’ realities
Epistemology	Objectivist; findings true	Modified objectivist; findings probably true	Subjectivist; value mediated findings	Subjectivist; created findings
Methodology	Experiments/survey; verification of hypotheses; chiefly quantitative methods	Case studies/convergent interviewing; triangulation, interpretation of research issues by qualitative and quantitative methods such as structural equation modeling	Dialogic/dialectical; researcher is a ‘transformative intellectual’ who changes the social world within which participants live	Hermeneutical/dialectical; researcher is a ‘passionate participant’ within the world being investigated

Source: Perry et al., 1999 (p.17) on the basis of Guba and Lincoln, 1994.

Saunders et al. (2003) identify three dominant views about the research process: positivism, interpretivism and realism. They are different, if not mutually exclusive, views about the way in which knowledge is developed and judged as being acceptable. Taking this view, the research philosophy of this thesis can be classified as realism, which “is based on the belief that a reality exists that is independent of human thoughts and beliefs” (Saunders, et al., 2003, p.84).

Following Guba and Lincoln (1994), Perry and colleagues (Perry, 1998; Perry et al., 1999; Healy and Perry, 2000) identify four basic belief systems of alternative inquiry paradigms: positivism, realism, critical theory, and constructivism (see Table 3.1). In this view, the research philosophy of this thesis is also classified as realism; it can be specifically marked as “critical realism”, “scientific realism”, or “transcendental realism”.

2. Critical realism

Realism is the philosophical thesis that a mind-independent reality, which has its own inherent order, exists (Fay, 1996). The version of realism here is a kind of critical realism, which is largely indebted to the work of two contemporary philosophers of social science: Roy Bhaskar (1978, 1979) and Rom Harre (Harre and Madden, 1975; Harre and Secord, 1972). Critical realism is now a growing movement transforming the intellectual scene (Archer et al., 1998; Fleetwood, 1999). The list of disciplines in which critical realism is beginning to become influential includes: economics (Lawson, 1997), sociology (Sayer, 1992), geography (Yeung, 1997), history (Steinmetz, 1998), organization studies (Reed, 1997), politics (Lane, 1996), management (Tsoukas, 1989), and marketing (Easton, 2002). Mingers (2000) argues that critical realism can be useful as the underpinning philosophy for operations research and management science and systems. Dobson (2002) suggests that critical realism may also provide a useful grounding for information systems research.

Critical realism has three basic contentions (Tsang and Kwan, 1999). First, the reality to which scientific theories primarily aim to refer is the structures and

mechanisms of the world, rather than empirical events. Structures are defined as sets of internally related objects and mechanisms as ways of acting (Sayer, 1992). Second, the underlying structures and mechanisms are only contingently related to observable empirical events. Third, although scientific knowledge of reality, especially social reality, is never infallible, it is still possible to acquire such knowledge through creative construction and critical testing of theories.

(1) Reality

For critical realists, reality is both intransitive (existing independently of humans) and stratified (Archer et al., 1998). Within the realism paradigm, the world can be distinguished as having the three domains of reality: mechanisms, events, and experiences, as illustrated in Table 3.2 (Bhaskar, 1978). In more detail, the three domains are the real domain, consisting of the processes that generate events, in which generative mechanisms or causal powers exist independently with a tendency to produce patterns of observable events under contingent conditions; the actual domain in which patterns of events occur, whether they are observed or not; and the empirical domain, in which experiences may be obtained by direct observation (Tsoukas, 1989; Bhaskar, 1978).

The discovery of these observable or non-observable structures and mechanisms that underlie events and experiences is the goal of realism research (Tsoukas, 1989).

Table 3.2 Ontological assumptions of realism

	<i>Domain of Real</i>	<i>Domain of Actual</i>	<i>Domain of Empirical</i>
<i>Mechanisms</i>	√		
<i>Events</i>	√	√	
<i>Experiences</i>	√	√	√

Source: Bhaskar, 1978, p.13.

(2) Causality

Having established the intransitive objects of knowledge, critical realists recognize that the production of knowledge is very much the work of humans, and occurs in what is called the transitive dimension (Bhaskar, 1989). The core of realist epistemology is a search for causal mechanisms rather than empirical regularities.

In realism, causality (the real) does not necessarily follow pattern (the actual), nor does it necessarily follow experience (the empirical). A constant conjunction of events is neither a sufficient nor a necessary condition for a causal law. The structures at work in a given situation, which can generate mechanisms in certain conditions, are not always producing events to experience. Sayers (1992) distinguishes subsequently between necessary causal powers and contingent conditions. The necessary causal powers are mutually constituted internal relations of an object. Contingent conditions refer to the time- and place-specific context within which the necessary relations operate. Whether a causal power is activated depends on two types of contingent conditions – namely, intrinsic and extrinsic. (Sayer, 1992; Tsang and Kwan, 1999).

(3) Closed and open systems

Critical realists distinguish closed and open systems. A closed system is “one in which a constant conjunction of events obtains; i.e. in which an event of type *a* is invariably accompanied by an event of type *b*” (Bhaskar, 1978, p.70). When both intrinsic and extrinsic conditions are met, a closed system is achieved, and regularities of events are generated. Scientists need to conduct experiments precisely because of the open character of the world in which events are subject to diverse causal variations.

Conditions of closure are rarely possible in the social sciences (Harre and Secord, 1972). Sayer (1992) provides two main reasons for the openness of social systems. First, the configuration of social systems is modified by human actions, thereby violating the extrinsic conditions. Second, our capacity for learning and self-change violates the intrinsic conditions. Therefore, social structures are less enduring than structures found in nature. It follows that, for the positivist, knowledge of causal laws

governing the social reality is almost unattainable.

Although realists agree that experiments, where closed systems are created, provide ideal conditions for the study of mechanisms (Pawson and Tilley, 1997), they do not think that the quest for reality is altogether precluded in open systems. Even if patterns of events do not amount to invariable laws, they are still the manifestation of the real structures under less than ideal conditions.

Following Harre (1979), Sayer (1992) distinguishes between extensive and intensive research designs. The two types of design ask different sorts of questions, use different techniques and define their objects of inquiry differently. Extensive research is concerned with discovering some of the common properties and general patterns of a population as a whole. In intensive research, which this thesis is, the primary questions concern how some causal process works out in a particular case or limited number of cases. Typical methods of extensive research are descriptive and inferential statistics and numerical analysis and the large-scale formal questionnaire of a population or representative sample thereof. Intensive research uses mainly qualitative methods such as structural and causal analysis, participant observation and/or informal and interactive interviews (Sayer, 1992).

Perry et al. (1999) argue that realism methodologies include qualitative ones such as case studies or convergent interviews which are process-oriented and do not investigate cause and effect relations but are rather concerned with underlying causal tendencies or powers (Bhaskar, 1978). The data analysis is usually summarized in an interpretative, necessarily value-laden way but with an awareness of the presence of those values. That is, the analysis is usually non-statistical and uses qualitative techniques. Moreover, realism researchers do not need to map all the details of an interviewee's subjective reality; they merely look through some parts of that reality at an external reality and manual coding of interview data can be adequate for this process (Perry et al., 1999).

II. Research approach

Researchers approach the building and testing of theory from two directions: deductive and inductive approaches (Neuman, 1994).

Creswell (1994) suggests a number of practical criteria on which research approach to adopt. Perhaps the most important is the nature of the research topic. A topic on which there is a wealth of literature from which a researcher can define a theoretical framework and a hypothesis lends itself more readily to the deductive approach. With research into a topic that is new, is exciting much debate, and on which there is little existing literature, it may be more appropriate to generate data and analyses and reflect on what theoretical themes the data are suggesting (Saunders et al., 2003).

Miles and Huberman (1994) hold the same opinion, but they also emphasize that any researcher, no matter how unstructured or inductive, comes to fieldwork with some orienting ideas. Highly inductive, loosely designed studies make good sense when experienced researchers have plenty of time and are exploring exotic cultures, understudied phenomena, or very complex social phenomena. But if the researcher is new to qualitative studies and is looking at a better-understood phenomenon within a familiar culture or subculture, a loose, inductive design may be a waste of time (Miles and Huberman, 1994). As Wolcott (1982) puts it, there is merit in open-mindedness and willingness to enter a research setting looking for questions as well as answers, but it is “impossible to embark upon research without some idea of what one is looking for and foolish not to make that quest explicit” (p.157).

Miles and Huberman (1994) argue that a case can be made for tight, prestructured qualitative designs and for loose, emergent ones. Much qualitative research lies between these two extremes. Something is known conceptually about the phenomenon, but not enough to house a theory. The researcher has an idea of the parts of the phenomenon that are not well understood and knows where to look for these things – in which settings, among which actors. And the researcher usually has some initial ideas about how to gather the information. At the outset, then, a

researcher usually has at least a rudimentary conceptual framework, a set of general research questions, some notions about sampling, and some initial data-gathering devices (Miles and Huberman, 1994).

They also mention that how prestructured a qualitative research design should be depends on the time available, how much already is known about the phenomena under study, the instruments already available, and the analysis that will be made (Miles and Huberman, 1994).

The topic of this thesis is a new one, is exciting much debate, and on which there is little existing literature, so it is appropriate to adopt the inductive approach. However, considering Yin's (1994) advice that the inductive approach may be a difficult strategy to follow and may not lead to success for someone who is an inexperienced researcher, a plan was made before the fieldwork on a rudimentary conceptual framework, some notions about sampling, and some initial data-gathering devices (Miles and Huberman, 1994). As Saunders et al. (2003) suggests, while researchers may commence with either an inductive or a deductive approach, in practice their research may combine elements of both.

III. Research strategy

A research strategy is a general plan of how a researcher goes about answering the research question(s) that have been set (Saunders, et al., 2003). Among the six specific research strategies indicated in the research process “onion” (Figure 3.1), case study is chosen for this thesis.

1. What is a case study?

Punch (1998) believes that the basic idea of a case study is that one case (or perhaps a small number of cases) will be studied in detail, using whatever methods

seem appropriate. While there may be a variety of specific purposes and research questions, the general objective is to develop as full an understanding of that case as possible. The researcher may be interested only in this case, or he or she may have in mind not just this case being studied, but others like it.

In keeping with other approaches in qualitative research, the case study aims to understand the case in depth, and in its natural setting, recognizing its complexity and its context. It also has a holistic focus, aiming to preserve and understand the wholeness and unity of the case. Therefore the case study is more a strategy than a method (Punch, 1998).

2. Different types of case studies

Case studies can be completed in a multitude of different ways, as Cavaye (1996, pp.227-228) argues:

Case research can be carried out taking a positivist or an interpretive stance, can take a deductive or an inductive approach, can use qualitative and quantitative methods, can investigate one or multiple cases. Case research can be highly structured, positivist, deductive investigation of multiple cases; it can also be an unstructured, interpretive, inductive investigation of one case; lastly, it can be anything in between these two extremes in almost any combination.

Stake (1994) distinguishes three main different types of case study:

- the intrinsic case study, where the study is undertaken because the researcher wants a better understanding of this particular case;
- the instrumental case study, where a particular case is examined to give insight into an issue, or to refine a theory;
- the collective case study, where the instrumental case study is extended to cover several cases, to learn more about the phenomenon, population or general condition.

The first two of these are single case studies, where the focus is within the case.

The third involves multiple cases, where the focus is both within and across cases. It is also called the multiple case study, or the comparative case study (Punch, 1998).

Case study research can be used to achieve various research aims: to provide descriptions of phenomena, develop theory, and test theory. But most often case study research has been associated with description and with theory development, where it is used to provide evidence for hypothesis generation and for exploration of areas where existing knowledge is limited (Cavaye, 1996). Approaches such as grounded theory (Glaser and Strauss, 1967), in which theoretical concepts and propositions emerge as the researcher gathers data and investigates phenomena, may be used to develop theory. Eisenhardt (1989) proposes a “roadmap” for theory development from case study research which synthesizes grounded theory building and techniques from more structured approaches to qualitative data collection and analysis, such as a priori construct specification, theoretical sampling, and triangulation of data sources.

Robson (2002) points out that inquiries can be classified in terms of their purpose as well as by the research strategy used. The classification most often used is the threefold one of exploratory, descriptive and explanatory. In the same way as a researcher may employ more than one strategy in the research project, so a researcher may have more than one purpose. For a case study, Yin (1994) mentions that it can have one or a combination of an exploratory, descriptive, or explanatory purpose.

This thesis is basically an instrumental, theory development, and explanatory case study as it aims to explain how the WTO commitments can influence the e-commerce adoption in developing countries. At the same time, the research is also of an exploratory nature as it is the first study investigating such a phenomenon in a(n) country/area.

3. Use of case studies

Saunders et al. (2003) argue that a researcher must have valid reasons for all his or her research strategy decisions and the justification should always be based on the research question(s) and objectives.

Case study research is deemed suitable when the proposed research addresses a contemporary phenomenon, over which the researcher has no control; the research is largely exploratory; and addresses the “how” and “why” questions (Benbasat et al., 1987; Darke et al., 1998; Yin, 1994). Furthermore, it is well suited when the contextual conditions are pertinent to the phenomenon of the inquiry (Yin, 1994). This makes the case study approach well suited to the study of IS implementations because context cannot be distinguishable from the IS phenomenon.

Case study research is useful when a phenomenon is broad and complex, where the existing body of knowledge is insufficient, when a holistic, in-depth investigation is needed, and when a phenomenon cannot be studied outside the context in which it occurs (Bonoma, 1985; Benbasat et al., 1987; Yin, 1994). Case study research is more widely used for exploration and hypothesis generation, but can also be used for providing explanations and for testing hypotheses (Benbasat et al., 1987).

Darke et al. (1998) sensibly suggest that the use of the case study in research is useful in newer, less well-developed research areas, particularly where examination of the context and the dynamics of a situation is important.

In the early stages of theory development where phenomena are not well comprehended and the relations between phenomena are not known, quantitative research methods can lead to inconclusive findings (Parkhe, 1993). In contrast, theory is built in case study and related qualitative research by making comparisons, looking for similarities and differences within the collected data, and for future questions to be examined (Neuman, 1994). That is, elements of the theory are being confirmed or disconfirmed, rather than being tested for generalizability to a population. Furthermore, a qualitative or exploratory method makes the research effort more flexible and allows data and theory to interact (Neuman, 1994), at least in the early stages of the research project (Eisenhardt, 1989; Perry, et al., 1999).

Case studies have a distinctive place in evaluation research (Cronbach et al., 1980; Guba and Lincoln, 1981; Patton, 1990; GAO, 1990). Unlike traditional evaluation methodologies which focus on outcomes, the case study approach zeroes in on the process of learning (Patton, 1990).

The use of case research can be best understood by comparing it to other qualitative methods often used in IS, namely, ethnography, action research, and grounded theory. While all four qualitative approaches or methods examine phenomena in a natural setting, use similar data collection methods, and are based on the subtle interplay of data collection and analysis, they differ in several important ways.

First, ethnographic research comes from the discipline of social and cultural anthropology where an ethnographer is required to spend a significant amount of time in the field. Ethnographers immerse themselves in the lives of the people they study and seek to place the phenomena studied in their social and cultural context (Atkinson and Hammersley, 1998; Creswell, 1998; Agar, 1986; Schwandt, 1997). In comparison, case study research is less demanding in terms of the amount of time to be spent in the field. Besides, culture and routinized behaviors may or may not be at the heart of the observed phenomenon in case research.

Second, action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework (Rapoport, 1970). This definition draws attention to the collaborative aspect of action research which differs significantly from the role of detached observer taken on by the case researcher (Mumford, 2001).

Finally, while sometimes referred to as a data analysis technique (e.g., Webster, 1998), grounded theory is conventionally conceived as an integrated research approach (Glaser and Strauss, 1967; Strauss and Corbin, 1990) as illustrated in Orlikowski (1993). Grounded theory is a research method that seeks to develop theory that is grounded in data systematically gathered and analyzed (Strauss and Corbin, 1990). In comparison, case study research is used for a broader spectrum of purposes, namely, descriptive, exploratory, and explanatory (Yin, 1994). Another major difference between grounded theory and other qualitative methods is its specific approach to theory development – a precise step-by-step procedure is provided. In this regard, grounded theory offers a more detailed approach for data

analysis than any of the other qualitative methods, including case study. These key differences call for a specific set of criteria for assessing the rigor and overall quality of case study research in IS.

A review of the literature suggested that the research question of this thesis has not been investigated thoroughly to devise hypothesis testing, so the case study research methodology is suggested. Furthermore, case study research is deemed suitable because the proposed research addresses a contemporary phenomenon, over which the researcher has no control; it is exploratory; and addresses a “how” question.

4. What is the case?

Punch (1998) says that almost anything can serve as a case, and the case may be simple or complex. Miles and Huberman (1994) define a case as a phenomenon of some sort occurring in a bounded context. The case is, in effect, the unit of analysis.

Studies may be of just one case or of several. Sometimes the “phenomenon” may be an individual. A case may also be defined by a role, or a small group, or an organization, or a community or “settlement”, or a nation (Miles and Huberman, 1994, p.26). These examples stress the nature and size of the social unit, but cases can be also defined in other ways.

Werner and Schoepfle (1987) usefully point out that a case can be located spatially. In addition, a case can be defined temporally as events or processes occurring over a specified period. See, for example, the case defined as an episode or encounter. A case also may be defined as an event, or as a period of time, or as a sustained process (the adoption, implementation, and institutionalization of an innovative program) (Miles and Huberman, 1994).

Patton (1990) argues that the underlying principle that is common to all case selection strategies is selecting information-rich cases. These are cases “from which one can learn a great deal about matters of importance” and they are cases “worthy of

in-depth study”. (Patton, 1990, p.181) The key issue for qualitative sampling is “how to focus, strategically and meaningfully, rather than how to represent” (Mason, 2002, p.136). A good instrumental case does not have to defend its typicality (Tellis, 1997).

A simple answer to what is the case in this thesis is: the “phenomenon” under study is the effects of WTO commitments on e-commerce diffusion in a developing country; to facilitate the data collection, the unit of analysis has been narrowed to the phenomenon in China’s coastal urban area.

As explained in Chapter 1, the selection of “China’s coastal urban area” as the focus of this study can be justified as follows: First, China is an important case because of the significant liberalization commitments it made and the size of its Internet population. Second, choosing China’s coastal urban area is appropriate because of the timescales for effective accession and the concentration of e-commerce activities in this area; in other words, this area is the only place in China where the phenomenon of interest can be studied so far. Most existing surveys and studies on China’s e-commerce also focus only on this area (Tan and Ouyang, 2004). The case studied here is a single, critical case.

Looking for critical cases is one strategy for selecting purposeful samples (Patton, 1990) and critical instances have been categorized by GAO (1990) as one group of case studies.

Critical cases are those that can make a point quite dramatically or are, for some reason, particularly important in the scheme of things. A clue to the existence of a critical case is a statement to the effect that “if it happens there, it will happen anywhere”, or, vice versa, “if it doesn’t happen there, it won’t happen anywhere” (Patton, 1990, p.174). The focus of the data gathering in this instance is on understanding what is happening in that critical case.

Looking for the critical case is particularly important where resources may limit the evaluation to the study of only a single site. Under such conditions it makes strategic sense to pick the site that would yield the most information and have the greatest impact on the development of knowledge. While studying one or a few critical cases does not technically permit broad generalizations to all possible cases,

logical generalization can often be made from the weight of evidence produced in studying a single, critical case (Patton, 1990).

The purpose of a single case study can be description, discovery or testing. A full and rich description of a rare phenomenon contributes to knowledge (Yin, 1989). Single case studies enable theory building by developing and refining concepts (Pettigrew, 1985). Single cases can also be used for theory testing by confirming or disconfirming theory (Markus, 1989). The use of a single case in this thesis falls into the second category, that is, discovery or theory building.

IV. Time horizons

An important question to be asked in planning a research project is “do I want my research to be a ‘snapshot’ taken at a particular time or do I want it to be more akin to a ‘diary’ and be a representation of events over a given period?” (Saunders et al., 2003, p.95) The “snapshot” approach is what is called *cross-sectional* while the “diary” perspective *longitudinal*.

“Longitudinal” is a very broad term (Ruspini, 1999). Menard (1991) and Ruspini (1999; 2002) believe that longitudinal research must be defined in terms of both the data and the method of analysis that are used in the research. Based on this, they think that the following three types of research may be regarded as longitudinal:

- repeated cross-sectional studies;
- prospective studies, such as household panel surveys or cohort panels; and
- retrospective studies, such as oral histories and life and work histories.

For this last retrospective panel design, data may be collected at a single period, for several periods, usually including the period that ends with the time at which the data are collected (Menard, 1991; Ruspini, 1999; 2002).

The issue of time horizons is of some complexity for qualitative research and case study, as Bryman (1988) argues that there is an implicit longitudinal element

built into much qualitative research, which “is both a symptom and cause of an undertaking to view social life in processual, rather than static terms” (p.65). Yin (2003) also says that the ability to trace changes over time is a major strength of case studies – which are not limited to cross-sectional or static assessments of a particular situation. “The compiling of chronological events is a frequent technique in case studies and may be considered a special form of time-series analysis” (Yin, 2003, p.125).

Given the above argument, although this thesis is not clearly a longitudinal study, it can be appropriately categorized as a study with a longitudinal element, as it uses extensively published longitudinal survey data on Internet and e-commerce use in China and does some time-series analysis (Saunders et al., 2003). This is consistent with what Menard (1991, p.22) says, “Some studies do not fall neatly under the definition of longitudinal research or of pure cross-sectional research.”

V. Data collection methods

1. Sources of evidence

A major strength of case study data collection is the opportunity to use many different sources of evidence (Yin, 2003). Any finding or conclusion in a case study is likely to be much more convincing and accurate if it is based on several different sources of information, following a corroboratory mode.

With data triangulation, the potential problems of construct validity also can be addressed because the multiple sources of evidence essentially provide multiple measures of the same phenomenon.

Yin (1984) identifies six sources of evidence in case studies: interviews, documents, archival records, direct observation, participant-observation, and physical artifacts. The first three are the main sources of evidence for this thesis. Strengths and weaknesses of each of these three sources are listed in Table 3.3.

Table 3.3 Sources of evidence: Strengths and weaknesses

Source of evidence	Strengths	Weaknesses
Interviews	<p>(1) targeted – focuses directly on case study topic;</p> <p>(2) insightful – provides perceived causal inferences.</p>	<p>(1) bias due to poorly constructed questions;</p> <p>(2) response bias;</p> <p>(3) inaccuracies due to poor recall;</p> <p>(4) reflexivity – interviewee gives what interviewer wants to hear.</p>
Documents	<p>(1) stable – can be reviewed repeatedly;</p> <p>(2) unobtrusive – not created as a result of the case study;</p> <p>(3) exact – contains exact names, references, and details of an event;</p> <p>(4) broad coverage – long span of time, many events, and many settings.</p>	<p>(1) retrievability – can be low;</p> <p>(2) biased selectivity, if collection is incomplete;</p> <p>(3) reporting bias – reflects (unknown) bias of author;</p> <p>(4) access – may be deliberately blocked.</p>
Archival records	<p>(1) – (4) <i>[same as above for documentation]</i>;</p> <p>(5) precise and quantitative.</p>	<p>(1) – (4) <i>[same as above for documentation]</i>;</p> <p>(5) accessibility due to privacy reasons.</p>

Source: Yin, 2003, p.86.

2. Interviews

(1) Overview

Interviews are one of the most important sources of case study information (Yin, 2003). An interview is a purposeful discussion between two or more people (Kahn and Cannell, 1957). The purpose of interviewing is to access the perspective of the person being interviewed. The use of interviews can help a researcher to gather valid and reliable data that are relevant to the research question(s) and objectives (Saunders et al., 2003).

Table 3.4 displays the continuum model for interviews. At the left hand end of the continuum, interviews are tightly structured and standardized. Here, interview questions are planned and standardized in advance, pre-coded categories are used for responses, and the interview itself does not attempt to go to any great depth. At the right hand end, by contrast, interviews are unstructured and open-ended. Interview questions are not preplanned and standardized, but instead there are general questions to get the interview going and to keep it moving. Specific questions will then emerge as the interview unfolds, and the wording of those questions will depend upon directions the interview takes. There are no pre-established categories for responding (Punch, 1998).

Table 3.4 The continuum model for interviews

Structured interviews	Focused or semi-structured interviews	Unstructured interviews
Standardized interviews Survey interviews Clinical history taking	In-depth interviews Survey interviews Group interviews	In-depth interviews Clinical interviews Group interviews Oral or life history interviews

Source: Punch, 1998 (p.176) on the basis of Minichiello et al., 1990 (p.89).

The interviews adopted in this thesis are semi-structured and of an open-ended

nature (Yin, 2003). In semi-structured interviews the researcher has a list of themes and questions to be covered, although these may vary from interview to interview. This means that the researcher may omit some questions in particular interviews, given the specific context that is encountered in relation to the research topic. The order of questions may also be varied depending on the flow of the conversation. On the other hand, additional questions may be required to explore the research question and objectives (Saunders et al., 2003). Open-ended means that a researcher asks key respondents about the facts of a matter as well as their opinions about events. In some situations, the researcher may even ask the respondent to propose his or her own insights into certain occurrences and may use such propositions as the basis of further inquiry. The respondent also can suggest persons to be interviewed, as well as other sources of evidence (Yin, 2003).

Among the total 33 interviews conducted for this thesis, 15 are telephone interviews. Saunders et al. (2003) suggest that telephone interviews may be appropriate where access would otherwise be prohibited because of long distance, where a researcher has been able to establish his or her credibility through prior contact and has made clear that the requirements are reasonable and guided by ethical principles (Saunders et al., 2003).

(2) Qualitative sampling and key informant interviews

Perhaps nothing better captures the difference between quantitative and qualitative methods than the different logics that undergird sampling approaches (Patton, 1990). Within the conventional paradigm the purpose almost always is to define a sample that is in some sense representative of a population to which it is desired to generalize. Qualitative samples tend to be purposive, rather than random (Kuzel, 1992; Morse, 1989).

Qualitative sampling is often decidedly theory-driven (Miles and Huberman, 1994). Samples in qualitative studies are usually not wholly prespecified, but can evolve once fieldwork begins. Initial choices of informants lead the researcher to similar and different ones; observing one class of events invites comparison with

another; and understanding one key relationship in the setting reveals facets to be studied in others. This is conceptually-driven sequential sampling.

Two most well-known sampling strategies used in qualitative research are Patton's (1990) "purposeful sampling", and the "theoretical sampling" initially introduced by Glaser and Strauss and subsequently modified by Strauss, and Strauss and Corbin (Glaser and Strauss, 1967; Strauss, 1987; Strauss and Corbin, 1990).

The purpose of purposeful sampling is to select information-rich cases whose study will illuminate the questions under study. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, thus the term purposeful sampling (Patton, 1990).

Table 3.5 lists 16 sampling strategies for purposefully selecting information-rich cases. They can be used either within a complex case or across cases. They can be designed ahead of time, or be evolved during early data collection. The word case may refer either to "cases" taken as a whole or to "informants" within a single case setting (Miles and Huberman, 1994).

In its more general form, theoretical sampling means selecting groups or categories to study on the basis of their relevance to the research questions, theoretical position and analytical framework, analytical practice, and most importantly the argument or explanation that is developing. Theoretical sampling is concerned with constructing a sample (sometimes called a study group) which is meaningful theoretically and empirically, because it builds in certain characteristics or criteria which help to develop and test the theory or the argument (Mason, 2002).

If a theoretical or purposeful sampling strategy is used, then whether or not the sample is big enough to be statistically representative of a total population is not a major concern. However, a researcher will wish to include particular categories, or a range of categories, from which the researcher can generate data which will help him or her to develop his or her theory. The key question to ask is to whether the sample provides access to enough data, and with the right focus, to enable the researcher to address the research questions (Mason, 2002).

Table 3.5 Typology of sampling strategies in qualitative inquiry

Type of sampling	Purpose
Maximum variation	Documents diverse variations and identifies important common patterns
Homogeneous	Focuses, reduces, simplifies, facilitates group interviewing
Critical case	Permits logical generalization and maximum application of information to other cases
Theory based	Finding examples of a theoretical construct and thereby elaborate and examine it
Confirming and disconfirming cases	Elaborating initial analysis, seeking exceptions, looking for variation
Snowball or chain	Identifies cases of interest from people who know people who know what cases are information-rich
Extreme or deviant case	Learning from highly unusual manifestations of the phenomenon of interest
Typical case	Highlights what is normal or average
Intensity	Information-rich cases that manifest the phenomenon intensely, but not extremely
Politically important cases	Attracts desired attention or avoids attracting undesired attention
Random purposeful	Adds credibility to sample when potential purposeful sample is too large
Stratified purposeful	Illustrates subgroups; facilitates comparisons
Criterion	All cases that meet some criterion; useful for quality assurance
Opportunistic	Following new leads; taking advantage of the unexpected
Combination or mixed	Triangulation, flexibility, meets multiple interests and needs
Convenience	Saves time, money, and effort, but at the expense of information and credibility

Source: Miles and Huberman, 1994 (p.28) on the basis of Kuzel, 1992 and Patton, 1990.

Related to theoretical and purposeful sampling, one way of getting information quickly and at low cost is to conduct key informant interviews. Key informant interviews are “qualitative, in-depth interviews of 15 to 35 people selected for their first-hand knowledge about a topic of interest” (USAID, 1996, p.1). Key informant interviews resemble a conversation among acquaintances, allowing a free flow of ideas and information. Advantages of key informant interviews include: they provide information directly from knowledgeable people; they provide flexibility to explore new ideas and issues not anticipated during planning; and they are inexpensive and simple to conduct (USAID, 1996).

In qualitative sampling the size of the sample is determined by informational considerations. If the purpose is to maximize information, the sampling is terminated when no new information is forthcoming from new sampled units; thus redundancy is the primary criterion (Lincoln and Guba, 1985). This is called “theoretical saturation” in grounded theory research. Theoretical saturation is simply the point at which incremental learning is minimal because the researchers are observing phenomena seen before (Glaser and Strauss, 1967).

Seidman (1991) points out that “enough” is an interactive reflection of every step of the interview process and different for each study and each researcher. The criteria of sufficiency and saturation are useful, but practical exigencies of time, money, and other resources also play a role, especially in doctoral research (Seidman, 1991).

Table 3.6 lists the interview informants selected for this thesis. In total, 33 semi-structured and open-ended interviews were conducted with 40 key informants, including 18 face-to-face interviews and 15 telephone interviews. In terms of cities, 25 interviews (32 informants) were in Beijing and its neighboring city Tianjin; 4 interviews/informants in Shanghai and its neighboring city Hangzhou; and 4 interviews/informants in Guangdong Province (Shenzhen and Guangzhou).

The informants were theoretically sampled on the basis of their profession and city in which located. Based on the initial conceptual framework built after the

literature review, four groups of knowledgeable people were identified as key informants: officials from relevant Chinese government agencies, people from e-commerce supporting sectors, e-commerce business practitioners, and researchers in this field.

Table 3.7 lists the number of interviews/informants in different sectors among the above-mentioned four groups. All of the government informants are located in Beijing and most of them are at director level. All of the e-commerce company informants are at general manager level. Most of the other informants are at manager or similar level. On average, face-to-face interviews lasted for about one hour; telephone interviews lasted for about 30 minutes.

The maximum variation strategy of purposeful sampling was used within each sector. For example, within the e-commerce practitioner group, informants cover both B2B and B2C e-commerce companies and they are located in four different cities.

The cities selected for interviews can be justified for two reasons: First, most Chinese Internet users live in big cities, such as Beijing, Guangzhou and Shanghai, and other places in the eastern coastal region (UNCTAD, 2001; Zhao, 2002). Current e-commerce activities in China are also concentrated in this area. Most existing surveys and studies on China's e-commerce also focus only on this area (Tan and Ouyang, 2004). Second, these cities are among the first in China's geographical opening process for WTO commitments in three most important service sectors for e-commerce – telecommunication, banking, and transport/distribution-related services (see Table 1.2 in Chapter 1, p.9). Thus, they are the most information-rich places and only area in China where the phenomenon of interest can be studied so far.

Table 3.6 Interview informants

Interview	City	Sector	Sex	Telephone/Face-to-face
1	Beijing	Ministry of Commerce	Female	Face-to-face
2	Beijing	Ministry of Commerce	Male	Face-to-face
3	Beijing	Ministry of Information Industry	Male	Face-to-face
			Female	
			Male	
4	Beijing	Chinese telecom company	Male	Face-to-face
5	Beijing	Chinese Internet service provider (ISP)	Male	Face-to-face
6	Beijing	Foreign telecom company	Male	Face-to-face
			Male	
			Female	
			Male	
7	Beijing	Chinese IT company	Male	Telephone
8	Beijing	Foreign IT company	Male	Telephone
9	Beijing	Foreign IT company	Male	Telephone
10	Beijing	China Banking Regulatory Commission	Male	Face-to-face
			Male	
			Male	
11	Beijing	Chinese bank	Male	Telephone
12	Beijing	Chinese bank	Female	Telephone
13	Beijing	Chinese bank	Male	Telephone

14	Beijing	Foreign bank	Male	Face-to-face
15	Beijing	Foreign bank	Male	Telephone
16	Beijing	China International Freight Forwarders Association	Male	Face-to-face
17	Beijing	China Post	Female	Telephone
18	Beijing	Chinese logistics company	Male	Face-to-face
19	Beijing	Foreign logistics company	Male	Face-to-face
20	Beijing	B2C e-commerce company	Male	Telephone
21	Beijing	B2B e-commerce company	Male	Face-to-face
22	Beijing	China Council for Promotion of International Trade	Male	Telephone
23	Beijing	Market research and consulting company	Male	Face-to-face
24	Beijing	University	Female	Face-to-face
25	Shanghai	Foreign bank	Female	Face-to-face
26	Shanghai	Foreign bank	Female	Face-to-face
27	Shanghai	Chinese telecom company	Male	Face-to-face
28	Shenzhen	Chinese bank	Male	Telephone
29	Shenzhen	Chinese bank	Female	Telephone
30	Shenzhen	Chinese telecom company	Male	Telephone
31	Guangzhou	B2C e-commerce company	Female	Telephone
32	Hangzhou	B2B e-commerce company	Male	Face-to-face
33	Tianjin	Chinese bank	Male	Telephone

In total, 33 interviews, 40 informants. In terms of cities, 24 interviews (31 informants) in Beijing, 3 interviews/informants in Shanghai, 3 in Shenzhen, 1 in Guangzhou, 1 in Hangzhou, 1 in Tianjin. Among the 33 interviews, 18 are face-to-face, 15 are telephone interviews.

Table 3.7 Number of interviews (informants) in different sectors

Sector	Sub-sector	Number of interviews (informants)					
		Beijing	Shanghai	Shenzhen	Other city	Sub-total	Total
Ministry of Commerce		2 (2)				2 (2)	2 (2)
Ministry of Information Industry		1 (3)				1 (3)	1 (3)
China Banking Regulatory Commission		1 (3)				1 (3)	1 (3)
China International Freight Forwarders Association		1 (1)				1 (1)	1 (1)
China Council for Promotion of International Trade		1 (1)				1 (1)	1 (1)
Telecom companies	Chinese telecom company	1 (1)	1 (1)	1 (1)		3 (3)	5 (8)
	Chinese ISP	1 (1)				1 (1)	
	Foreign telecom company	1 (4)				1 (4)	
IT Companies	Chinese IT company	1 (1)				1 (1)	3 (3)
	Foreign IT company	2 (2)				2 (2)	
Banks	Chinese banks	3 (3)		2 (2)	1 (1)	6 (6)	10 (10)
	Foreign banks	2 (2)	2 (2)			4 (4)	
Post, delivery and logistics companies	China Post	1 (1)				1 (1)	3 (3)
	Chinese logistics company	1 (1)				1 (1)	
	Foreign logistics company	1 (1)				1 (1)	
E-commerce companies	B2C e-commerce company	1 (1)			1 (1)	2 (2)	4 (4)
	B2B e-commerce company	1 (1)			1 (1)	2 (2)	
Market research and consulting companies		1 (1)				1 (1)	1 (1)
Universities		1 (1)				1 (1)	1 (1)
Total		24 (31)	3 (3)	3 (3)	3 (3)	33 (40)	33 (40)

(3) Interview guide

An interview guide is “a list of questions or issues that are to be explored in the course of an interview” (Patton, 1990, p.283). An interview guide is prepared in order to make sure that basically the same information is obtained from a number of people by covering the same material. The interview guide provides topics or subject areas within which the interviewer is free to explore, probe, and ask questions that will elucidate and illuminate that particular subject. Thus the interviewer remains free to build a conversation within a particular subject area, to word questions spontaneously, and to establish a conversational style – but with the focus on a particular subject that has been predetermined (Patton, 1990).

The advantage of an interview guide is that it makes sure that the interviewer/evaluator has carefully decided how best to use the limited time available in an interview situation. The interview guide helps make interviewing across a number of different people more systematic and comprehensive by delimiting in advance the issues to be explored (Patton, 1990).

A number of decisions must be made in planning an interview guide. The researcher must decide what questions to ask, how to sequence questions, how much detail to solicit, how long to make the interview, and how to word the actual questions. Patton (1990) identifies six kinds of questions that can be asked of people; on any given topic it is possible to ask any of these questions:

- Experience/behavior questions
- Opinion/values questions
- Feeling questions
- Knowledge questions
- Sensory questions
- Background/demographic questions

Any of the questions described above can be asked in the present tense, past tense, or future tense. But Patton (1990) points out that a researcher should begin by asking questions about the present, then, using the present as a baseline, ask questions about

the same activity or attitude in the past or future.

The way a question is worded is one of the most important elements determining how the interviewee will respond. As Payne (1951) observed in his classic book on questioning, asking questions is an art. For purposes of qualitative inquiry, Patton (1990, p.295) argues that, good questions should, at a minimum, be “open-ended”, “neutral”, “singular”, and “clear”.

The interview guide used for this thesis is attached in Appendix A (p.371).

(4) Reporting media

An important issue in interviewing concerns reporting media (Walsham, 1995), since it is vital in an interpretive study to “capture” people’s interpretations in as effective a way as possible, while at the same time conducting the normal social interchanges of the interview.

One approach is to tape-record all research interviews. As Table 3.8 shows, tape-recording interviews can be both advantageous and disadvantageous. To tape-record an interview, permission should always be sought (Saunders et al., 2003).

Table 3.8 Advantages and disadvantages of tape-recording the interview

Advantages	Disadvantages
<ul style="list-style-type: none">- allows interviewer to concentrate on questioning and listening;- allows questions formulated at an interview to be accurately recorded for use in later interviews where appropriate;- can re-listen to the interview;- accurate and unbiased record provided;- allows direct quotes to be used;- permanent record for others to use.	<ul style="list-style-type: none">- may adversely affect the relationship between interviewee and interviewer (possibility of focusing on the recorder);- may inhibit some interviewee responses and reduce reliability;- possibility of a technical problem;- disruption to discussion when changing tapes;- time required to transcribe the tape.

Source: Saunders et al., 2003, p.264.

The main alternative to tape-recording is to make rough but extensive notes during interviews, and to write them up in full as soon as possible after the interview. Patton (1990) even suggests that the use of the tape recorder does not eliminate the need for taking notes. When a tape recorder is being used during the interview, Patton (1990) suggests that notes should consist primarily of key phrases, lists of major points made by the respondent, and key terms or words shown in quotation marks that capture the interviewee's own language.

For this thesis, the approach mentioned by Walsham (1995) was adopted: note-taking supplemented by tape-recording where appropriate. Immediately following the interview, a full record of the interview was compiled. The process involved editing rough-draft transcripts and then typing into final form. This is recommended by Saunders et al. (2003) as one of the means to control bias and to produce reliable data for analysis.

3. Documents and archival records

Documents and records are singularly useful sources of information, although they have often been ignored (Patton, 1990). But there are many reasons that they should be more consistently tapped. They are, first of all, almost always available, on a low-cost (mostly investigator time) or free basis. Second, they are a stable source of information, both in the sense that they may accurately reflect situations that occurred at some time in the past and that they can be analyzed and reanalyzed without undergoing changes in the interim. Third, they are a rich source of information, contextually relevant and grounded in the contexts they represent. Their richness includes the fact that they appear in the natural language of that setting. Fourth, they are often legally unassailable, representing, especially in the case of records, formal statements that satisfy some accountability requirement. Finally, they are, unlike human respondents, nonreactive (Patton, 1990).

The terms "document" and "record" are often used interchangeably, but both

Patton (1990) and Yin (2003) elect to define them in somewhat different ways. Examples of archival records include: service records, organizational records, maps and charts, lists, survey data, and personal data (Yin, 2003). The term “document” is used to denote any written or recorded material other than a record. Examples of documents include letters, diaries, speeches, newspaper editorials, case studies, television scripts, administrative documents, and formal studies (Yin, 2003; Patton, 1990). For case studies, the most important use of documents is to corroborate and augment evidence from other sources.

Document analysis is particularly important for this thesis as the topic of interest is closely related to international trade rules, national laws and government policies. Four types of documents are essential in this study: first, WTO rules relevant to e-commerce, such as the ITA, the GATS, the TRIPS and others; second, the commitments the Chinese government made to become a member of the WTO; third, Chinese laws and regulations on e-commerce and related service sectors; fourth, formal studies, news clippings and other articles on the topic.

The main archival records collected for this thesis are survey data on Internet usage, e-commerce activity collected by relevant Chinese organizations, such as the China Internet Network Information Center (CNNIC).

4. Instrumentation and case records

Yin (2003) argues that a case study protocol is a major way of increasing the reliability of case study research and is intended to guide the investigator in carrying out the data collection from a single-case study. However, Miles and Huberman (1994) give three arguments concerning how much preplanning and structuring of instrumentation is desirable: “little” (hardly any prior instrumentation) to “a lot” (of prior instrumentation, well structured) to “it depends” (on the nature of the study).

The arguments for “it depends” suggest that: (1) heavy initial instrumentation or closed-ended devices are inappropriate for an exploratory, largely descriptive study; and (2) a single-case study calls for less front-end preparation than does a

multiple-case study. For these two reasons, this thesis adopted a simple interview guide instead of a well-developed case study protocol.

Yin (2003) also suggests creating a case study database to increase the reliability of the case study. The database can be developed with four components: case study notes, case study documents, tabular materials, and narratives.

Table 3.9 The process of constructing case studies

Step 1:	<i>Assemble the raw case data.</i> These data consist of all the information collected about the person or program for which a case study is to be written.
Step 2 (optional):	<i>Construct a case record.</i> This is a condensation of the raw case data organizing, classifying, and editing the raw case data into a manageable and accessible package.
Step 3:	<i>Write a case study narrative.</i> The case study is a readable, descriptive picture of a person or program making accessible to the reader all the information necessary to understand that person or program. The case study is presented either chronologically or thematically (sometimes both). The case study presents a holistic portrayal of a person or program.

Source: Patton, 1990, p.388.

The case study database is very similar to Patton's (1990) case records. The case record pulls together and organizes the voluminous case data into a comprehensive, primary resource package. The case record includes all the major information that will be used in doing the final case analysis and case study. Information is edited,

redundancies are sorted out, parts are fitted together, and the case record is organized for ready access either chronologically and/or topically. Patton (1990) argues that the case record must be complete but manageable; it should include all the information needed for subsequent analysis, but it is organized at a level beyond that of the raw case data.

As Table 3.9 shows, the case record can be used to construct a case study after assembling raw case data and before writing the actual case study. However, this process is optional (Patton, 1990). A case record is only constructed when there is a great deal of unedited raw data from interviews, observations, and documents that must be edited and organized before the final case study is written. In many studies, the researcher will work directly from the raw data in case files to write the final case study (Patton, 1990).

In this thesis, the case record is mainly composed of interview transcripts, survey data, and documents.

VI. Data analysis

1. Overview of qualitative data analysis

The purpose of qualitative inquiry is to produce findings. The process of data collection is not an end in itself. The culminating activities of qualitative inquiry are analysis, interpretation, and presentation of findings (Patton, 1990).

The challenge in qualitative data analysis is to make sense of massive amounts of data, reduce the volume of information, identify significant patterns, and construct a framework for communicating the essence of what the data reveal. The problem is that “we have few agreed-on canons for qualitative data analysis, in the sense of shared ground rules for drawing conclusions and verifying their sturdiness” (Miles and Huberman, 1984, p.16). There are no formulas for determining significance. There are no ways of perfectly replicating the researcher’s analytical thought

processes. There are no straightforward tests for reliability and validity. In short, there are no absolute rules except to do the very best with one's full intellect to fairly represent the data and communicate what the data reveal given the purpose of the study (Patton, 1990).

There are many qualitative research traditions or approaches, with the result that there are also different strategies to deal with the data collected. Based on Coffey and Atkinson (1996), Dey (1993), Miles and Huberman (1994), and Tesch (1990), Saunders, et al. (2003) seek to identify a number of features of the process involved that are common to several of these approaches. One particular feature they have found that is common to these types of strategy is that they all involve a researcher in disaggregating the mass of qualitative data collected, as the researcher collects them, into meaningful and related parts or categories. Saunders, et al. (2003) also identify a general set of processes for qualitative data analysis, which involves the following activities: categorization, "unitizing" data, recognizing relationships and developing categories, and developing and testing hypotheses.

2. Strategy for analysis: Using a theoretical framework

Yin (2003) argues that the analysis of case study evidence needs a general analytic strategy in the first place. A general analytic strategy helps a researcher to treat the evidence fairly, produce compelling analytic conclusions, and rule out alternative interpretations. The strategy also will help to use tools and make manipulations more effectively and efficiently.

The general analytic strategy for this thesis is to follow the initial conceptual framework built on the basis of literature review. Yin (1994) suggests that, where a researcher has made use of existing theory to formulate research questions and objectives, the researcher may also use the theoretical propositions that helped him or her do this as a means to devise a framework to help to organize and direct data analysis.

Even though a researcher may incorporate an inductive approach, commencing

the work from a theoretical perspective may have certain advantages. It will link the research into the existing body of knowledge in the subject area, help the researcher to get started and provide him or her with an initial analytical framework (Saunders et al., 2003).

3. Inductive data analysis

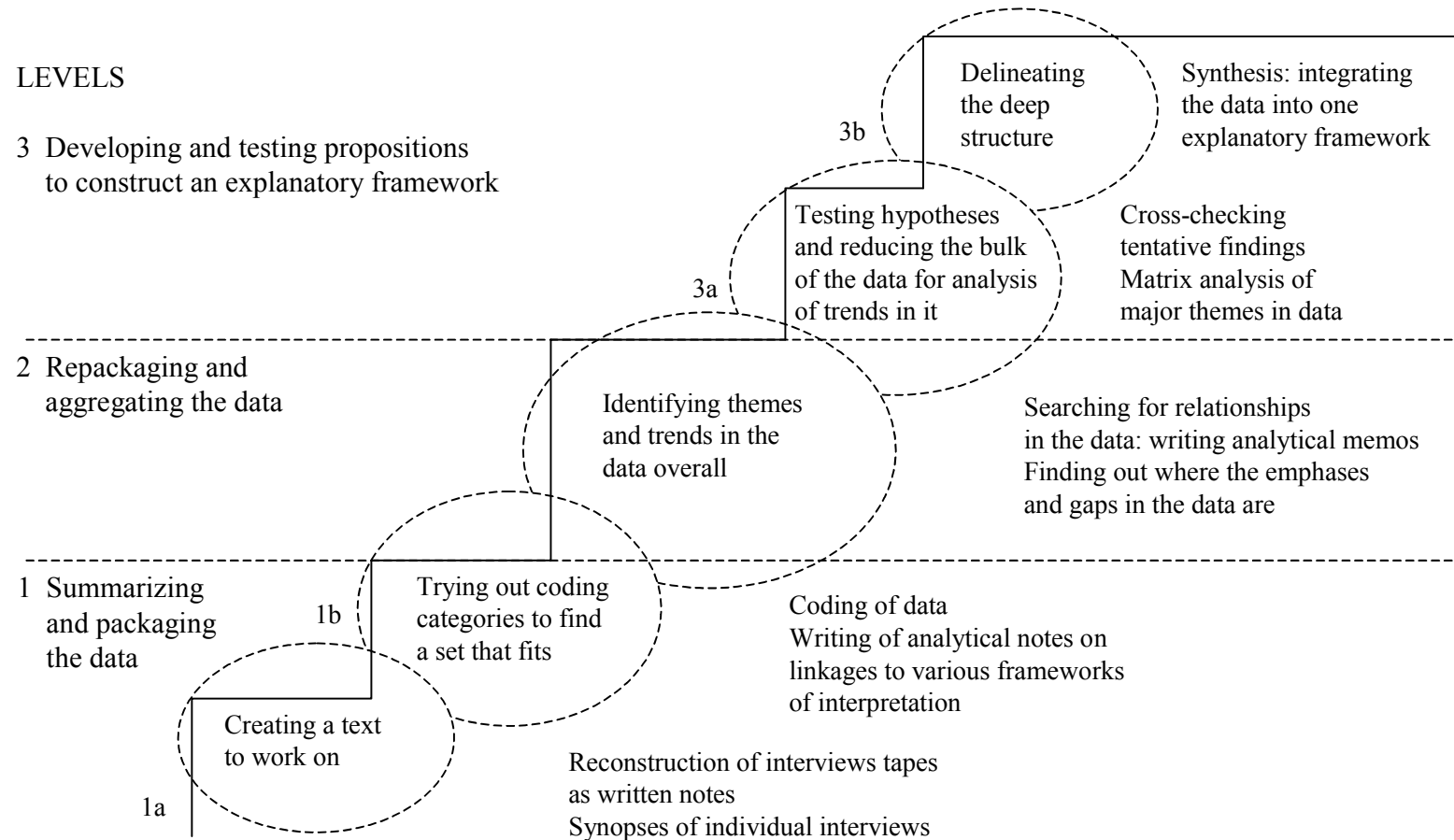
Although this thesis has an initial analytical framework, its purpose is still to develop a theory. Therefore, its data analysis is also of an inductive nature. Inductive data analysis may be defined most simply as a process for “making sense” of field data (Lincoln and Guba, 1985, p.203). The data analysis strategy adopted here is the one proposed by Miles and Huberman (1984; 1994).

Miles and Huberman (1984, pp.21-23) describe data analysis as consisting of three concurrent activities. *Data reduction* refers to the process of selecting, simplifying, abstracting and transforming the raw case data. *Data displays* include narratives, matrices, graphs, tables and various charts. *Conclusion drawing/verification* involves drawing meaning from data and building a logical chain of evidence. Various types of matrices, clustering diagrams and causal networks are used. Several techniques are similar to those of grounded theory; these include coding of data segments into categories identified from the study’s initial conceptual framework or hypotheses, subsequent pattern coding to identify patterns or repeatable regularities in the data, and memoing (making notes) as a step towards producing a conceptually coherent explanation of the phenomenon being studied.

(1) The analytic progression

Following Carney (1990), Miles and Huberman (1994) see the analytic progression as a sort of “ladder of abstraction” (see Figure 3.2). A researcher begins with a text, trying out coding categories on it, then moving to identify themes and trends, and then to testing hunches and findings, aiming first to delineate the “deep structure” and then to integrate the data into an explanatory framework.

Figure 3.2 The ladder of analytical abstraction



Source: Miles and Huberman, 1994 (p.92) on the basis of Carney, 1990.

There is no clear or clean boundary between describing and explaining. The researcher typically moves through a series of analysis episodes that condense more and more data into a more and more coherent understanding of what, how, and why (Miles and Huberman, 1994).

(2) Codes and first-level coding

Codes are “tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study” (Miles and Huberman, 1994, p.56). Codes are used to retrieve and organize “chunks” of varying size – words, phrases, sentences, or whole paragraphs, connected or unconnected to a specific setting, so the researcher can quickly find, pull out, and cluster the segments relating to a particular research question, hypothesis, construct, or theme. Clustering, and, as we will see, display of condensed chunks, then sets the stage for drawing conclusions (Miles and Huberman, 1994).

Coding is analysis. The conventional advice is to go through transcripts or field notes with a pencil, marking off units that cohered because they dealt with the same topic and then dividing them into topics and subtopics at different levels of analysis. These identifiable topics (or themes or gestalts) presumably would recur with some regularity. They would be given a “name”, and instances of them would be marked with a shorthand label – a code (Miles and Huberman, 1994).

Codes can be at different levels of analysis, ranging from the descriptive to the inferential. First-level coding is a device for summarizing segments of data. Codes used at this level can be either descriptive or interpretive codes.

The method of creating codes suggested by Miles and Huberman (1994) is that of creating a provisional “start list” of codes. That list may come from the conceptual framework, literature review, professional definitions, local commonsense constructs, and researcher’s values and prior experiences (Miles and Huberman, 1994; Bulmer, 1979).

For all approaches to coding – predefined, accounting-scheme guided, or postdefined – codes will change and develop as field experience continues (Miles and

Huberman, 1994). Some codes decay, other codes flourish, still other codes emerge progressively.

Whether codes are created and revised early or late, Miles and Huberman (1994) emphasize that they should have some conceptual and structural order; clear operational definitions are also indispensable.

Table 4.4 in Chapter 4 (p.119) is the final code list for this thesis.

(3) Pattern coding

Pattern codes are explanatory or inferential codes, ones that identify an emergent theme, configuration, or explanation. They pull together a lot of material into more meaningful and parsimonious units of analysis. Pattern coding is a way of grouping those summaries into a smaller number of sets, themes, or constructs. For qualitative researchers, it is an analogue to the cluster-analytic and factor-analytic devices used in statistical analysis (Miles and Huberman, 1994).

Pattern codes usually turn around four summarizers: themes, causes/explanations, relationships among people, and more theoretical constructs.

(4) Memoing

A memo is “the theorizing write-up of ideas about codes and their relationships as they strike the analyst while coding ... it can be a sentence, a paragraph or a few pages ... it exhausts the analyst’s momentary ideation based on data with perhaps a little conceptual elaboration” (Glaser, 1978, pp.83-84).

Memoing helps the analyst move easily from empirical data to a conceptual level, refining and expanding codes further, developing key categories and showing their relationships, and building toward a more integrated understanding of events, processes, and interactions in the case (Miles and Huberman, 1994).

Miles and Huberman (1994) suggest that priority should always be given to memoing. When an idea strikes, a researcher should stop whatever else is doing and write the memo. Memoing should also begin as soon as the first field data start coming in, and usually should continue right up to production of the final report.

(5) Developing propositions

As a study proceeds, there is a greater need to formalize and systematize the researcher's thinking into a coherent set of explanations. One way to do that is to generate propositions, or connected sets of statements, reflecting the findings and conclusions of the study (Miles and Huberman, 1994).

(6) Drawing and verifying conclusions

Miles and Huberman (1994) give two lists of tactics, the first for generating meaning in qualitative analysis, and the second for testing or confirming findings (see Table 3.10).

Table 3.10 Tactics for generating meaning and testing or confirming findings

Tactics for generating meaning	Tactics for testing or confirming findings
1. noting patterns, themes	1. checking for representativeness
2. seeing plausibility	2. checking for researcher effects
3. clustering	3. triangulating
4. making metaphors	4. weighting the evidence
5. counting	5. checking the meaning of outliers
6. making contrasts/comparisons	6. using extreme cases
7. partitioning variables	7. following up surprises
8. subsuming particulars into the general	8. looking for negative evidence
9. factoring	9. making if-then tests
10. noting relations between variables	10. ruling out spurious relations
11. finding intervening variables	11. replicating a finding
12. building a logical chain of evidence	12. checking out rival explanations
13. making conceptual/theoretical coherence	13. getting feedback from informants

Source: Miles and Huberman, 1994.

Tactics for generating meaning are numbered from 1 to 13. They are arranged roughly from the descriptive to the explanatory, and the concrete to the more conceptual and abstract.

Tactics for testing or confirming findings are also numbered from 1 to 13, beginning with ones aimed at ensuring the basic quality of the data, then moving to those that check findings by examining exceptions to early patterns. They conclude with tactics that take a skeptical, demanding approach to emerging explanations (Miles and Huberman, 1994).

4. Data display

By display Miles and Huberman (1994) mean a visual format that presents information systematically, so the user can draw valid conclusions and take needed action.

The formats suggested by Miles and Huberman (1994) fall into two major families: matrices, with defined rows and columns, and networks, with a series of “nodes” with links between them.

Visual displays are an important part of qualitative analysis (Ryan and Bernard, 2000). Valid analysis requires, and is driven by, displays that are focused enough to permit a viewing of a full data set in the same location, and are arranged systematically to answer the research questions at hand. By using such displays, the chances of drawing and verifying valid conclusions are much greater than for extended text, because the display is arranged coherently to permit careful comparisons, detection of differences, noting of patterns and themes, seeing trends, and so on (Miles and Huberman, 1994).

VII. Research ethics

The ethical issues in research are the concerns, dilemmas, and conflicts that arise over the proper way to conduct research (Neuman, 1994). Ethics define what is or is not legitimate to do, or what “moral” research procedure involves. Ethical research requires balancing the value of advancing knowledge against the value of noninterference in the lives of others. Furthermore, Miles and Huberman (1994) indicate that ethical issues have significant implications for qualitative data analysis. For example, weak consent may lead to poorer data.

This research was approved by the ANU Human Research Ethics Committee (HREC) on 6 February 2004. The ethical concerns in this thesis are mainly related to interviews, such as consent, confidentiality, and recruitment. As required by the HREC, details on how these issues would be handled were included in the information letter and the consent form for this thesis (see Appendix B and C, pp. 381-384). Up to now, they have been strictly followed.

As the interviews in this thesis are key-informant interviews, informants were targeted purely based on their profession and knowledge about the research topic. They were first approached by a contact person, who introduced the researcher, the research, and asked the potential informants whether they would like to participate. If the potential informants refused, they were not further approached. The potential informants who agreed were requested by the contact person to give their telephone numbers and/or e-mail addresses.

After obtaining the contact methods of the informants, the researcher first sent an e-mail message to the informants with attachments of the information letter, the consent form, and indicative interview questions. Several days after the e-mail was sent, the researcher would make a phone call to follow up if no e-mail reply was received. Time, venue and interview method were decided at this stage. Because of the informants’ schedule and preference, some interviews were conducted on telephone. Their consents on recording were then obtained on the telephone before the interviews started. Telephone interviews were also used for some informants who were located in a different city. For face-to-face interviews, the researcher brought with him both the information letter and the consent form. The informants’ signature

on the consent form and their agreement on recording were obtained before interview questions were asked.

The interview recordings were numbered and a separate list of corresponding numbers and names were kept. The interview recordings and notes were securely stored in a locked cabinet in a locked room during and after the field trip. The researcher is the only person with the key to the cabinets. The computer is also protected by a password, which only the researcher knows.

When drafting the thesis, particular attention has been paid not to name interview subjects and not to disclose their job title if this would reveal the identity of the interview subject.

VIII. Suggested evaluation criteria

Lee et al. (1995) made a call “to discuss explicitly the criteria for judging qualitative, case and interpretive research in information systems” (p.367).

Guba and Lincoln (1981) maintain that qualitative data are credible when others can recognize experiences after having only read about them. Nonetheless, there is a strong case for undertaking more strenuous attempts to establish the credibility of qualitative research findings (Cutcliffe and McKenna, 1999). Unfortunately, there is no universal agreement on how to evaluate qualitative research (Flick, 2002).

There exist distinct philosophical and methodological positions concerning the trustworthiness of qualitative research findings (Cutcliffe and McKenna, 1999). Mays and Pope (2000) therefore suggest that it would be unwise to consider any single set of guidelines as definitive.

There is debate about whether it is feasible or desirable to establish quality criteria for qualitative research, and how far these are different to criteria for quantitative research. Spencer et al. (2003, p.8) summarize this debate as “positions range from a rejection of the notion of criteria altogether, to the identification of

criteria or principles developed specifically to qualitative research, to the retention of concepts drawn from quantitative research.”

As “critical realists”, Miles and Huberman (1994, p.277) hold the view that “shared standards are worth striving for” and raise this question, “would you be bothered if a journalist did not tell the truth about you, or if a court dismissed a case against someone who had assaulted you, saying that everyone has different interpretations?”

Maxwell (2004a) further argues that, in contrast to most relativist, constructivist, or postmodern positions, which have often been invoked as stances for qualitative research, realism emphasizes the fundamental importance of validity issues (Hammersley, 1992; Maxwell, 1992, 2002, 2004b), as well as the legitimacy of causal explanation, in qualitative research. Thus, realism supports the argument that qualitative research can be scientific in the full sense of the term, providing explicitly developed, testable explanations for the phenomena studied (Maxwell, 2004a).

Since the philosophical assumption underlying this thesis falls into the realm of critical realism, two sets of principles are suggested and will be discussed in detail in Chapter 10 to assess the quality of this thesis: first, the conventional criteria for judging the rigor of inquiries including internal validity, external validity, reliability, and objectivity (Cook and Campbell, 1979; Guba and Lincoln, 1989; Miles and Huberman, 1994; Yin, 1994); second, the six quality criteria proposed by Healy and Perry (2000) for judging validity and reliability of qualitative research within the realism paradigm.

IX. Summary

This chapter answers the important question of how the inquiry is conducted in this thesis. The philosophical assumption underlying the thesis is critical realism. The research combines elements of both inductive and deductive approaches. A case study is chosen as the research strategy for this thesis to develop the theory. In terms of time

horizons, this research is a study with a longitudinal element. Multiple sources of evidence including interviews, documents, and archival records are used to construct the case, with theoretically and purposefully sampled key informant interviews as the major data collection method. The strategies suggested by Yin (2003) and Miles and Huberman (1994) are adopted in conducting qualitative data analysis. The ethical issues have been properly handled. Two sets of criteria are suggested to evaluate the research.

Chapter 4 Overview of theoretical models

A key question for researchers in any tradition, regardless of philosophical stance, concerns the role of theory in their research (Walsham, 1995). The purpose of this research is to develop, or to build a theory.

In qualitative analysis, once the researcher identifies a set of things (themes, concepts, beliefs, behaviors), the next step is to identify how these things are linked to each other in a theoretical model (Ryan and Bernard, 2000; Miles and Huberman, 1994).

Before presenting the theoretical models developed in this research, the chapter first gives an introduction to process theories, the critical realist view of causal explanation and evaluation research, as they are the bases of the theoretical models and they may be new to some readers.

I. Process theories and study of change

1. Variance theories and process theories

Efforts to describe and explain can take two different approaches (Miles and Huberman, 1994). They are distinguished by Mohr (1982) as “variance theory” and “process theory”.

The distinction in theoretical structure between variance and process theories is somewhat analogous to the distinction between cross-sectional and longitudinal research methodologies (Markus and Robey, 1988). Variance theories are concerned with predicting levels of outcome from levels of contemporaneous predictor variables; process theories are concerned with explaining how outcomes develop over time.

Table 4.1 Variance theory and process theory

	Variance theory	Process theory
Role of time	Static	Longitudinal
Definition	The cause is necessary and sufficient for the outcome	Causation consists of necessary conditions in sequence; chance and random events play a role
Assumptions	Outcome will invariably occur when necessary and sufficient conditions are present	Outcomes may not occur (even when conditions are present)
Elements	Variables	Discrete outcomes
Logical form	If X, then Y; If more X, then more Y	If not X, then not Y; cannot be extended to “more X” or “more Y”

Source: Markus and Robey, 1988, p.590

Mohr (1982) explains the difference between variance theories and process theories in terms of the hypothesized relationships between logical antecedents and outcomes (see the row of “definition” in Table 4.1). In variance theories, the precursor (loosely, that which might be referred to as the “cause”) is posited as a necessary and sufficient condition for the outcome. In process theories, the precursor is assumed insufficient to “cause” the outcome, but is held to be merely necessary for it to occur (Markus and Robey, 1988).

In general, necessary conditions alone cannot constitute a satisfactory theory (Markus and Robey, 1988). For example, while water may be necessary for the growth of plants, it is not sufficient; therefore, it cannot be considered the cause of plant growth. Necessary conditions, however, can comprise a satisfactory causal explanation when they are combined in a “recipe that strings them together in such a way as to tell the story of how (the outcome) occurs whenever it does occur” (Mohr,

1982, p.37). In short, outcomes are (partially) predictable from a knowledge of process, not from the level of predictor variables (Markus and Robey, 1988).

Variance theories differ from process theories in their assumptions about the relationship between antecedents and outcomes. Variance theories posit an invariant relationship between causes and effects when the contingent conditions obtain. Process theories assert that the outcome can happen only under these conditions, but that the outcome may also fail to happen (Markus and Robey, 1988).

Variance and process theories also differ in their conceptualization of outcomes and precursors. In variance theories, these constructs are usually conceptualized as variables; entities which can take on a range of values. In process theories, outcomes are not conceived as variables that can take on a range of values, but rather as discrete or discontinuous phenomena, that might be called “changes of state” (Markus and Robey, 1988).

In his work Mohr (1982) insists on the necessity of keeping variance and process theories separate. However, Langley (1999) finds that this requirement is extremely difficult to satisfy. In their book on qualitative data analysis, Miles and Huberman (1994) recommend that both approaches need to be combined for careful description and explanation.

2. Process and study of change

Process is an essential ingredient in a theory of change; thus one way to improve the literature on change is to encourage a form of research which is contextualist and processual in character (Pettigrew, 1990).

Van de Ven and Huber (1990) point out that study of change tends to focus on two kinds of questions (p.213): (1) What are the antecedents or consequences of changes? (2) How does a change emerge, develop, grow or terminate over time?

Putting these two questions in an input-process-output model, the first question focuses on the inputs and outcomes of change, while the second examines the process of change (Van de Ven and Huber, 1990). The first question usually entails a

“variance theory” (Mohr, 1982) explanation of the input factors (independent variables). The second question requires a “process theory” explanation of the temporal order and sequence in which a discrete set of events occurred based on a story or historical narrative (Abbott, 1988). In terms of causality, the first question requires evidence of covariation, temporal precedence, and absence of spurious associations between the independent and dependent variables (Blalock, 1972), while the second question explains an observed sequence of events in terms of some underlying generative mechanisms or laws that have the power to cause events to happen in the real world and the particular circumstances or contingencies when these mechanisms operate (Tsouskas, 1989).

Van de Ven and Huber (1990) suggest that one way to significantly improve the robustness of answers to the first question is to explicitly examine the process theory that is assumed to explain why an independent (input) variable causes a dependent (output) variable. To do so requires opening the proverbial “black box” between inputs and outcomes, and to take process seriously by examining temporal sequences of events (Van de Ven and Huber, 1990, p.214).

As Pettigrew (1990) argues, theoretically sound and practically useful research on change should explore the contexts, content, and process of change together with their interconnections through time. Abbott (1997) brings in an added complexity. He argues that the analysis of any single process occurs not just in a nested context but also alongside other processes. There may be a requirement to understand a network of intertwined processes (Pettigrew, 1992).

3. Advantage and use of process theories

The main advantage of process theories is that they can deal with more complex causal relationships than variance theories, and provide an explanation of how the inputs and outputs are related, rather than simply noting the relationship (Crowston, 2000).

By their very structure, variance theories posit an invariant relationship between antecedents and outcomes. This assumption may simply be too stringent for social phenomena. As Sutherland (1973) has put it, “not all real-world phenomena will ultimately become deterministic if we spend enough time analyzing them” (p.145). In circumstances like these, process theories may enable researchers to find patterns in empirical data that variance theorists might miss (Markus and Robey, 1988).

Consequently, explicit use of process theory as an alternative to variance theory is becoming more common in social sciences (Maxwell, 2004a). Many theories on innovation diffusion are process theories, at least implicitly (Markus and Robey, 1988). In what is widely viewed as the preeminent work on the diffusion of innovations, Rogers (1995) argues that use of variance-theory methods, such as surveys, in diffusion research “is intellectually destructive of the ‘process’ aspects of the diffusion of innovations” (p.122).

II. Realist causality and evaluation

1. Realist approach to causality

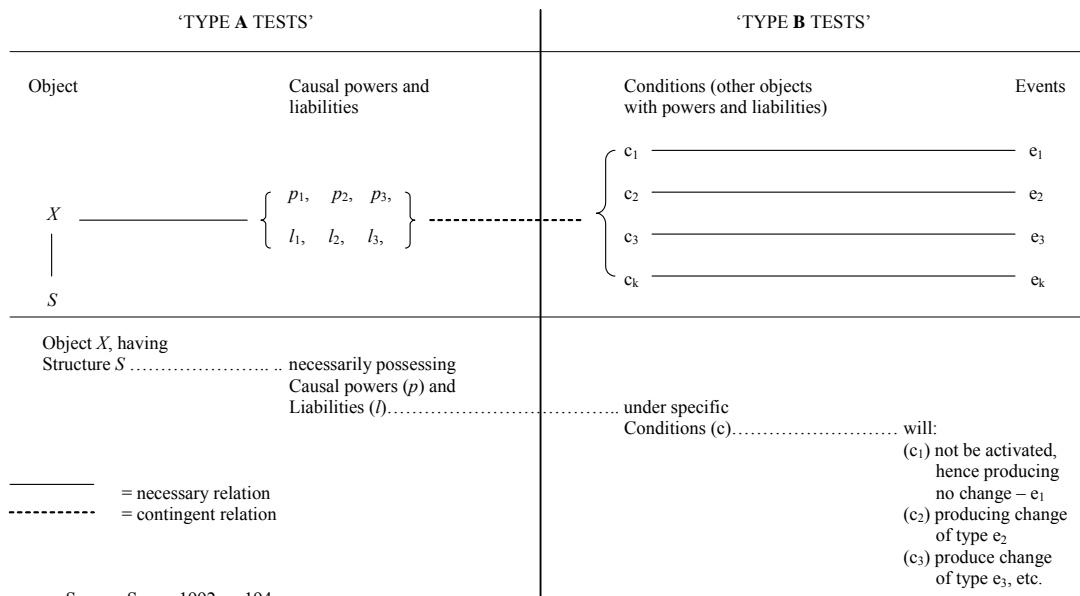
The regularity view of causality deals with whether X caused Y, rather than how it did so. It uses “cause” mainly for the systematic relationship between variables, rather than for causal processes (Maxwell, 2004a).

The most widely accepted alternative to the regularity approach to causality is a realist approach that sees causality as fundamentally referring to the actual causal mechanisms and processes that are involved in particular events and situations (Maxwell, 2004a). A mechanism is not a variable but an account of the makeup, behavior and interrelationship of those processes which are responsible for the regularity (Pawson and Tilley, 1997).

As Figure 4.1 attempts to show, on the realist view, causality concerns not a relationship between discrete events – cause and effect, but the causal powers or

liabilities of objects and relations, or more generally their ways of acting or “mechanisms”. Powers and liabilities can exist whether or not they are being exercised or suffered. Whether a causal power or liability is actually activated or suffered on any occasion depends on conditions whose presence and configuration is contingent.

Figure 4.1 Realist evaluation or testing of causal hypotheses



Source: Sayer, 1992, p. 194.

We usually have some understanding of the nature of the objects involved (their structure, composition, properties) and can often observe the operation of the mechanism. Claims about powers, liabilities or, more generally, mechanisms possessed by the object X can be checked by our observing, under suitable conditions, how they work and by examining X ’s structure in order to discover by virtue of what properties these powers exist. Causal explanations may therefore be evaluated in zone A of the diagram (Sayer, 1992).

Sayer (1992) argues that since the range of conditions c in which X is located may be enormous, but given information on their location and nature, we may be able to predict what kind of events e will be produced. “But particularly in the case of complex, open social systems we know little in advance about such conditions and so are unable to make a firm prediction. If they are made, success or failure does not

count seriously either in favor or against the causal hypothesis precisely because the conditions *c* are not known.” (Sayer, 1992, p.193) “Those who try to use purely predictive tests of causal hypotheses in open systems (relying solely on the occurrence or non-occurrence of events in zone B) are liable to be guilty of ‘naïve falsification’, in which an anomaly due to interference from some other mechanisms is treated as a falsification of the causal claim in question.” (Sayer, 1992, p.194) Alternatively, “if a verification is claimed purely on the basis of predictive success in zone B, i.e. ‘the predicted event occurred, therefore the hypothesis about its cause, *X*, must be true’, they fall foul of the fallacy of affirming the consequent once again, for it has not been shown that *X*, rather than any other mechanism, was the cause.” (Sayer, 1992, p.195)

Causal claims are not about regularities but about the production, and prevention, of change. “When I push the door but fail to open it, it doesn’t mean that I wasn’t pushing. No *ceteris paribus* qualifications are needed – if I’m pushing the door, I am doing so regardless of whether it is locked, unlocked, barricaded or really a sliding door.” (Sayer, 1992, p.195)

In the realist view, researchers would have to examine the social, institutional and ideological structure and contexts by virtue of which such reasons and powers are held. In other words, the verification of an explanation does not rest simply on the occurrence of certain events in zone B (the consequent) – under some conditions *X* may even fail to produce such events. Rather, the verification rests upon the identification and “unpacking” of *X* (the antecedent) and its mechanism(s), that is, on evidence at least partly independent of the occurrence of past events (Sayer, 1992).

In conclusion, to ask for the cause of something is to ask what “makes it happen”, what “produces”, “generates”, “creates” or “determines” it, or more weakly, what “enables” or “leads to” it (Sayer, 1992). Causal powers and liabilities (*C*) may thus be attributed to objects independently of any particular pattern of events (*E*); that is, not only when “*C*” leads to the “*E*”, but also sometimes when “*C*” does not lead to “*E*”. This point is extremely important for realist causal analysis (Sayer, 1992).

2. *Evaluation research and realist evaluation*

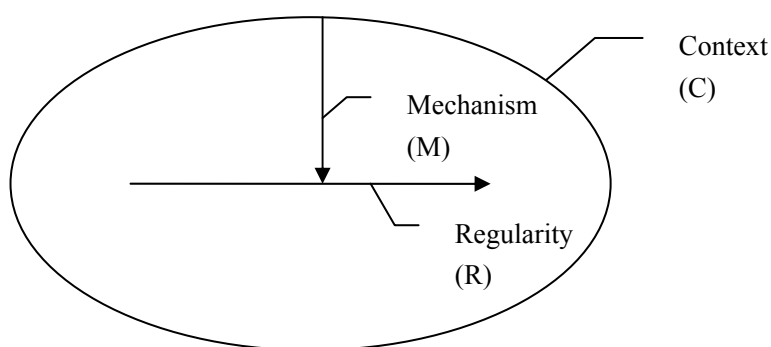
(1) Evaluation and evaluation research

The term evaluation can be broadly used to include any effort to increase human effectiveness through systematic data-based inquiry (Patton, 1990). When one examines and judges accomplishments and effectiveness, one is engaged in evaluation. When this examination of effectiveness is conducted systematically and empirically through careful data collection and thoughtful analysis, one is engaged in evaluation research.

(2) Realist evaluation

The so-called “realist evaluation” fundamentally targets the mechanisms sustaining programs with greater complexity in their respective contexts (Pawson, 2003).

Figure 4.2 Basic ingredients of realist social explanation



Source: Pawson and Tilley, 1997, p.72.

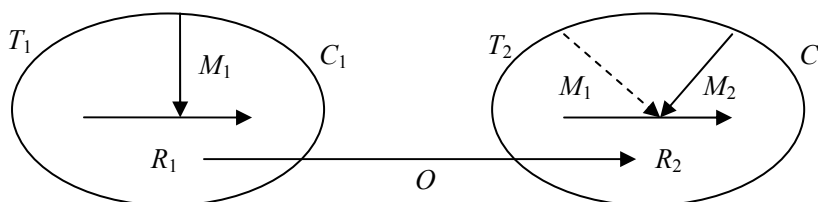
As Figure 4.2 shows, in the realist view, the basic task of social inquiry is to explain interesting, puzzling, socially significant regularities (R). Explanation takes the form of positing some underlying mechanism (M) which generates the regularity

and thus consists of propositions about how the interplay between structure and agency has constituted the regularity. Within realist investigation there is also investigation of how the workings of such mechanisms are contingent and conditional, and thus only fired in particular local, historical or institutional contexts (C). Pawson and Tilley (1997) sum up this position in their formula “mechanism (M) + context (C) = outcome (O)”.

In Pawson and Tilley’s (1997) view, realist evaluators have to confront the business of social change, because programs and policy making are quintessentially about change. Figure 4.3 illustrates the basic ingredients of successful programmed social change.

Social programming starts with the identification of a regularity (R_1) deemed to represent a social problem and faces the task of trying to shift the pattern of behavior in question to a more acceptable level (R_2). This may involve the effort to reduce rates of, say, crime or smoking, or to increase rates of, say, e-commerce adoption. Herein lies the inevitable interest in change in programming, which is signified as a key concern for the evaluator by labeling as an outcome (O) the change in rates which evaluation research tries to discern and explain. The terms “regularity” and “rate” describe the behaviors under scrutiny before (T_1) and after (T_2) the intervention. The term “outcome” describes the change in rates ($R_2 - R_1$) over time, and it is such outcomes that constitute the explanatory goal of evaluation research.

Figure 4.3 Basic ingredients of successful programmed social change



Source: Pawson and Tilley, 1997, p. 74.

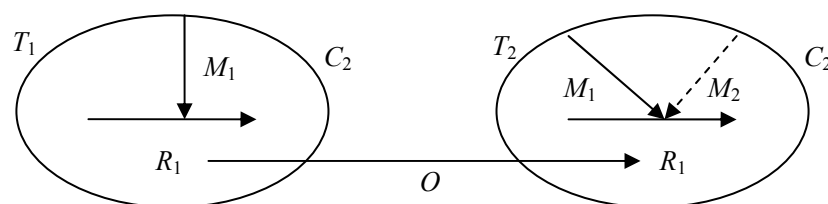
Coming to the matter of explaining the outcomes, the realist evaluator has to acknowledge the set of mechanisms (M_1) which sustained the initial problem. The key

explanatory resource, however, is to figure out the potential for change of the program mechanisms (M_2). Pawson and Tilley (1997) emphasize that it is not programs that “work” but their ability to break into the existing chains of resources and reasoning which led to the “problem”. As depicted in the right hand of Figure 4.3, the mechanisms (M_1) which sustain the initial problem are dashed (literally and diagrammatically) with the arrival of the program mechanisms (M_2).

Realist social researchers place considerable emphasis on the context dependence of causal explanation. In realist terms, it is the contextual conditioning of causal mechanisms which turns (or fails to turn) causal potential into a causal outcome. Pawson and Tilley (1997) make it clear that in most social programs there is no significant expectation that the prevailing contextual conditions will be transformed. Programs are always introduced into pre-existing social contexts and these prevailing social conditions are of crucial importance when it comes to explaining the successes and failures of social programs. This assumption is represented in Figure 4.3 by depicting change as occurring within broadly the same contextual conditions C_1 .

Due to different contextual conditions, programs sometimes succeed and sometimes fail. An instance of program failure is depicted in Figure 4.4, in which the program mechanisms (M_2) fail to fire (and are hence dashed) because they are introduced into an inhospitable context (C_2), which continues to sustain the “problem mechanisms” (M_1). A crucial task of evaluation is to include investigation of the extent to which these pre-existing conditions “enable” or “disable” the intended mechanism of change (Pawson and Tilley, 1997).

Figure 4.4 Program failure due to inappropriate contextualization



Source: Pawson and Tilley, 1997, p.76.

III. Theoretical models developed in this research

Miles and Huberman (1994) mention that critical realists look for an individual or a social process, a mechanism, a structure at the core of events that can be captured to provide a causal description of the forces at work.

Of the two kinds of questions mentioned by Van de Ven and Huber (1990) on study of change (see p.96 of this chapter), this thesis focuses on the second - “how” question; thus it examines the process of change.

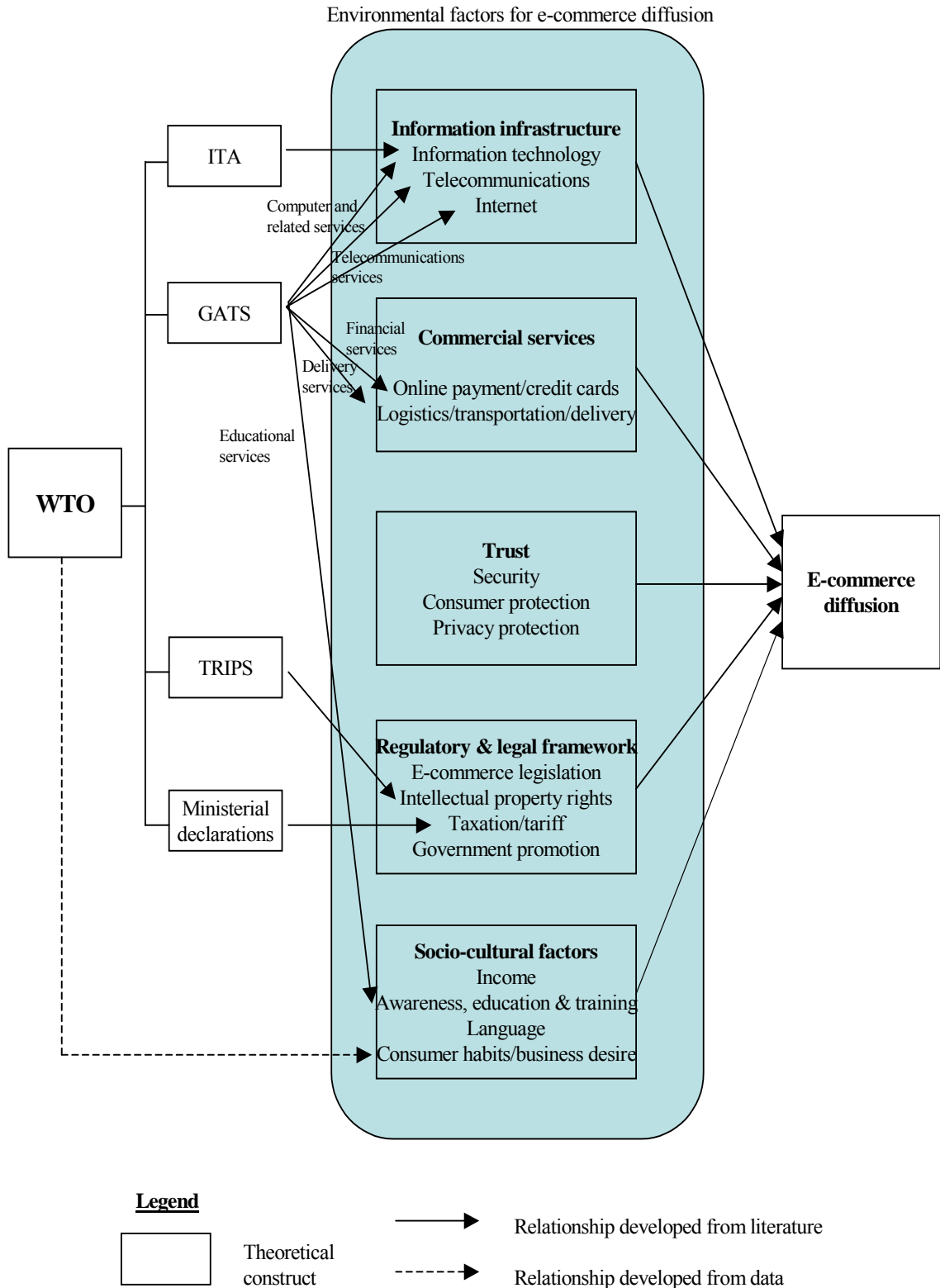
As Dawson (1994; 1997; 1999) and Langley (1999) have pointed out, process theories are characterized by multiple units and levels of analysis (contextualism) and data of temporal embeddedness (a focus on events, activities, choices and emotions) and eclecticism (i.e. the incorporation of both variables and process constructs such as events/activities and choices into theories).

In process research, Abbott (1997) argues that contextuality is so important that one can no longer focus on a single process. Instead one must study a whole network of intertwined processes. For this reason, the theoretical models developed in this research have two levels: the model at the lower level focuses on the single process of how WTO commitments can affect an individual infrastructural sector related to e-commerce; the model at the higher level is a network combining the processes at the lower level, examining the overall effects of WTO commitments on e-commerce diffusion.

In theorizing from process data, Langley (1999) argues that a researcher should not have to be shy about mobilizing both inductive (data-driven) approaches and deductive (theory-driven) approaches iteratively or simultaneously as inspiration guides us. There is room not only for building on existing constructs to develop new relationships (Eisenhardt, 1989) but for designing process research that selectively takes concepts from different theoretical traditions and adapts them to the data at hand, or takes ideas from the data and attaches them to theoretical perspectives, enriching those theories as it goes along. In this research, the model at the higher level

is developed more from previous literature, while the model at the lower level is more data-driven.

Figure 4.5 Theoretical model for the higher-level analysis (overall WTO effects)



1. Theoretical model for the higher-level analysis

In this thesis, the overall structure of the data analysis chapters (Chapter 5-9) and the structure of the last data analysis chapter (Chapter 9) on overall WTO effects are based on the theoretical model for the higher-level analysis (see Figure 4.5).

The theoretical model for the higher-level analysis is built from the initial conceptual framework on e-commerce adoption/diffusion factors at the societal level and effects of WTO commitments (Table 2.7, Chapter 2, pp.31-36) developed from the literature review in Chapter 2, but displayed graphically in the form of a causal network (Miles and Huberman, 1994). The things in boxes are elements of the theory; and the arrows indicate direction of causal influence.

This model posits that some components of WTO agreements can affect e-commerce diffusion by influencing the intermediary environmental factors for e-commerce diffusion. Identified by the literature review, these components of WTO agreements include the ITA, the GATS, the TRIPS, and the Ministerial declarations. The environmental factors essential for e-commerce diffusion cover five major issues – information infrastructure, commercial services, trust, regulatory and legal framework, socio-cultural factors – and sub-factors under each of these issues. The components of WTO agreements are supposed to make certain e-commerce environmental factors change to a more hospitable status for e-commerce adoption, thus facilitating overall e-commerce diffusion. In process theory and realist terms, the model posits that these components of WTO agreements have causal powers to change the environmental factors; and an individual environmental factor is only a necessary condition for e-commerce diffusion to occur. Thus, there are many other contextual conditions – factors not related to the WTO agreements – that may influence the outcomes. So, the model does not assume an invariant relationship between WTO accession and e-commerce diffusion.

Perry (1998) indicates that prior theory developed from the literature can be the first step in the theory-building process of case study research. Some prior theory can

have a pivotal function in the design of the case study and analysis of its data. Pure induction might prevent the researcher from benefiting from existing theory, just as pure deduction might prevent the development of new and useful theory (Perry et al., 1999). Thus Parke (1993, p.252; p.256) argues that “both extremes are untenable and unnecessary” and that the process of ongoing theory advancement requires “continuous interplay” between the two.

Walsham (1995) also suggests that the motivation for the use of theory in the earlier stages of interpretive case studies is to create an initial theoretical framework which takes account of previous knowledge, and which creates a sensible theoretical basis to inform the topics and approach of the early empirical work.

Although theory can provide a valuable initial guide as described above, there is a danger of the researcher only seeing what the theory suggests, and thus using the theory in a rigid way which stifles potential new issues and avenues of exploration. It is desirable in interpretive studies to preserve a considerable degree of openness to the field data, and a willingness to modify initial assumptions and theories. This results in an iterative process of data collection and analysis, with initial theories being expanded, revised, or abandoned altogether. A simple metaphor for this latter case is described by Walsham (1995) as the use of scaffolding in putting up a building, where the scaffolding is removed once it has served its purpose.

This advice was followed during the whole process of data collection and analysis. The open-mindedness referred to by Wolcott (1982) was achieved by including open-ended interview questions in the interview protocol. Consequently, as indicated in Figure 4.5, besides the relationships developed from literature, an additional relationship (a dashed arrow) has been developed from field data and added to the final model.

This new relationship is connected with rights to trade awarded by approval from the Chinese government. Before the WTO accession these rights were restricted to only approximately 35,000 Chinese enterprises, while prohibiting foreign companies in principle from trading (USTR, 2004a). Within three years of accession, China has committed to permit all companies in China (including foreign companies) to obtain

rights to trade. With the emergence of a truly global free market economy, a company is likely to experience competitive pressure from every corner of the globe. Gibbs, et al. (2003) argue that a country's integration in global production networks and the extent of trade liberalization can increase the level of global competition and therefore the pressure for countries to adopt e-commerce as a means of reducing costs and/or expanding markets.

All the other components of the model depicted in Figure 4.5 have been explained in Chapter 2 when building the conceptual framework on e-commerce adoption/diffusion factors at the societal level and the effects of WTO commitments. Thus no repetition is made here. Instead, nine propositions related to this model are listed in Table 4.2. At the end of each proposition, the last column of the table indicates in which chapter the proposition will be discussed.

Table 4.2 Propositions related to the model for higher-level analysis

Proposition No.	Proposition content	Chapter No.
1	The WTO commitments can improve liberalization in telecommunication services and thus help e-commerce diffusion in China's coastal urban area.	5
2	The WTO commitments can improve liberalization in banking services and thus help e-commerce diffusion in China's coastal urban area.	6
3	The WTO commitments can improve liberalization in logistics and express delivery services and thus help e-commerce diffusion in China's coastal urban area.	7
4	Implementation of the ITA can improve liberalization of IT products importation and	8

	thus help e-commerce diffusion in China's costal urban area.	
5	The WTO commitments can improve liberalization of computer and related services and thus help e-commerce diffusion in China's costal urban area.	8
6	The WTO commitments can improve intellectual property rights protection and thus help e-commerce diffusion in China's costal urban area.	8
7	The WTO commitments can improve liberalization of educational services and thus help e-commerce diffusion in China's costal urban area.	8
8	The WTO commitments can restrain the imposition of duties on e-commerce and thus help e-commerce diffusion in China's costal urban area.	8
9	The WTO commitments can liberalize foreign trading rights so the desire and pressure to compete globally increase e-commerce adoption in China's costal urban area.	8

2. Theoretical model developed from the lower-level analysis

Compared to the theoretical model for the higher-level analysis, the model developed from the lower-level analysis is narrowly focused on the single process of how the WTO liberalization can influence an individual infrastructural sector for

e-commerce and thus affect e-commerce diffusion in China's coastal urban areas (see Figure 4.6). Among the nine propositions mentioned above, only the first five will be applied with this model, as these sectors are considered the most essential inputs for e-commerce (OECD, 2001a; Mann et al., 2000).

This model is a data-driven one, developed following the qualitative data analysis methods suggested by Miles and Huberman (1994) and Ryan and Bernard (2000). The main procedures of the data analysis include: creating a provisional "start list" of codes, first-level coding, pattern coding, memoing, developing propositions, building conceptual models, and drawing and verifying conclusions.

The purpose of introducing this model here is to give an overall picture on how data analysis from Chapter 5 to Chapter 8 has been undertaken. The rest paragraphs in this chapter explain how the model works, such as the meaning of each "theme", where do the themes come from, how the links between each of them work, why there is a link (the logic behind it), and how one affects the other, but leaving the justification and evidence of the model until later chapters.

(1) Overview of the model

Hinings (1997) suggests that conceptual frameworks in process research need to deal with context, incidents, activities, actions, sequences, and time in a way that is dynamic. In building logic models for case study evaluations, Yin (2003) argues that the analysis should also entertain rival chains of events. Thus, besides the input and the output constructs (in shaded boxes), the process constructs of the theoretical model displayed in Figure 4.6 (regular boxes, events or theoretical elements) include contextual conditions. The links of some of these process constructs constitute competing explanations.

Figure 4.6 Theoretical model developed from the lower-level analysis (WTO effects on individual infrastructural sectors)

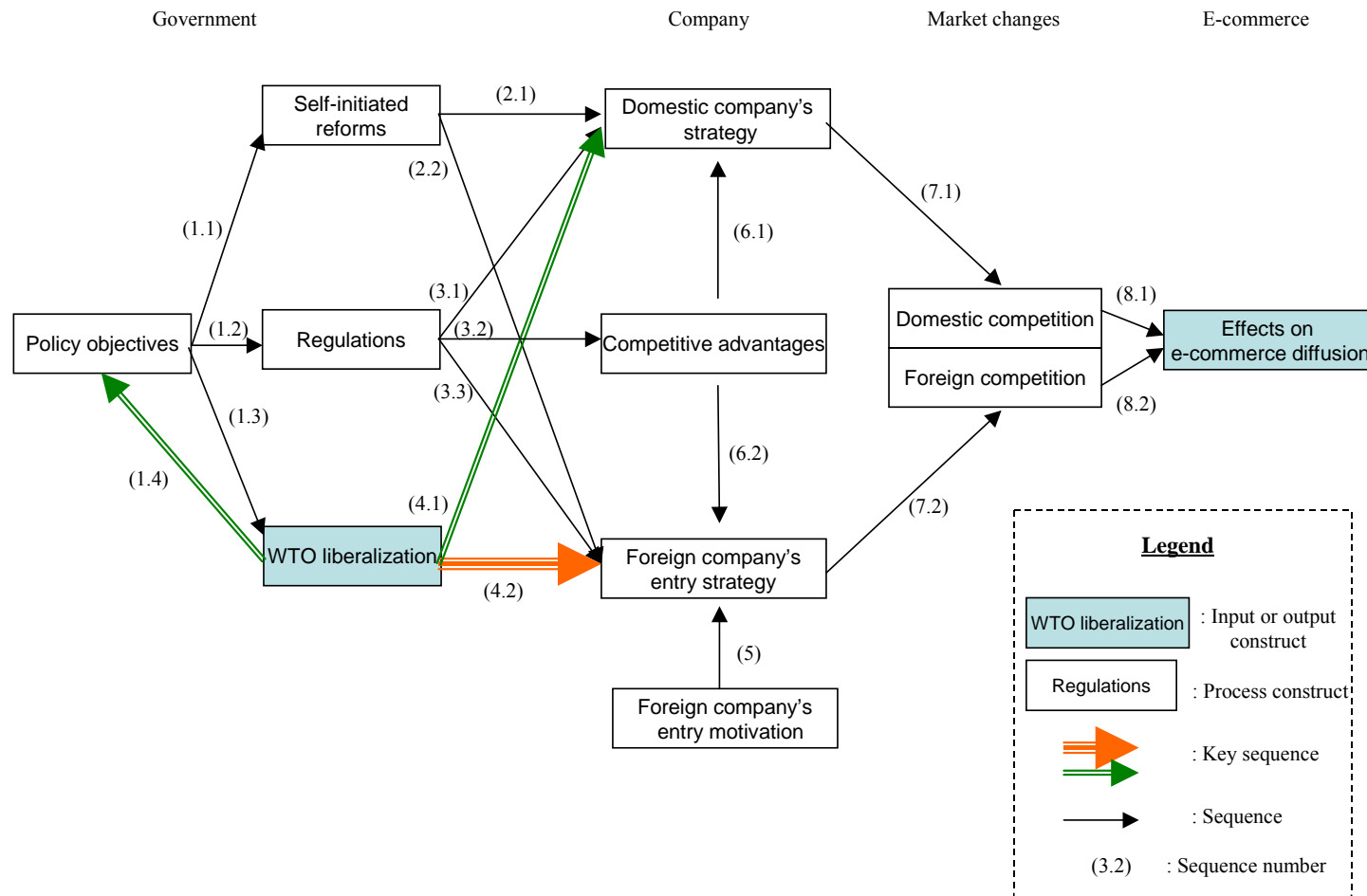


Table 4.3 Themes/theoretical constructs and their sources

Themes/theoretical constructs	Sources of themes (exemplified by sample quotes)
<p><i>Policy objectives</i></p> <p>(1) Telecommunication services</p> <p>(2) Banking services</p> <p>(3) Logistics and express delivery</p> <p>(4) IT industry and IT services</p>	<p>(1) Interview – “Before the WTO accession, the direction of China’s telecommunications reforms was not clear. Over the past 10 years significant changes have taken place on the government’s policy on telecommunications.”</p> <p>(2) Interview – “Opening up its financial industry is a component of China’s economic reform and opening up policy.”</p> <p>(3) Interview – “Express delivery service is a product of market economy.” “In the Tenth Five-Year Plan, the Government has already categorized the postal sector as a service industry, instead of an administrative sector.”</p> <p>(4) Document – “This willingness to learn from outsiders without surrendering technological or economic control has been a guiding philosophy behind China’s computer policies.” (Kraemer and Dedrick, 2001, p.17)</p> <p>Interview – “The Ministry of Information Industry takes a positive attitude to open the IT</p>

	sector. This is under the consideration of domestic policies.”
<i>Self-initiated reforms</i>	
(1) Telecommunication services	<p>(1) Document – “In recent decades, most countries have initiated telecommunications reforms, with these reform programs manifesting divergences in approaches.” (Gao and Lyytinen, 2000, p.719)</p> <p>Interview – “Telecommunication reforms are motivated by both external and internal pressure. It is a requirement of domestic reforms.”</p>
(2) Banking services	(2) Interview – “The WTO accession is a kind of external pressure. China’s banking reforms are more motivated by domestic reforms.”
(3) Logistics and express delivery	<p>(3) Document – “The government is itself investing in infrastructure and encouraging change in industry structure that will enable faster acceptance and development of third-party logistics.” (McKinsey, 2001, p.12)</p>
(4) IT industry and IT services	(4) Document – “In order to create a more conducive environment for the adoption of IT and e-commerce, the government has launched a series of policy initiatives.” (Dedrick and Kraemer, 2001, p.4).

<p><i>Regulations</i></p> <p>(1) Telecommunication services</p> <p>(2) Banking services</p> <p>(3) Logistics and express delivery</p> <p>(4) IT industry and IT services</p>	<p>(1) Document – “Regulatory environment” (Pangestu and Mrongowius, 2004, p.159)</p> <p>Interview – “The cooperation between foreign and Chinese telecommunications companies are strictly regulated by the Chinese government.”</p> <p>(2) Document – “Regulatory restrictions” (Frauendorfer and Gantenbein, 2002, p.3)</p> <p>Interview – “There are still some policy restrictions on foreign banks.”</p> <p>(3) Document – “Regulatory hurdles for supply chain” (Easton, 2003a, p.12)</p> <p>Interview – “The difficulties so far we have met mainly come from regulations.”</p> <p>(4) Interview – “We don’t have any difficulties in terms of regulations in the Chinese market.”</p>
<p><i>WTO liberalization</i></p> <p>(1) Telecommunication services</p> <p>(2) Banking services</p>	<p>(1) Interview – “The Chinese government has promulgated many new regulations to fulfill its WTO commitments.”</p> <p>(2) Document – “WTO entry implies an increase in competition in China’s banking industry.” (Wong and Wong, 2001, p.19) “Financial liberalization” (Lin, 2001, p.14)</p> <p>Interview – “Starting from 11 December 2004, the Renminbi business by foreign banks will be</p>

(4) IT industry and IT services	(4) Document – “When China’s branded PC companies attain sufficient market share, they are expected to move into the higher end market and may also expand into the global low-cost PC market.” (Kraemer and Dedrick, 2001, p.14)
<i>Competitive advantages</i> (1) Telecommunication services (2) Banking services (3) Logistics and express delivery (4) IT industry and IT services	(1) Interview – “We have our own advantages.” (2) Document – “Foreign banks in general have competitive edges in the areas of financial soundness, risk management, and financial innovations. Several advantages are specific to both ownership and location.” (Leung, 2000, p.3). Interview – “Chinese banks have some obvious advantages compared to foreign banks.” (3) Interview – “Compared with foreign companies, Chinese companies have both advantages and disadvantages.” “Our advantage lies in international networks.” (4) Document – “Cost advantage” (Dedrick and Kraemer, 2001, p.6)
<i>Foreign company’s entry strategy</i> (1) Telecommunication services (2) Banking services	(1) Interview – “Value-added services will be the entry point for foreign companies.” (2) Document – “Market entry strategies” (Frauendorfer and Gantenbein, 2002, p.4)

<p>(3) Logistics and express delivery</p> <p>(4) IT industry and IT services</p>	<p>Interview – “Business clients will be foreign banks’ major target.”</p> <p>(3) Document – “Foreign firms’ supply chain models in China” (Jiang, 2002, p.184)</p> <p>Interview – “We rely on our own international networks to provide services to multinational companies.”</p> <p>(4) Interview – “Since Huawei started to produce and sell high-grade routers in China, Cisco has cut its prices.”</p>
<p><i>Foreign company’s entry motivation</i></p> <p>(1) Telecommunication services</p> <p>(2) Banking services</p> <p>(3) Logistics and express delivery</p>	<p>(1) Document – “A set of environmental forces ... and firm-level drivers ... are driving telecom globalization.” “Drivers of telco internationalization” (Sarkar et al., 1999, p.362; p.364)</p> <p>Interview – “Foreign companies hope to make some profits by offering certain technologies and business modes to Chinese telecommunications companies.”</p> <p>(2) Document – “Motivation for banks to go abroad” (Frauendorfer and Gantenbein, 2002, p.2)</p> <p>Interview – “Our bank opened branches in China to support our long-term customers’ business development.”</p> <p>(3) Interview – “Large international enterprises need global logistics services.”</p>

(4) IT industry and IT services	(4) Document – “Foreign and foreign-joint-venture firms accounted for nearly 75% of China’s exports, as they have used China as a low-cost export platform.” (Kraemer and Dedrick, 2001, p.10).
<i>Market changes</i>	
(1) Telecommunication services	(1) Document – “Telecommunications market change” (Gao and Lyytinen, 2000, p.724) Interview – “Since the China Netcom started its ADSL service, we have reduced our prices. Competition has become fiercer.”
(2) Banking services	(2) Document – “Anyone observing Chinese financial institutions over the past few years will appreciate the progress already made in improving competitiveness ... Banks have also improved their products ...” (Harner, 2000, p.10).
(3) Logistics and express delivery	(3) Interview – “Foreign express delivery companies have already taken over 70% of the international service market share.”
(4) IT industry and IT services	(4) Document – “Market size and growth” (Kraemer and Dedrick, 2001, p.7)
<i>Effects on e-commerce diffusion</i>	Literature review – Hauser and Wunsch-Vincent, 2001; Mann and Knight, 2000; Mitchell, 2001; OECD, 2001a; Panagariya, 2000; WTO, 1998.

Table 4.4 Definition of theoretical constructs (Codebook for the lower-level analysis)

Term	Description
(Government)	
Policy objectives	Policy changes over years and reasons for such changes.
Self-initiated reforms	Regulatory reforms initiated by the Chinese government, not directly related to WTO commitments.
Regulations	Laws or regulatory measures imposed in the sector, not necessarily against foreign companies.
WTO liberalization	WTO rules, WTO commitments, and implementation of the commitments.
(Company)	
Domestic company's strategy	Chinese company's moves and approaches to produce successful performance.
Competitive advantages	Chinese or foreign company's strengths and weaknesses.
Foreign company's entry strategy	Foreign company's moves and approaches to enter and produce successful performance.
Foreign company's entry motivation	Foreign company's global strategy and motivation to enter the Chinese market, excluding the regulation factor.
Market changes	
Domestic competition	<i>Entry of new comers, market share, new products, prices, service quality, and future trend.</i> Market changes brought by Chinese companies.
Foreign competition	Market changes brought by foreign companies.
(E-commerce)	
Effects on e-commerce diffusion	Direct effects on e-commerce diffusion; indirect effects on improvement of e-commerce infrastructure (commercial services, information infrastructure, legal and regulatory frameworks, social and cultural issues, or trust).

The sequences (directional arrows) in the model follow time flow or/and causal influence order. The term “sequence” used here has the same meaning as the term “sequence” or “sequential stages” used by Yin (2003, p.126; p.127) in explaining logic models and time-series analysis in case study research. In a logic model, “a key ingredient is the claimed existence of repeated cause-and-effect sequences of events, all linked together.” (Yin, 2003, p.128) “Some events must always occur before other events, with the reverse *sequence* being impossible.” (Yin, 2003, p.126)

In a process study, key sequences of action and the core stream of activity are essential to the organizing mechanism for analysis (Pettigrew, 1997). In Figure 4.6, the three double/triple-line arrows originated from the input construct “WTO liberalization” are the key sequences of the model. Single-line arrows indicate all the other sequences. A number is given to each sequence for the convenience of explanation.

(2) Themes/theoretical constructs/concepts

Themes are “abstract (and often fuzzy) constructs that investigators identify before, during, and after data collection” (Ryan and Bernard, 2000, p.780). In social sciences, researchers identify themes, describe them, and compare them across cases and groups. Finally, they combine themes into conceptual models and theories to explain and predict social phenomena (Ryan and Bernard, 2000).

Bulmer (1979) notes that investigators’ general theoretical orientations, the richness of the existing literature, and the characteristics of the phenomena being studied influence the themes researchers are likely to find. Ryan and Bernard (2000) indicate that literature reviews are rich sources for themes, as are investigators’ own experiences with subject matter. More often than not, however, researchers induce themes from the text itself. This is essentially the “grounded” approach originally advocated by Glaser and Strauss (1967).

Table 4.3 describes how the themes in the lower-level model have been found by presenting some sample quotes from interview respondents or documentary sources. Table 4.4 lists the definition for all the theoretical constructs appearing in the model.

(3) Links between themes: Sequences

The model in Figure 4.6 posits that the WTO liberalization is an integral part of the policy-making process for the Chinese government. For some sectors, the WTO commitments are used as a facilitating device in promoting regulatory reforms; for other sectors that the government is reluctant to liberalize, WTO liberalization is the driver of the reforms. Through promulgation of new laws and regulations by the Chinese government, the WTO liberalization allows more access to foreign companies and places Chinese companies under more competitive pressure. Facing the challenges or opportunities, both Chinese and foreign companies need to change their business strategies in the Chinese market; thus creating more competition and other market changes. The increased competition is expected to offer better services at cheaper prices in such infrastructural sectors for e-commerce as IT, telecommunications, banking, and express delivery. The improvement in environmental factors will finally help the diffusion of e-commerce.

The detailed sequences between each theoretical construct (event or other theoretical element) in the model are illustrated as follows:

Four sequences are at the government level:

Sequence 1.1	Self-initiated reforms are the most important measures in achieving policy objectives of liberalizing trade in services.
Sequence 1.2	Regulations are an important way to achieve policy-making objectives; sometimes they constitute a major barrier to service liberalization.
Sequence 1.3	For policy-makers, WTO commitments can be used as a facilitating

	device in promoting regulatory reforms in service.
Sequence 1.4	In anticipation of the WTO liberalization, policy-makers may do some preparatory work.

Ten sequences related to company strategy:

Sequence 2.1	Self-initiated reforms have an influence on domestic companies' strategy.
Sequence 2.2	Self-initiated reforms have an influence on foreign companies' entry strategy.

Sequence 3.1	Regulations have an influence on domestic companies' strategy.
Sequence 3.2	Regulations are an important source of competitive advantages.
Sequence 3.3	Regulations have an influence on foreign companies' entry strategy.

Sequence 4.1	WTO liberalization has an influence on domestic companies' strategy.
Sequence 4.2	WTO liberalization has an influence on foreign companies' entry strategy.

Sequence 5	Other entry motivation factors influence foreign companies' entry strategy.
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Sequence 6.1	Competitive advantages have an influence on domestic companies' strategy.
Sequence 6.2	Competitive advantages have an influence on foreign companies' entry strategy.

Two sequences are related to market-changes:

Sequence 7.1	Domestic companies' strategy affects domestic competition.
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Sequence 7.2	Foreign companies' entry strategy affects foreign competition.
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Finally, two sequences are related to e-commerce:

Sequence 8.1	Domestic competition leads to effects on e-commerce diffusion.
Sequence 8.2	Foreign competition leads to effects on e-commerce diffusion.

(4) How data analysis will be presented in Chapter 5-8?

To develop the lower-level model and investigate the effects of WTO liberalization on the four most important infrastructural sectors for e-commerce (telecommunications, banking, express delivery, and IT), each of the following four chapters (Chapter 5-8) will be structured as follows:

First, all the themes/theoretical constructs of the lower-analysis model will be discussed for each e-commerce infrastructural sector, by using direct quotes from interview informants, relevant documents, archival data and other evidence sources. Supporting and challenging data of the sequences – interaction between theoretical constructs – will also be indicated at this stage in the form of bold letters and brackets, such as **[Evidence for Sequence 1.4]** or **[Evidence against Sequence 7.2]**.

Then, a sequence analysis will be undertaken to examine existence or not of each sequence/link of theoretical constructs in the model. Results of this analysis will be presented in a table in the same format of Table 4.5. In the first column of the table, all the sequences are listed according to their number. Column 3 lists all the evidence identified previously when themes/theoretical constructs are discussed. Based on Column 3, Column 2 concludes whether existence of the sequence/link is supported or not. A sequence is considered “strongly supported” when more than three types of evidence source – archival record, document, interview, or others – positively support the relationship. A sequence is considered “supported” when one or two types of evidence source positively support the relationship. A sequence is not supported when

“no evidence (found)”, only “negative evidence” or “contradictory evidence” (both positive and negative evidence) are found.

Table 4.5 Sample sequence analysis for an e-commerce infrastructural sector

Sequence No.	Support or not	Evidence source
...
Sequence 1.4	Strongly supported	Document (p.131; p.134); Interview (p.129; p.135; p.153); Others (p.142)
Sequence 2.1	Supported	Document (p.154; p.155); Interview (p.153)
<u>Sequence 2.2</u>	<u>No evidence found</u>	
...
<u>Sequence 4.1</u>	<u>Negative evidence</u>	Negative evidence: Interview (p.146)
<u>Sequence 4.2</u>	<u>Contradictory evidence</u>	Positive evidence: Others (p.139; p.142; p.143; p.159); Negative evidence: Interview (p.139)
...

Based on this sequence analysis table, a figure will be presented to illustrate what the lower-analysis model is alike for that specific instratructural sector. Among all the links in the model, the three arrows that depart directly from the input construct “WTO liberalization” and the sequences thereafter are especially important in answering the second research question. So they will be examined with particular care. In the remaining chapters, the chain starting from Sequence 4.2 (the triple-line arrow) to the output construct “effects on e-commerce diffusion” will be referred as direct WTO effects; the chains from the other two key sequences (Sequence 4.1 and Sequence 1.4, both as double-line arrows in Figure 4.6) to the output construct will be referred as indirect WTO effects.

Finally, after these effects and competing explanations are examined, conclusions will be drawn and summarized in the form of Pawson and Tilley’s (1997) realist

evaluation formula “mechanism (M) + context (C) = outcome (O)”.

3. Rival explanations

A persistent challenge of doing case study research is to produce high-quality analysis, which require investigators to attend to all the evidence, display and present the evidence separately from any interpretation, and show adequate concern for exploring alternative interpretations. The examination of the evidence from different perspectives will increase the chances that a case study will be exemplary (Yin, 2003).

To represent different perspectives adequately, an investigator must seek those alternatives that most seriously challenge the design of the case study. These perspectives may be found in alternative cultural views, different theories, variations among the people or decision makers who are part of the case study, or some similar contrasts (Yin, 2003).

Yin (2003) itemizes nine types of rival explanations and classifies them into two categories (see Table 4.6). While not ignoring the “craft rivals” mentioned by most other social science research textbooks, Yin (2003) argues that the “real-life rivals” are the ones that case study researchers should carefully identify prior to their data collection. Some real-life rivals also may not become apparent until researchers are in the midst of their data collection, and attending to them at that point is “not only acceptable but also desirable” (Yin, 2003, p.113). Overall, the more rivals that a case analysis addresses and rejects, the more confidence a researcher can place in his or her findings.

In this thesis, due attention has been paid to accommodating rival (alternative, or competing) explanations (Yin, 2003; Miles and Huberman, 1994) in developing both the higher-level and the lower-level models. Rival theories were examined during the literature review and establishment of the conceptual framework. Alternative views were obtained from a wide range of interview informants and were wrestled with

during the development of the models. Many of the competing explanations have been proved to be commingled rivals rather than direct rivals.

Table 4.6 Brief descriptions of different kinds of rival explanations

Type of rival	Description or examples
<i>Craft rivals:</i>	
(1) The null hypothesis	(1) The observation is the result of chance circumstances only
(2) Threats to validity	(2) E.g., history, maturation, instability, testing, instrumentation, regression, selection, experimental mortality, and selection-maturation interaction
(3) Investigator bias	(3) E.g., “experimenter effect”; reactivity in field research
<i>Real-life rivals:</i>	
(4) Direct rival (Practice or policy)	(4) An intervention (“suspect 2”) other than the target intervention (“suspect 1”) accounts for the results (“the butler did it”) (5) Other interventions and the target intervention both contributed to the results (“it wasn’t only me”)
(5) Commingled rival (Practice or policy)	(6) The implementation process, not the substantive intervention, accounts for the results (“did we do it right?”)
(6) Implementation rival	(7) A theory different from the original theory explains the results better (“it’s elementary, my dear Watson”)
(7) Rival theory	(8) A force larger than but including the intervention accounts for the results (“it’s bigger than both of us”)
(8) Super rival	(9) Social trends, not any particular force or intervention, account for the results (“the times they are a-changin”)
(9) Societal rival	

Source: Yin, 2003, p.113.

IV. Summary

The theoretical models of this thesis have two levels. The model at the lower level focuses on the single process of how the WTO liberalization can affect an individual infrastructural sector for e-commerce. The model at the higher level is a network combining the processes at the lower level, examining the overall effects of WTO commitments on e-commerce diffusion.

Both models are process theories and adopt the realist view of explanation and evaluation. Realist approach to causality is characterized by the emphasis on looking for the underlying generative mechanism and contextual conditions.

Chapter 5 Telecommunication services

Fixed-line and wireless telecommunications form the backbone through which most Internet traffic travels. The communications infrastructure is therefore crucial to the growth of the Internet, in particular of valued services such as media-rich content and electronic commerce. Policy-makers can lay the foundation for a high quality, fairly priced, and technologically up-to-date telecommunications infrastructure by introducing into their countries a combination of competition, privatization, and independent regulation (Mann et al., 2000).

The high cost of Internet access and telephony has long been a point of contention for Internet users and operators in China. The dial-up Internet access fee is composed of a connection service fee and a telephone communication fee. Given the low level of personal disposable income, the access charge is extremely high. Communication services users argue that the high connection fee charged by Internet service providers (ISPs) is caused by the China Telecom's monopoly of the basic telecommunication services. Hosting charges for web sites with sufficient bandwidth are so high that most e-commerce service providers can only afford to rent narrow bandwidth, leading to long waiting times to download (UNCTAD, 2001). At the end of 2001 38.4% of Chinese Internet users were not satisfied with the slow access speed, and 40% complained about high Internet access fees (CNNIC, 2002).

The first proposition of the higher-level model implies that the commitments China made to progressively liberalize its telecommunication services upon accession to the WTO may create a competitive environment that will substantially reduce access cost and spur the growth of electronic commerce. In value-added and paging services, foreign service suppliers may hold 30% of equity shares upon China's accession to the WTO. This may increase to 49% one year later and 50% after two years (UNCTAD, 2001). In developing the lower-level process model, this chapter first discusses the findings of the constructs (events, theoretical elements), then

analyses the sequences of the process, and finally draws a conclusion on the effects of WTO commitments on telecommunications sector and e-commerce diffusion.

I. Policy objectives

An informant from the Ministry of Commerce said:

The WTO accession has a great impact on China's telecommunications sector.

Before the WTO accession no one in China had ever thought about opening up the telecommunications sector. It was an issue of hot debate during the negotiation process. At that time the direction of China's telecommunications reform was not clear. Over the past 10 years significant changes have taken place on the government's policy on telecommunications. **[Evidence for Sequence 1.4]**

In the central-planning economy era from 1949, when the People's Republic was founded, to the 1970s, telecommunications infrastructure received low priority in the heavy-industry oriented development plans and the sector was seen purely as a tool for administrative needs. All aspects of telecommunications were controlled by the Ministry of Post and Telecommunications (MPT). The ministry combined three functions under its supervision: policy and regulation, service provision and equipment manufacturing.

When China started its economic modernization program in late 1978, the telecommunications sector appeared as a visible bottleneck in the economy. This caused serious concerns to the policy makers. To promote the development of telecommunications from a very poor basis, the government granted preferential policies to the sector, which was possible under the state monopoly system. The State Council allowed the MPT to charge an installation fee from every subscriber that corresponded to the construction cost of one line. The MPT had a privilege in advancing depreciation, using foreign currency and paying tax (MII, 1999). These

policies promoted fast development in telecommunications and brought huge profits to the telecommunications monopoly. But meanwhile the prices had been high, and the service quality had not improved satisfactorily. These preferential policies had met with more and more resistance from the society. At the same time, the State Council recognized the inefficiency and inequality of exclusively granting such a strong preference to the telecommunications sector. From the mid-1990s the government began to gradually remove these policies. But the MPT itself was not able to meet the market demands without the support of state policy. The government had to consider introducing other sources to the telecommunications sector and using competition to promote telecommunications development (Gao and Lyytinen, 2000). **[Evidence for Sequence 1.1]**

The Chinese telecommunications industry has experienced three major changes since then. First, China Unicom was established in 1994 as a competitor to China Telecom, bringing about a major change in telecommunications structure. Second, the Ministry of Information Industry (MII) was established in 1998 through the merger of the MPT and the Ministry of Electronics Industry (MEI). A series of reforms followed thereafter. Third, in May 2002, China Telecom was split into two: China Telecom and China Netcom. These events reflected the government's objective to separate the state from the market (i.e. separation of regulation and operation of telecommunication services) in order to invigorate market growth through independent management and wider market competition – building a socialist market economy after Deng Xiaoping's historic trip to Shenzhen in March 1992 (OECD, 2003). **[Evidence for Sequence 1.1]**

If the 1994 reform was purely self-initiated, the recent two changes were more closely related to China's WTO accession. Telecommunications figured very prominently during the WTO talks of 1999. During negotiations, the U.S. government pressed hard for China to open up both basic and value-added telecommunication services. The U.S. was willing to accept "developing country" types of delays in implementing access to basic and value-added services (Foster and Goodman, 2000). A thorough reform on telecommunications industry was a part of China's plan of

joining the WTO as soon as possible. A deep reform was necessary to foster a fair competition market as required to join the WTO, and improve the competence of domestic operators in the forthcoming international competition (DeWoskin, 2001; Gao and Lyytinen, 2001; Pangestu and Mrongowius, 2004; Zhang, 2001; Zhang, 2002). **[Evidence for Sequence 1.4]** However, as one of the “key industries” of national security and sovereignty, telecommunications has been shielded from foreign investment in basic services up to 2004.

A key factor in China’s fast Internet growth is the stimulating role played by the Chinese government. Believing that Internet and e-commerce would facilitate China’s integration into the global information economy and enhance the government’s administrative efficiency, the central government launched the Golden Projects in 1993 to build the national information infrastructure. **[Evidence for Sequence 1.2]** The Chinese government through its interconnecting network regime has instituted a hierarchical order on which is a network of networks. At the top of the hierarchy are certain chosen state-owned enterprises. China Telecom was once the monopoly provider.

Based on Kim’s (2002) analysis on the evolution of China’s economic system, Table 5.1 illustrates the relationships between China’s economic system reforms, domestic reforms in telecommunications sector, entry of foreign service providers as well as the Internet development in China. Besides the 1978 initiation of economic system reforms and 2001 entry into the WTO, year 1992 is another important milestone in China’s economic reform process. The 14th Chinese Communist Party Congress in this year fixed the objective of establishing market economy and modern enterprise system for the reform of China’s economic system (Yang and Cheng, 2001).

Table 5.1 Evolution of China's economic system, domestic reforms in telecommunications sector, entry of foreign service providers, and Internet development

Year	1949-1978	1979-1991	1992-2001	After 2001
Economic system	Command economy	Planned commodity economy (1979-1983); Socialist commodity economy (1984-1991)	Socialist market economy	Preliminary market economy
Relationship between market and planning	Planning as principal, market as supportive means	Planning as principal, market as supportive means	Market as principal, planning as supportive means	Concept of fair competition introduced
Domestic reforms in telecommunications sector	Telecommunications infrastructure received low priority. The Ministry of Post and Telecommunications (MPT) combined three functions under its supervision: policy and regulation, service provision and equipment manufacturing	Government-controlled monopoly. Development of telecommunications sector was boosted by the government's preferential policies	In 1994 China Telecom was changed to an enterprise; In July 1994 China Unicom was established; In March 1998 the Ministry of Information Industry (MII) was created through the merger of the MPT and the Ministry of Electronics Industry (MEI); In April 1998 the postal sector was separated from the MII; In February 1999 China Telecom was split into four: China Telecom, China Mobile, China Satellite, and China Paging; China Unicom acquired China Paging; In August 1999 China Netcom was	In May 2002 China Telecom was split into two: China Telecom and China Netcom

			established; In March 2000 China Railcom was established; In September 2000 the Telecommunications Regulations were promulgated	
Entry of foreign investment			In 1999 the “Chinese-Chinese-foreign” (CCF) investment model used by China Unicom was corrected	Regulations on the Administration of Foreign-Invested Telecommunications Enterprises (FITE Regulations) was effective from 1 January 2002; In March 2001 China’s first telecom joint venture - Shanghai Symphony Telecom was established; In April 2004 SK of Korea formed a joint venture with China Unicom called UNISK to provide value-added services
Internet			In January 1994 Jitong was established to undertake the Golden Bridge Project; In 1999 and 2000 China Unicom and China Netcom launched their own national Internet network respectively	

Source: Created by the author, on the basis of Kim, 2002 and other listed literature.

II. Self-initiated reforms

1. The 1994 reform

Before 1994, there was no competition in China's telecommunication service market. China Telecom, a national network operator under the arm of the MPT, monopolized all of the telecommunication services. In 1994, as a part of macro reform, China Telecom was changed from a functional department of MPT to an enterprise.

Due to strong market demands, the average annual growth rate of revenue including post and telecommunications sectors reached 48.62% from 1992 to 1997. The lucrative telecommunications market attracted some parties interested to step into it. With the excuse of making use of spare capacities and resources in private communications networks, some ministries including the Ministry of Electronics Industry (MEI), the Ministry of Railways (MOR), and the Ministry of Electrical Power (MEP) persuaded the State Council to approve the establishment of China Unicom to compete with the incumbent China Telecom. The birth of Unicom is widely regarded as a turning point of China's telecommunications policy transforming toward liberalization (Zhang, 2002). **[Evidence for Sequence 1.1]**

In 1994 the MEI also obtained permission to form Jitong Communications Ltd. Jitong was licensed to build and operate the Golden Bridge Network, which formed another public data network. It was granted permission to provide services such as satellite communications service, Internet services, Intranet/Extranet implementation, etc.

2. Reforms since 1998

In March 1998 the State Council integrated the former MPT, the MEI and parts of the Ministry of Radio, Film and Television into the new Ministry of Information Industry (MII). The creation of the MII on the one hand was to accommodate the convergence trend between telecommunications, computing and broadcasting; on the other hand it was a necessary measure for China to enter into the WTO (Gao, 2002; Tan, 1999; Zhang, 2001). **[Evidence for Sequence 1.4] [Evidence for Sequence 1.1]**

In the telecommunications sector, creating an independent regulator is one of six principles specified in the WTO Reference Paper.

In anticipation of liberalization commitments for accession to the WTO, striking measures for restructuring China's telecommunications industry were taken immediately after the creation of the MII. **[Evidence for Sequence 1.1]** The first was to split the postal service sector from telecommunications. Before that, the telecommunications sector heavily subsidized the postal services. Separating these two sectors paved the way for the government to treat them differently based on their specific industry characteristics and needs.

The second step was to break up the former China Telecom into four independent companies. The new China Telecom focuses on fixed-line services, China Mobile on mobile communication, China Satellite on the satellite network and services, and China Paging soon merged into China Unicom. In 1999 China Netcom was also established to build a broadband IP network. The dedicated telecommunications network of the national railway sector was granted permission to enter into public telecommunications competition in 2000 by forming China Railcom. Consequently China has formed a "national fleet" composed by seven carriers: China Telecom, China Unicom, China Mobile, China Satellite, China Netcom, Jitong and China Railcom.

Much of this early preparatory work was to strengthen domestic competition and therefore the domestic hold on the market, prior to the onslaught of foreign investors and competitors (Gao and Lyytinen 2001). **[Evidence for Sequence 1.1]** As one interview informant commented:

The pressure from China's entry into the WTO plays a direct and catalytic role in propelling China's government to restructure China's telecommunications regulatory regime and industry. In other words, without the pressure from the WTO, China would not have taken such drastic actions in so short a time. **[Evidence for Sequence 1.4]**
[Evidence for Sequence 1.1]

3. The 2002 reform

In an effort to further challenge the incumbent's dominance in basic services in May 2002, China Telecom was broken up into two sections. The southern section of

China Telecom remained as the new China Telecom. China Netcom was set up as a new company through the merger of China Netcom and Jitong, as well as the northern section of China Telecom. After the split-up, the China telecommunications sector takes on a new look with six telecommunication operators – China Telecom, China Netcom, China Mobile, China Unicom, China Railcom, and China Satellite (see Table 5.2).

Table 5.2 Six telecommunications operators in China

Operator		Advantages	Mobile experience
China Telecom	(China Telecom South)	70% nationwide trunk lines; fixed line services; largest Internet network; data communications; trunk line leasing	Personal handy phone system (PHS, a quasi mobile phone service)
China Netcom	(China Telecom North)	30% of nationwide trunk lines; fixed line services; data communications; trunk line leasing	PHS
	Netcom	12,000km backbone broadband wholesale	
	Jitong	2 nd largest satellite network; 2 nd largest Internet network; VSAT business; VoIP business	
China Mobile		Mobile; mobile data	GSM, GPRS
China Unicom		Fully licensed carrier	CDMA, GSM
China Railcom		Fixed line; data communications; line leasing	
China Satellite		Largest satellite network, providing data, ISP services	Satellite mobile

Source: MFC, 2002

III. Regulations

1. Telecommunications regulations

The Chinese government plays an important role in developing the market and creating the regulations for the telecommunications industry. **[Evidence for Sequence 1.2]** However, at the turn of this century China had yet to promulgate any significant comprehensive telecommunications legislation. The telecommunications sector was governed by piecemeal regulations and unpublished internal decrees consisting mainly of administrative notices dealing with technical standards and service tariffs (Dudek et al., 2001). While a comprehensive telecommunications law appears to be still several more years in the making, the long-awaited provisional Telecommunications Regulations were issued in September 2000 in line with China's WTO commitments in the telecommunications sector. This regulation and some follow-up regulations are a very important first step towards developing a comprehensive and pro-competitive regulatory framework, but of course there remain many issues of interpretation, clarity and implementation, and some areas which have not been adequately addressed. Moreover, as they are only regulations, they do not have the full effectiveness that a true telecommunications law would have.

The Telecommunications Regulations apply to anyone engaged in or related to telecommunication services in China. According to the Regulations, an enterprise must obtain a telecommunication services operating license before engaging in the provision of telecommunication services. The Operating License Measures govern the application for, approval and administration of such operating licenses.

The Telecommunications Regulations divide service providers into basic and value-added telecommunication services. Compared with basic services, value-added services are much more liberalized. As of June 2004, China has six state-owned telecommunications operators in basic services and about 10,000 companies providing value-added services, 70% of which are privately-owned (Xinhua, 2004).

2. Telecommunications charges

Other than licensing, the MII retains a considerable degree of control over the sector through determining the price range for basic telecommunication services. Telecommunications charges in China are divided into three categories: government-set prices, government-guided prices and market-adjusted prices. Currently, fixed local telephony, long-distance telephony, international telephony and mobile telephony fall under the category of government-set prices, while IP telephony

is categorized under government-guided prices. Market-adjusted prices are applied to charges for value-added telecommunication services.

In practice, basic telecommunication service fees have come down since 1999 mainly due to mandated price cuts rather than through competition. In 1999 the MII slashed service fees, in part to address consumer complaints, but also to increase consumer access to advanced technology and to rationalize the fee structure to conform to international practice in anticipation of China's WTO entry. It was also part of the strategy to provide universal service. **[Evidence for Sequence 1.2]** The drastic cuts accelerated telephone popularity in rural areas, doubled the number of Chinese accessing the Internet, and enabled Chinese Internet service providers (ISPs) to expand their business and telecommunications facilities, which in turn benefited Chinese Internet content providers (ICPs).

The MII, the State Development and Planning Commission and the Ministry of Finance also jointly announced massive cuts in telecommunications and Internet usage fees of up to 50% in early 2001, followed by a second round of cuts in July of 2001. As a result the local phone charge unit dropped from three to one minute, monthly service fees for fixed-line telephones dropped from RMB 24 yuan (US\$ 2.90) to RMB 18 yuan (US\$ 2.17), and fixed-line phone installation fees were completely eliminated. Domestic long-distance charges have also been standardized at RMB 0.70 yuan (US\$ 0.08) per minute and additional charges on long-distance calls will no longer apply. The rate for international calls was set at around RMB 8 yuan (US\$ 0.97) per minute. Initial installation fees have also been eliminated. The price to lease lines from China Telecom was also lowered by a total of 72.8% (SIC, 2002).

The MII allows new competitors such as China Unicom to charge 10% less for services than the incumbent operators like China Mobile in the mobile market and China Telecom in the fixed-line sector. This has enabled China Unicom to win more new customers, especially in recent years. At the end of June 2001, China Unicom's market share by subscriber number was up to 26.3% from 18.8% in June 2000 and 22.7% at the end of 2000 (Wang, 2001). **[Evidence for Sequence 3.2]**

3. Regulations on foreign investment

On 1 September 1993, the MPT issued the Tentative Telecom Measures, which strictly prohibited foreign investment, operation and participation in China's

telecommunications industry. This prohibition was memorialized in the Guidance Catalogue of Foreign Investment Industries, which specifically listed the operation and management of telecommunications business as an industry category in which foreign investment was prohibited (Dudek et al., 2001).

Despite the official ban on foreign investment, 21 foreign investors injected US\$ 1.3 billion between 1995 and 1998 into China Unicom's provincial cellular networks via their Chinese-foreign joint ventures – hence the term “Chinese-Chinese-foreign” (CCF). The legal ambiguity of the CCF model sent a misleading signal to carriers such as Bell Canada, Cable and Wireless Plc., France Telecom, NTT, and Sprint International, which took a risk in the absence of clear rules, hoping for a future slice of Unicom's market.

However, in fall 1999, Unicom unilaterally ordered these investors to withdraw their investments in exchange for the refund of their principal plus a nominal return far below what the foreign investors had hoped for. By December 1999, such withdrawals were complete, despite the investors' protests. Whether the ejection of foreign investors was a political decision made by the MII (or higher authorities) to enforce the ban strictly, or a business decision made by China Unicom to put its financial house in order before floating its shares publicly in 2000, prospective foreign carriers have hardly been encouraged by the lack of protection for their investments (Zhang and Peng, 2000).

In December 2001, China became a member of the WTO, and celebrated its entry with the promulgation of the long-awaited Regulations on the Administration of Foreign-Invested Telecommunications Enterprises (the “FITE Regulations”). Effective from 1 January 2002, the FITE Regulations allow foreign companies to establish Sino-foreign equity joint venture (EJV) companies engaged in the provision of basic or value-added services in China. **[Evidence for Sequence 4.2]** However, as a foreign company informant said:

The EJV requirement under the new regulations is terribly inconvenient because it means that the foreign investor has to find a Chinese partner with cash. A Chinese partner that invests actual cash in what at best is a 50-50 joint venture is, by definition, not a silent partner. This gives rise to control and corporate governance issues. **[Evidence against Sequence 4.2]**

4. Internet connection

The Chinese Internet access service sector is clearly divided into two categories: network service providers (NSP), which operate the interconnecting network (IN) and have direct access to the Internet; and Internet service providers (ISP), which operate the access network (AN) and simply interconnect to the Internet through IN. NSPs secure massive bandwidth of leased international connections and provide transit services to ISPs through the distribution of these leased international connections.

Currently, the Internet backbones comprise five major commercial networks and three main public networks. The former are operated by five state-owned enterprises (China Telecom, Jitong, China Unicom, China Netcom, and China Mobile) serving as NSPs. The latter are operated directly by governmental organizations, such as the Chinese Academy of Science, the Ministry of Education, and the Ministry of National Defense, for their own purposes. The five commercial networks and state-owned NSPs practically monopolize China's commercial Internet networks and exercise enormous influence on the overall Internet industry.

Regulations on the operation of ANs are relatively less stringent. Any Chinese companies, after meeting certain technology, safety and legal status requirements, can be licensed as an ISP. In fact, many of China's ISPs are non-MII-owned, although historically most of the independent ISPs have not been able to compete with China Telecom and its affiliated ISPs. The operation scale of the ISPs is so small that only 10% hold more than 100 Mbps of the leased connection bandwidth (OECD, 2003). The majority of the ISPs are in financial difficulties due to the high rental fees charged by the NSPs. Individual users do have choices to choose their ISPs from several providers in most cities. The competition often results in improved service quality and decreased charges (Tan, 1999). **[Evidence for Sequence 7.1]**

IV. WTO liberalization

1. WTO commitments

The main commitments are to open up for foreign entry, which was previously prohibited. The opening up is undertaken in phases with regard to geographical area

and percentage of foreign ownership; and agreement to give national treatment to foreign firms. China also has to abide to the Reference Paper on Telecommunications.

Table 5.3 China's WTO commitments in telecommunication services

Telecommunication services	Foreign investment		Timeframe
	Foreign equity interest	Geographic restrictions	
Value-added Services including: - Electronic mail - Voice mail - On-line information and database retrieval - Electronic data interchange - Enhanced/Value-added facsimile services (including store and forward, store and retrieve) - Code and protocol conversion - On-line information and/or data processing (including transaction processing) Basic Telecommunication Services - Paging Services	30%	Beijing, Shanghai, Guangzhou	Upon accession
	49%	Add 14 cities: Chengdu, Chongqing, Dalian, Fuzhou, Hangzhou, Nanjing, Ningbo, Qingdao, Shenyang, Shenzhen, Xiamen, Xi'an, Taiyuan, Wuhan	Within 1 year after accession
	50%	No geographic restrictions	Within 2 years after accession
Basic Telecommunication Services - Mobile Voice and Data Services <ul style="list-style-type: none"> Analogue/Digital/Cellular Services Personal Communications Services 	25%	Beijing, Shanghai, Guangzhou	Upon accession
	35%	Add 14 cities (same as above)	Within 1 year after accession
	49%	Beijing, Shanghai, Guangzhou and the 14 cities	Within 3 years after accession
	49%	No geographic restrictions	Within 5 years after accession
Basic Telecommunication Services - Domestic Services <ul style="list-style-type: none"> Voice services Packet-switched data transmission services Circuit-switched data transmission services 	25%	Beijing, Shanghai, Guangzhou	Within 3 years after accession

<ul style="list-style-type: none"> • Facsimile services • Domestic private leased circuit services 	35%	Add 14 cities (same as above)	Within 5 years after accession
Basic Telecommunication Services - International Services <ul style="list-style-type: none"> • Voice services • Packet-switched data transmission services • Circuit-switched data transmission services • Facsimile services • International closed user group voice and data services (use of private leased circuit services is permitted) 	49%	No geographic restrictions	Within 6 years after accession

Source: Leigh, 2002.

2. Implementation of WTO commitments

Over a three-month period at the end of 2001 and the beginning of 2002, the entire face of the China telecommunications market underwent what appeared to be a complete, although not a completely unanticipated, upheaval.

First, in October 2001, a massive overhaul of China Telecom and several other domestic basic telecom operators was announced, purportedly to improve their competitiveness in anticipation of foreign competition following China's WTO entry. This restructuring was completed in May 2002. **[Evidence for Sequence 1.4]**
[Evidence for Sequence 1.1]

With the publication in November 2001 of the WTO Working Party report on China's accession to the WTO at the Doha ministerial conference, China officially committed for the first time to open up its telecom operation sector gradually to foreign participants. Following the WTO Working Party Report, the MII formally rescinded the prior notices banning foreign investment in the Chinese telecommunications sector. **[Evidence for Sequence 4.2]**

On 11 December 2001, the State Council approved the long-awaited Regulations on Administration of Foreign-Invested Telecommunications Enterprises (the FITE Regulations), which took effect on 1 January 2002. Just over two weeks later, the MII issued the Measures for the Administration of Telecommunications Operating Licenses (Operating License Measures), which also took effect on 1 January 2002.

These supplemented the September 2000 Telecommunications Regulations.

In addition, the Investment Catalog prohibiting foreign participation in the operation and management of telecommunication services was revised to reflect the sectors liberalized under China's market access commitments. **[Evidence for Sequence 4.2]**

3. The WTO Reference Paper

China's WTO accession obliges it to also adhere to the principles of the WTO Reference Paper on Telecommunications including: competitive safeguards, interconnection, resource allocation, universal service, licensing criteria, and independent regulator. **[Evidence for Sequence 4.2]**

The Reference Paper requires WTO members to set up a pro-competitive framework for interconnection among telecom operators and service providers. On 10 May 2001, the MII issued the Regulations for the Administration of the Interconnection of Public Telecommunications Network (the "Interconnection Regulations").

The Reference Paper requires the procedures for the allocation and use of resources to be carried out in an objective, transparent and non-discriminatory manner. The Chinese government operates a central system for the allocation of telecommunications resources. Telecommunications resources may be allocated by way of designation or auction. They may not be assigned or leased nor can the use of the resources be changed without the approval of the MII or the provincial-level authority.

The obligation of universal service is not defined in the Reference Paper; instead, any member country has the right to define the kind of universal service obligation it wishes to maintain. The MII is responsible for determining which telecommunications operators should assume specific obligations in respect of the universal availability of telecommunication services by designating such operators or by inviting tenders.

The Reference Paper also emphasizes transparency of interconnection arrangements, licensing criteria and universal service obligations. The Telecommunications Regulations provides for public consultation between telecommunications carriers, users and other related parties when formulating telecommunication service charge rates. Although the rates are to be fixed or guided

by the government, opinions from various operators and providers of services and customers are to be obtained through public hearings.

China has also agreed to ensure that the regulatory authority for the industry remains independent from the service providers. After the ownership of all the six state-owned telecommunications operators was transferred to a newly established State Assets Management Commission in March 2003, the MII as the telecommunications industry regulator has no direct interest in any telecommunications enterprise.

V. Competitive advantages

1. Networks

Telecommunications requires substantial investment in spatially embedded complete, sophisticated and integrated delivery networks, especially in projects involving system modernization and expansion for which leasing existing network facilities is not an option. Local loops connecting consumers, long distance haul lines, and switching facilities all need to be installed before end-to-end service can be provided. Such project-specific, spatially embedded investments are usually associated with higher risk, as there is little reversibility in the investment due to the location-bound nature (Sarkar et al., 1999).

In a recent informal online survey conducted by China's biggest portal website – Sina.com (<http://www.sina.com.cn/>), 56% of the respondents believed that the major difficulty for foreign investors to provide basic telecommunication services in China would be telecommunications networks (Li, 2004). **[Evidence for Sequence 6.2]** As one interview informant said:

It is almost impossible for foreign operators to build a new telecommunications network in China. Not to mention the significant size of investment and high risk, building a new network means that they will have a face-to-face competition with local telecommunications operators. **[Evidence for Sequence 6.2]**

The informants from foreign telecommunications companies held the same opinion:

Networks are the most basic resource for telecommunications operators. If we build our own networks, even an investment of millions of U.S. dollar means nothing in the Chinese market. On the other hand, there are already six or seven existing nation-wide networks in China. Therefore, we will definitely not, and it is not possible to make such an investment. Instead we will look for other profit-making points. **[Evidence for Sequence 6.2]**

2. Licenses

The major barrier for new entrants to enter mobile services will be obtaining a license. Licenses to operate mobile services, as with any other basic service, are issued at the discretion of the central authorities, yet there is no clear set of guidelines that detail who can get a license, what are the criteria, and how long it will take. The official regulator, the MII, would only issue a few licenses in the mobile services market. Only the operators who are awarded the licenses have the right to provide mobile services for the end users. Therefore, those who are without licenses can't just open the door and do business. **[Evidence for Sequence 3.3]** Furthermore, the limited radio spectrum within the country could only be assigned to the licensees. For national security considerations, many governments keep some spectrum for military use and only allocate a portion of spectrum for business use. In other words, the mobile services market, unlike some other industries, can only provide finite amount of services or products to their customers. Mobile services operators can only assign limited radio spectrum to their customers because the spectrum is the core resource for the operators. Once the user base exceeds the spectrum, the quality of services would decrease.

3. Domestic companies' strengths

An informant from the Ministry of Information Industry said:

Chinese telecommunications operators have many advantages and they are confident about their position in Chinese market. China now has the largest number of telecommunication service subscribers in the world. China Mobile is a Global 500 company and the world's largest mobile phone operator, and China Unicom ranks third. They all have

rich operating experiences. China Telecom is the ninth largest operator in the world and it has become a well-known brand. It was even awarded World's Most Admired Companies by the *Fortune* magazine. **[Evidence for Sequence 6.1]**

An informant from foreign telecommunications company admitted:

Chinese firms know better about local economy, politics, and customs. But we don't have such general knowledge.

4. Management and awareness

A Chinese telecommunications company informant said:

Compared with foreign companies, we don't have many differences in technology. The thing we lack most is the awareness to serve our customers. This is because of years of planned economy and industry monopoly.

Another interview informant added:

It takes time. We have already tried very hard to improve our service quality. But some staff still have the old state-owned enterprise thinking. **[Evidence for Sequence 6.1]**

VI. Domestic company's strategy

1. Be strong

A Chinese telecommunications company informant said:

For the time being, we haven't felt the competitive pressure from foreign companies. It is hard to say what will happen in the future. What we can do now is to strengthen our own competitiveness by bringing our advantages into play and improving our weak points. So long as we are strong enough, we will no longer be afraid of outside competition. **[Evidence against Sequence 4.1]**

Besides improving their efficiency, reducing prices, and improving service quality,

in recent years the six domestic state-owned telecommunications operators have adopted various other marketing strategies to attract their customers (SINOTRUST, 2004). **[Evidence for Sequence 7.1]**

(1) New products/services

As demand for fixed line telephony dwindled and average revenue per user (ARPU) fell, starting from 2003, fixed-line operators – China Telecom, China Netcom, and China Railcom have to rely on personal handy phone system (PHS, a quasi mobile phone service) and ADSL (asymmetric digital subscriber line) for revenue growth.

A local ISP interview informant said:

When our company first provided the LAN Internet access service to customers three years ago, China Telecom was still selling its ISDN. But after the LAN was adopted by more people, China Netcom (previous China Telecom north) started to promote its ADSL service. **[Evidence for Sequence 7.1]**

For the two mobile operators, despite of continuing growth of customers, they are under pressure of steadily falling ARPU as most new customers use prepaid service without a contract and tend to spend less. Competition from the PHS is another factor which offers some mobility and does not charge for receiving calls. To maintain growth, China Mobile and China Unicom have to cut prices, offer new services, and expand to new areas. **[Evidence for Sequence 7.1]**

(2) Product differentiation

In fierce market competition, when the shares are taken by competitors of similar size, a company may make a strategic option to target a certain group of customers. China Mobile's "M-zone" is such an example.

China Mobile offers data services through its Monternet.com which hosts services provided by third-party service providers via WAP. The "Monternet" is an abbreviation for mobile Internet. By the end of 2004, China Mobile had 30 million registered WAP users (China Mobile, 2005). In 2003, China Mobile launched "M-zone", a service brand on Monternet that targets young mobile phone users with

mobile data services like ring-tones, multimedia messaging, mobile payment and games. This was clearly explained by what a China Mobile staff member said, “Young people don’t use voice telephony very much, but are willing to try wireless data services to show their ‘coolness’.” (*China E-commerce*, 2004, p.54)

(3) Key customers

Key customers play an important role in telecommunications operators’ profit making. To better serve its key customers, China Netcom set up a VIP customers calling center. The competition between two fixed-line operators – China Telecom and China Netcom also started from key customers. **[Evidence for Sequence 7.1]** One China Netcom interview informant said:

China Telecom has accelerated its network construction in North China. All the ministries are headquartered in Beijing; with the help from telecommunications operators, they want to set up an Intranet within their different agencies across the country. China Telecom wants to compete with us in this market. **[Evidence for Sequence 7.1]**

2. Attitude towards cooperation with foreign investors

One interview informant said:

“The domestic telecommunications operators with a strong position are not very interested in cooperating with foreign investors. China Mobile had a net profit rate of 20% last year. With such a high profit rate, it certainly wants to run by itself. **[Evidence for Sequence 6.1]**

An informant from a foreign telecommunications company added:

Cooperation with foreign investors is not a simple decision which can be made by China Telecom or China Unicom themselves, but needs to be supported by the government. It is the largest shareholder of all the state-owned telecommunications operators – the State Assets Management Commission who makes the decision. **[Evidence for Sequence 3.1]**

VII. Foreign company's entry motivation

1. Forces for telecommunications globalization

Sarkar et al. (1999) argued that a set of environmental forces (privatization, liberalization and related institutional changes), and firm-level drivers (strategic and scale related) are driving telecommunications globalization.

(1) Environmental forces

The telecommunications industry has changed from the “natural monopoly” and national security industry to a free-market industry (Sarkar et al., 1999). This change has created a wave of privatization and liberalization, and thus new market opportunities. The increasing information intensity of economic activity and globalization of capital flows, manufacturing, and trade has resulted in strong demand for better communication and information services. In addition, liberalization of global markets has provided opportunities for telecommunications firms to expand overseas.

(2) Firm-level drivers

There are five strategic reasons for telecommunication firms to seek new markets abroad (Sarkar et al., 1999).

First, regulatory changes and technological turbulence in domestic markets are interacting to enhance the relative attractiveness of foreign markets, thus increasing foreign country specific advantages and creating incentives to invest abroad. Because of deregulation in the home market, competition is escalating in traditionally protected markets, which in advanced economies show limited growth opportunities in any case. In addition, rapidly changing technology is affecting established market structures, demand, and regulatory regimes.

Second, location-specific opportunity occurs when telecommunications companies are able to arbitrage across government policies to maximize their returns. Because international markets represent a way to move funds outside the regulated zone, they allow potentially higher returns than rate-of-return in regulated domestic markets.

Third, the heightened need to coordinate and integrate globally dispersed

operations of corporate clients makes it almost mandatory for telecommunications companies to establish a substantial international presence to retain major customers.

Fourth, competitive advantage of early movers into a foreign market and success in obtaining an operating license in international markets are incentives for telecommunications business to expand overseas.

Fifth, new “systemic” ownership advantages accrue through international presence, as global standard setting in the technologically volatile telecommunications industry assumes critical importance. This facilitates their formal and informal clout over institutions such as the International Telecommunication Union (ITU) and during standard-setting negotiations with other telecommunications and equipment manufacturers.

2. Attractiveness of Chinese telecommunications market

The Chinese telecommunications market has experienced double-digit growth in recent years and continues to expand rapidly as demand surges. As of 2000, China was ranked second in the world, after the United States, in terms of its absolute market size in the telecommunication service sector, with 145 million fixed lines and 85 million mobile subscribers, respectively. However, as of September 2002, China became the world’s largest telecommunication service market with 397 million combined subscribers in fixed line and mobile telephony, that is, 207 million and 190 million, respectively. In that time span, the number of mobile telecommunication service subscribers increased 123.5% and fixed line telephony subscribers also increased by 43.7% (OECD, 2003). China also has the largest wireless pager market and the second largest number of Internet users in the world.

However, the overall level of infrastructure development remains low. As of September 2002, the penetration rate, i.e. subscribers per 100 population, in the wired market was 16.25% (with 23.95% in urban areas) and 14.95% for mobile services, and still up to 50% of the country did not have access to basic telecommunication services (OECD, 2003), which presents a huge market potential and creates a strong incentive for foreign players to enter. **[Evidence for Sequence 5]**

VIII. Foreign company's entry strategy

1. Globalization strategies for telecommunications companies

A telecommunications company has two distinct choices to pursue growth in the global market. It can either enter directly by building the product/service offerings with its own resources in the target country, or it can collaborate with other firms (Joshi et al., 1998).

The “new entrant” globalisation strategy gives the telecommunications firm the freedom of choice in markets and technologies. However, it is a slower and more costly process, inevitably lacks initial brand name recognition, lacks local political and business expertise, and increases risk of expropriation of investment. This approach is especially undesirable where time and speed are critical and where resource commitments in a particular market, segment, or technology might be too risky a pursuit for a company by itself, as in the case of the global telecommunications market (Joshi et al., 1998).

A telecommunications company may also enter a target market through a strategic alliance relationship with other firms. A strategic alliance is a business relationship in which two or more companies, working to achieve a collective advantage, attempt to integrate operational functions, share risks, and align corporate cultures. The degree of strategic alliances may range from a simple licensing agreement, to a joint marketing effort, to establishing a consortium, to combining resources for joint ventures, to the ultimate form of mergers and acquisitions. Companies may be interested in alliances to capitalize on different expertise, build strategic synergies, mitigate risks, speed up a venture with combined resources, and develop scope economies (Chan-Olmsted, 1998).

Major factors in determining an entry strategy are perception of risk, level of control, profitability, and culture distance (Indanon, 2000).

2. Entry strategy of foreign telecommunications companies

A Chinese telecommunications operator informant said:

Considering the significant size of investment and time to build a new network, a new company has to be very cautious in making the decision – to make its own investment or to cooperate with an incumbent company. It is much more effective to develop value-added services using existing networks. So value-added services should be foreign company's entry point. **[Evidence for Sequence 6.2]**

An informant from a consulting company agreed:

The best way for a foreign telecommunications company to enter the Chinese market is to cooperate with a Chinese partner, but currently it is still strictly controlled by government regulations. **[Evidence for Sequence 3.3]** Foreign companies hope that they can enter the market by using domestic operators' backbone networks, getting operating licenses with help from their Chinese partners, and obtaining their partners' other resources such as switching facilities, front desk offices, and billing rights. **[Evidence for Sequence 6.2]** Their target is to exchange new technologies or business models for income. **[Evidence for Sequence 5]** But Chinese operators won't do so. Foreign companies haven't found their best way to enter the Chinese market yet.

For basic services, it is not because foreign companies don't want to enter, but they have to consider the investment and how to attract subscribers. So they can only focus on value-added services. In some fields, such as mobile telecommunications, China has become one of the most important markets in the world. The adoption of 3G (third generation technology mobile services) has attracted a huge number of equipment, handset, content providers as well as telecommunications operators. The general direction for foreign companies is value-added services, but on strategy details such as how to enter the market and with which Chinese company to cooperate, foreign companies have different opinions. Some focus on VIP customers, others pay attention to 3G or wireless business. **[Evidence for Sequence 5]** **[Evidence for Sequence 6.2]**

3. Further reasons for not entering at this time

An academic interview informant gave some additional reasons for foreign companies' current cautious position in entering the Chinese market:

First, the global operators all have balance sheet problems at home. Many foreign carriers are still recovering from the 'telecom bubble' during the 2000-2001 and cannot afford to take high risks in investment or long-term efforts to enter a market they know very little about and have no control over. Although the Chinese market is attractive to them

for its low penetration and high population base, profits cannot be guaranteed because of its declining ARPU and uncertain purchasing power figures. **[Evidence for Sequence 5]** Second, the regulatory environment is uncertain. The Telecommunications Law is still under discussion. Foreign companies are not clear about their rights and responsibilities. Without a telecommunications law to protect the legality of foreign investment, there is no guarantee that the CCF fiasco will not recur. **[Evidence for Sequence 3.3]** Third, foreign companies cannot operate in China as an independent entity but must buy a position in an incumbent or form EJV's. Domestic operators have more advantages now, so they don't really want to cooperate with foreign companies. **[Evidence for Sequence 3.2]** **[Evidence for Sequence 6.1]** Fourth, uncertainty lingers before the 3G licenses are issued. Last, the bursting of the Internet bubble has made them cautious in selecting business models in value-added projects. As a result, foreign companies are still waiting for the right time to enter. **[Evidence for Sequence 5]**

IX. Market changes

Great changes have taken place in China's telecommunications market in recent years. When asked about the reasons, most of the interview informants attributed this to increasing market demand and domestic competition brought by the government's self-initiated reforms. **[Evidence for Sequence 2.1]** **[Evidence for Sequence 7.1]** However, many informants added comments like:

Telecommunications reforms in China resulted from not only the internal motivation, but also the external pressure of WTO entry. **[Evidence for Sequence 1.1]** **[Evidence for Sequence 1.4]**

One interview informant said:

The WTO accession introduced the market competition system into China's telecommunications market. **[Evidence for Sequence 1.4]**

1. Domestic competition

Over the past 10 years, compared with other traditionally monopolized basic industries such as post, railway and energy, the telecommunications sector has been the most reformed and rapidly developed in China (Ming, 2004). Prices were

significantly reduced, teledensity dramatically increased. Telecommunications became the most profitable as well as the most fiercely competitive market (Ming, 2004). The resulting changes have mostly been due to controlled competition managed by the government, although there were instances of the influence of technological advancement overcoming government control such as in the case of VoIP (Pangestu and Mrongowius, 2004). **[Evidence for Sequence 2.1] [Evidence for Sequence 7.1]**

(1) Rapid growth

Table 5.4 User growth in China's telecommunications sector

	1978	1997	2000	2001	2002	2003	2004
Teledensity	0.18%	8.1%	20.1%	25.9%	33.7%	42.1%	50.8%
Fixed-line penetration	0.18%	7.04%	11.45%	14.14%	17.5%	21.1%	24.9%
Mobile penetration	-	1.07%	6.77%	11.2%	16.2%	21.0%	25.9%
Internet users (millions)	-	0.62	22.5	33.7	59.1	79.5	94.0

Source: Created by the author, on the basis of OECD, 2003; SIC, 2002; 2003; ChinaNex, 2005; CNNIC, 2005.

When the reform process started in 1978, the telephone penetration rate in China was only 0.18%. As of December 2004 China had 312 million fixed line subscribers and 335 million mobile phone subscribers. The teledensity was significantly increased to 50.8% (OECD, 2003; ChinaNex, 2005). In 1997 when the China Internet Network Information Centre (CNNIC) started its first national Internet development survey China only had 62,000 Internet users. Some 94 million Chinese on the mainland had become Internet users by the end of 2004 (CNNIC, 2005).

(2) Market players

Before 1994 the Chinese telecommunications market was monopolized by China

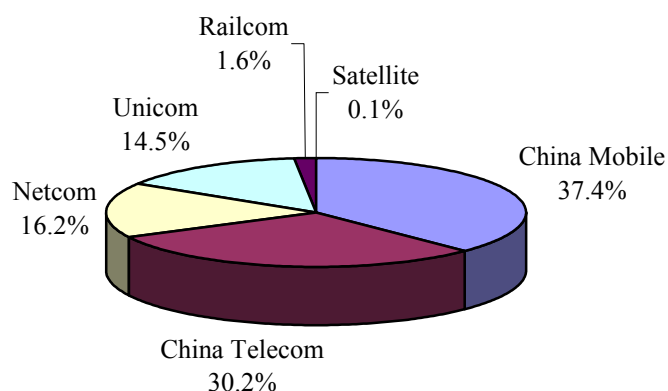
Telecom. Now there are six state-owned operators in basic telecommunication services and about 10,000 companies providing value-added services (Xinhua, 2004). In each category of basic telecommunication services, at least two operators compete with one another (see Table 5.5). **[Evidence for Sequence 2.1]**

Table 5.5 Market players in the Chinese telecommunications market

Category	Telecommunications providers
Fixed line telephony	China Telecom, China Netcom, China Railcom, China Unicom
Mobile telephony	China Mobile, China Unicom
Paging	Guoxin, Zhongbei, Runxun, Wancheng Wanlitong, etc.
IP telephony	China Telecom, China Netcom, China Unicom, China Railcom, China Mobile
Satellite service	China Satellite

Source: Created by the author, on the basis of OECD, 2003.

Figure 5.1 Revenue share by operators in 2003



Source: SIC, 2003.

Since the 2002 reform, the two new companies – China Telecom and the new China Netcom – have retained dominant positions in local telephony and China Mobile has dominated the mobile communications market. In the meantime, mobile phones have closed the gap with fixed phones as the primary business of China's

telecommunications sector (see Figure 5.1).

(3) Price competition

Prices for telephone line installation, mobile network access, Internet access fees, telephone charges for Internet uses, and data communication have also been cut a number of times over the past several years.

An example of price competition and its effect on reducing prices is evident with services over which the government has no price control such as IP (Internet protocol) telephony. There has been intense competition leading to reduction in prices of long distance calls. A price war over IP telephony was begun on the first day of 2001 by China Netcom. As a prepaid device for long-distance calling, IP phone cards have become very popular as they can save callers up to 70% on their long-distance call charges. China Netcom then further reduced their charges by another 50%, pricing IP domestic long-distance calls at RMB 0.3 yuan (US\$ 0.036) per minute and RMB 2.4 yuan (US\$ 0.28) for overseas calls. The other operators, China Telecom, China Unicom, and China Mobile followed suit and reduced their IP pre-paid card costs, and the government had, in the end, to lower long distance rates that China Telecom was charging in the face of such competition (Pangestu and Mrongowius, 2004).

[Evidence for Sequence 7.1]

Table 5.6 Price competition for pre-paid mobile users

Mobile operator	Pre-paid card	Face value (RMB yuan)	Extra value (RMB yuan)
China Mobile	“Shen Zhou Xing”	100	25
		300	90
		500	180
China Unicom	“Ru Yi Tong”	100	25
		300	128

Source: Li, Q., 2004.

Despite the mandated price range, several operators continued to announce further rate cuts. Most competition in pricing takes place through packaging

mechanisms, which are not subject to the constraints of the established price ranges. Besides offering packages to their contract subscribers, China Mobile and China Unicom also give their pre-paid card users discounted prices. Table 5.6 gives an example of their recent promotion campaign in Beijing: **[Evidence for Sequence 7.1]**

(4) Service quality

Several regulations governing the quality of services have been promulgated by the government. The MII issued, in 2002, the Reporting System on the Quality of Telecommunication Service, which requires operators to report periodically to the relevant government authorities concerning the quality of their service. Table 5.7 shows that complaints on telecommunication service quality have decreased since then.

Table 5.7 Complaints on telecommunication service quality

	2001 4th Quarter	2002 2nd Quarter	2003 2nd Quarter	2004 1st Quarter
China Telecom	17	5	4	2
China Netcom	2	3	2	4
China Mobile	31	21	16	8
China Unicom	24	19	23	13
China Railcom	2	3	5	1
Others	1	3	0	0
Total	77	54	50	28

Source: Created by the author, on the basis of information from the MII official website <http://www.mii.gov.cn/>.

(5) Dial-up Internet access

Internet access service in China is provided by one of the following: 1) the NSPs (China Telecom, China Netcom, China Unicom, and China Railcom); 2) national ISPs such as ChinaNet (operated by China Telecom), and 263 (owned by telephone companies); and 3) local ISPs that lease lines in large quantities from China Telecom or other NSPs. There are nearly 1,000 ISPs in China (165 cross regional) that provide

various Internet access services to the public (ChinaNex, 2005). **[Evidence for Sequence 7.1]**

To promote Internet development in China, in March 2000 the MII reduced the telephone charge per minute paid by consumers for Internet connection to RMB 0.02 from previously as high as RMB 0.11 yuan. In addition, between 1999 and 2000 the MII also twice reduced the monthly rental fees charged by the NSPs for leased connections. The price was RMB 9,000 yuan before October 1999, then RMB 4,500 yuan between October 1999 and March 2000, and finally RMB 2,000 yuan after March 2000. This significantly reduced the operating costs for local ISPs. **[Evidence for Sequence 3.1]** Fierce competition in the market forced the ISPs to lower their service charges in the same proportion as the decrease in leased connection rental fees. Currently Internet service fees per hour in China range from RMB 1.2 yuan to RMB 4.2 yuan. Charges by local ISPs is much lower than national operators, but quality of service (availability, reliability and support) is generally poor (ChinaNex, 2005). **[Evidence for Sequence 7.1] [Evidence for Sequence 8.1]**

(6) Broadband Internet access

Table 5.8 Broadband Internet access fees charged in Shanghai

Operator	Installation fee (RMB yuan)	Monthly fee (RMB yuan)
China Telecom (ADSL)	310	130 (512k)
China Netcom (LAN)	280	130 (1M), 230 (2M)
Shanghai Cable (Cable Modem)	199	120
Great Wall Broadband (LAN)	180	100 (10M)

Source: Created by the author, on the basis of fieldwork observation.

Since 2001 several small companies such as Great Wall Broadband and Beida Founder started to provide LAN-based broadband Internet services to business and residential customers in all major cities across China. Competition in the broadband market increased sharply in 2003 when China Telecom and China Netcom began to provide telephone line-based ADSL service. In 2003 China Netcom also offered a six-month no installation fee promotion in Beijing. Other small companies had to

follow by reducing their installation fees by as much as 80%. Table 5.8 lists the broadband Internet access fees charged by major operators in Shanghai: **[Evidence for Sequence 7.1]** **[Evidence for Sequence 8.1]**

2. Foreign competition

There are a few cases of foreign entry in China. Shanghai Symphony Telecom Ltd., China's first telecom joint venture, was established on 22 March 2001. AT&T has a 25% stake in the joint venture. The remaining share is split between China Telecom Shanghai subsidiary and Shanghai Information Investment Ltd. This signals the first step China has taken to lift control over its telecommunications market.

UNISK (Beijing) Information Technology Co. Ltd. formed in April 2004 between SK of South Korea and China Unicom was the first joint venture approved by the Chinese government after the WTO accession. **[Evidence for Sequence 4.2]**

However, during interviews the informants from foreign telecommunications companies thought that these two cases could hardly claim success: **[Evidence against Sequence 7.2]**

Shanghai Symphony is more of a gateway service for multinationals to link field offices with other countries than a direct competitor in the local market. The company is still operating but its prospects are precarious.

The problem for UNISK is that CDMA data service in China is very small (four million users and RMB 776 million yuan or US\$ 93 million in revenue in 2004), which means the effect of the joint venture will likely be limited.

X. Effects on e-commerce diffusion

The China Internet Network Information Centre (CNNIC) is the Chinese government department in charge of statistical survey of host computers, Internet users, distribution of users and information traffic, and the situation of domain name registration. It has conducted semi-annual surveys on China's Internet development in each January and July since 1998. Some related issues such as e-commerce adoption and e-mail use are also included in the surveys. The CNNIC surveys are a reliable

source to evaluate consumers' adoption of e-commerce (B2C e-commerce) as the surveys target individual Internet users and non-users.

The latest CNNIC survey shows that in general only 7.8% of users are not satisfied or disappointed by the Internet use in China now (see Table 5.9). **[Evidence for Sequence 8.1]**

Table 5.9 Users' attitudes towards Internet use in China
(survey results in January 2005)

	Excellent	Satisfied	So so	Unsatisfied	Disappointed
Cost	2.9%	17.4%	43.4%	28.1%	8.2%
Security	2.8%	17.6%	44.2%	27.8%	7.6%
Speed	4.9%	31.8%	38.0%	19.0%	6.3%
Chinese information	8.5%	43.7%	36.2%	9.9%	1.7%
Easy to operate	10.6%	45.5%	36.8%	5.9%	1.2%
General	2.9%	36.5%	52.8%	6.9%	0.9%

Source: CNNIC, 2005.

Although access cost and Internet speed are still among the greatest concerns to Chinese Internet users, over the period from 2001 to 2004, the percentage of users getting disappointed by access cost was decreasing, more users were satisfied with Internet speed, while there was not much change in users' attitude towards security (see Tables 5.10, 5.11 and 5.12). **[Evidence for Sequence 8.1]** This shows that, with reduction of access cost and expansion of broadband connections, security has become a relatively more important concern for Internet users in China. However, as analysed previously in this chapter, improvement in Internet services in China have come from the increased competition among domestic telecommunication companies and the government's efforts to promote the Internet – indirect effects of WTO commitments, rather than from direct entry of foreign service providers.

Table 5.10 Users' attitude towards access cost

	Excellent	Satisfied	So so	Unsatisfied	Disappointed
Jan-02	5.1%	21.3%	33.6%	23.1%	16.9%
Jan-03	3.4%	15.9%	37.5%	30.6%	12.6%
Jan-04	3.1%	17.6%	40.5%	29.2%	9.6%
Jan-05	2.9%	17.4%	43.4%	28.1%	8.2%

Source: CNNIC, various years.

Table 5.11 Users' attitude towards Internet speed

	Excellent	Satisfied	So so	Unsatisfied	Disappointed
Jan-02	2.9%	22.1%	36.6%	23.3%	15.1%
Jan-03	4.5%	29.2%	36.5%	21.5%	8.3%
Jan-04	5.7%	35.1%	36.2%	17.3%	5.7%
Jan-05	4.9%	31.8%	38.0%	19.0%	6.3%

Source: CNNIC, various years.

Table 5.12 Users' attitude towards security

	Excellent	Satisfied	So so	Unsatisfied	Disappointed
Jan-02	3.5%	18.7%	45.0%	24.2%	8.6%
Jan-03	2.1%	15.1%	46.4%	29.0%	7.4%
Jan-04	3.0%	17.7%	44.4%	27.3%	7.6%
Jan-05	2.8%	17.6%	44.2%	27.8%	7.6%

Source: CNNIC, various years.

XI. Sequence analysis of the lower-level model

This chapter discusses the first proposition related to the theoretical model for higher-level analysis (Figure 4.5, Chapter 4, p.105): how the WTO commitments can influence the telecommunication services in China's coastal area and help facilitate e-commerce diffusion.

In developing the lower-level process model (Figure 4.6, Chapter 4, p.111), the previous parts of this chapter present findings about each theoretical construct of the lower-level model. At the same time, relationships between the constructs – the

sequences have also been examined. Following the method introduced in Chapter 4, Table 5.13 summarizes the results of this examination.

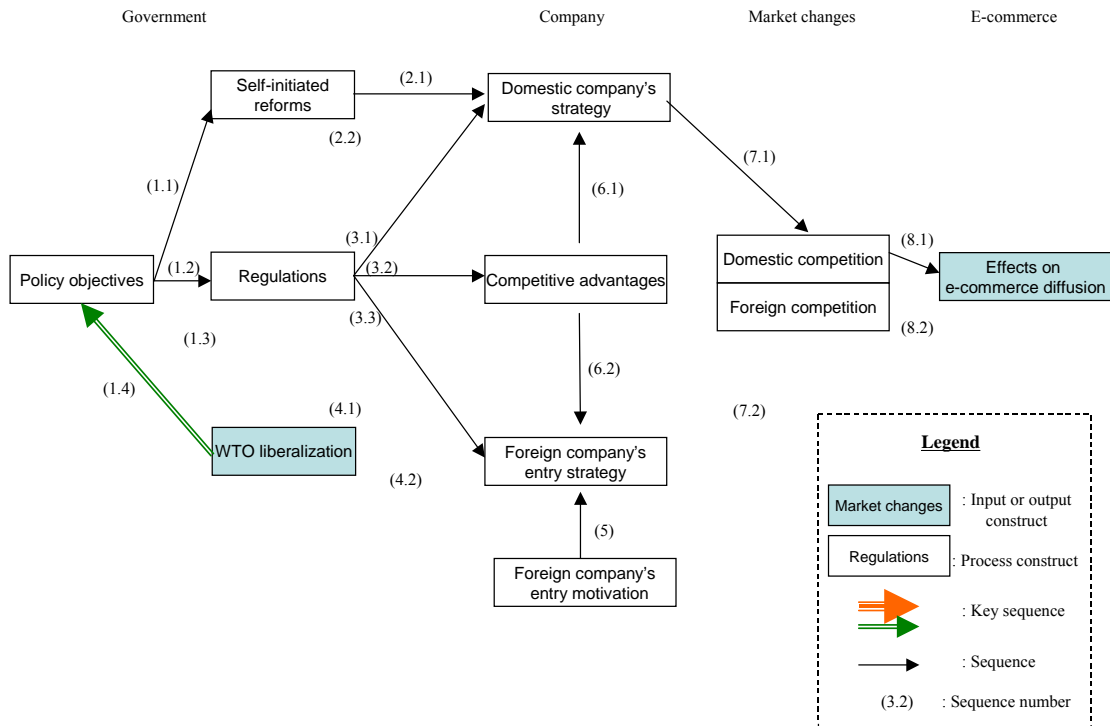
Table 5.13 Sequence analysis for telecommunications sector

Sequence No.	Support or not	Evidence source
Sequence 1.1	Strongly supported	Document (p.130; p.134; p.135); Interview (p.135; p.153); Others (p.135; p.142)
Sequence 1.2	Supported	Document (p.137); Others (p.131; p.138)
<i>Sequence 1.3</i>	<i>No evidence found</i>	
Sequence 1.4	Strongly supported	Document (p.131; p.134); Interview (p.129; p.135; p.153); Others (p.142)
Sequence 2.1	Supported	Document (p.154; p.155); Interview (p.153)
<i>Sequence 2.2</i>	<i>No evidence found</i>	
Sequence 3.1	Supported	Document (p.158); Interview (p.149)
Sequence 3.2	Supported	Document (p.138); Interview (p.153)
Sequence 3.3	Supported	Interview (p.152; p.153); Others (p.145)
<i>Sequence 4.1</i>	<i>Negative evidence</i>	<i>Negative evidence: Interview (p.146)</i>
<i>Sequence 4.2</i>	<i>Contradictory evidence</i>	<i>Positive evidence: Others (p.139; p.142; p.143; p.159);</i> <i>Negative evidence: Interview (p.139)</i>
Sequence 5	Supported	Document (p.150); Interview (p.152; p.153)
Sequence 6.1	Supported	Interview (p.146; p.148; p.153)
Sequence 6.2	Supported	Document (p.144); Interview (p.144; p.145; p.152)
Sequence 7.1	Strongly supported	Document (p.140; p.147; p.154, p.156; p.157; p.158); Interview (p.147; p.148; p.153); Others (p.147; p.148; p.159)
<i>Sequence 7.2</i>	<i>Negative evidence</i>	<i>Negative evidence: Interview (p.159)</i>
Sequence 8.1	Strongly supported	Archival record (p.160); Document (p.158); Others (p.159)
<i>Sequence 8.2</i>	<i>No evidence found</i>	

Based on Table 5.13, Figure 5.2 illustrates the lower-level model developed from

data for telecommunications sector, leaving only the theoretical constructs and the arrows of supported sequences.

Figure 5.2 The lower-level model for the telecommunications sector



1. WTO effects

Figure 5.2 shows that, among the three key sequences departing directly from the input construct “WTO liberalization”, only Sequence 1.4 is supported, the other two – Sequence 4.2 and Sequence 4.1 are not supported.

(1) Direct WTO effects: “WTO liberalization” → Sequence 4.2 → Sequence 7.2 → Sequence 8.2 → “effects on e-commerce diffusion”

The chain departing from the input construct “WTO liberalization” first with Sequence 4.2 to the output construct “effects on e-commerce diffusion” is defined as direct WTO effects in Chapter 4. It goes across four constructs from “WTO liberalization” first to “foreign company’s entry strategy”, then to “foreign competition”, and finally to “effects on e-commerce diffusion”. If the chain is complete, it should be connected by three process sequences: Sequence 4.2, Sequence

7.2, and Sequence 8.2. However, as Figure 5.2 shows, none of these three sequences are supported. So this causal chain is not supported for the telecommunications sector.

The evidence listed in Table 5.13 gives the reasons why these links are missing. Although the WTO agreements require and China has fulfilled its commitments to open up both basic and value-added telecommunication services for foreign entry and abide to the Reference Paper on Telecommunications (**Evidence for Sequence 4.2:** others, p.139; p.142; p.143; p.159), the equity joint venture requirement has put foreign telecommunications companies in a disadvantageous position, as they have to look for a Chinese partner and their ownership in the joint venture will not exceed 50%. Foreign companies have to think carefully about it before they decide to enter the Chinese market (**Negative evidence for Sequence 4.2:** interview, p.139).

Furthermore, the other three arrows leading to the construct “foreign company’s entry strategy” – Sequence 3.3, Sequence 5, and Sequence 6.2 all have some negative influence on a foreign company’s decision to enter. For example, there is not an official telecommunications law in China yet (**Evidence for Sequence 3.3:** interview, p.153) and the criteria to issue mobile licenses are not transparent (**Evidence for Sequence 3.3:** others, p.145). Many foreign carriers are still recovering from the “telecom bubble” and become cautious to invest abroad (**Evidence for Sequence 5:** interview, p.153). It is difficult for foreign companies to build a new telecommunications network, so they have to rely on value-added services first, but they haven’t found the profit-making business models yet (**Evidence for Sequence 6.2:** document, p.144; interview, p.144; p.145; p.152).

As a result, even though several foreign telecommunications companies have started to provide value-added services in China, they hardly have any influence on the market (**Negative evidence for Sequence 7.2:** interview, p.159). No evidence has been found to support Sequence 8.2.

(2) Indirect WTO effects 1: “WTO liberalization” → Sequence 4.1 → Sequence 7.1 → Sequence 8.1 → “effects on e-commerce diffusion”

The chain departing from the input construct “WTO liberalization” first with Sequence 4.1 to the output construct “effects on e-commerce diffusion” is defined as one link of the indirect WTO effects in Chapter 4. It goes across four constructs as well: from “WTO liberalization” first to “domestic company’s strategy”, then to “domestic competition”, and finally to “effects on e-commerce diffusion”. If the chain

is complete, it should be connected by three process sequences: Sequence 4.1, Sequence 7.1, and Sequence 8.1. However, as Figure 5.2 shows, Sequence 4.1 is not supported; thus this chain is not complete and the argument is not supported, either.

Table 5.13 indicates that there is evidence directly against the arrow from “WTO liberalization” to “domestic company’s strategy”, as an informant from a Chinese telecommunications company explicitly said, “For the time being, we haven’t felt the competitive pressure from foreign companies. It is hard to say what will happen in the future.” (**Negative evidence for Sequence 4.1:** interview, p.146)

(3) Indirect WTO effects 2: “WTO liberalization” → Sequence 1.4 → Sequence 1.1 → Sequence 2.1 → Sequence 7.1 → Sequence 8.1 → “effects on e-commerce diffusion”

The chain departing from the input construct “WTO liberalization” first with Sequence 1.4 to the output construct “effects on e-commerce diffusion” is defined as another link of the indirect WTO effects in Chapter 4. It goes across six constructs from “WTO liberalization” first to “policy objectives”, then to “self-initiated reforms”, “domestic company’s strategy”, “domestic competition”, and finally to “effects on e-commerce diffusion”. As Figure 5.2 shows, the whole chain is complete and all its five process sequences – Sequence 1.4, Sequence 1.1, Sequence 2.1, Sequence 7.1, and Sequence 8.1 – are supported. However, before drawing a conclusion, the time order and logic between Sequence 1.4 and Sequence 1.1 need to be examined.

First, as Table 5.13 indicates, Sequence 1.3 is not supported and Sequence 1.4 is strongly supported; thus the relationship between the two constructs “policy objectives” and “WTO liberalization” is a purely one-way influence. Second, except for the 1994 telecommunications reform, most of the other evidence listed in Table 5.13 support both Sequence 1.1 and Sequence 1.4 at the same time (**Evidence for Sequence 1.1 and Sequence 1.4:** document, p.134; interview, p.135; p.153; others, p.142). Finally, there is some evidence explicitly supporting the argument that “WTO liberalization” leads to “self-initiated reforms” via “policy objectives”. For example, one interview informant said, “The WTO accession introduced the market competition system into China’s telecommunications market.” (**Evidence for Sequence 1.4:** interview, p.153) Another informant said, “The pressure from China’s entry into the WTO plays a catalytic role to propel China’s government to restructure China’s telecommunications regulatory regime and industry. In other words, without

the pressure from the WTO, China would not have taken such drastic actions in so short a time.” (**Evidence for Sequence 1.4**: interview, p.135) Several researchers also argue that a thorough reform of the telecommunications industry was a part of China’s plan for joining the WTO as soon as possible. A deep reform was necessary to foster a fair competition market, as required to join the WTO, and to improve the competence of domestic operators in the forthcoming international competition (**Evidence for Sequence 1.4**: document, p.131).

No contradictory evidence can be found from the other three process sequences – Sequence 2.1, Sequence 7.1, and Sequence 8.1, so it can be concluded that this chain works and the argument is supported.

2. Competing explanations

Two competing explanations for e-commerce diffusion appeared from the early discussion of theoretical constructs in this chapter: one concerns the government’s self-initiated reforms; the other comes from the construct “regulations” – the government’s Internet promotion efforts, specifically the telecommunication service price reduction decision. As just discussed, a thorough telecommunications reform was a part of China’s plan for joining the WTO, so the first explanation is no longer considered as a competing one. Thus only the second competing explanation is discussed here.

In Figure 5.2, this explanation follows the link: “policy objectives” → “regulations” → “domestic company’s strategy” → “domestic competition” → “effects on e-commerce diffusion” and it is composed of four sequences: Sequence 1.2, Sequence 3.1, Sequence 7.1, and Sequence 8.1. Table 5.13 and Figure 5.2 show that all of the sequences are supported. However, a careful examination found that the price reduction decision enforced by the MII in 1999 and 2000 only covered the telephone charge per minute paid by consumers for Internet connection and the rental fees charged on local ISPs on leased connections (**Evidence for Sequence 3.1**: document, p.158). It did not cover broadband installation fees and broadband Internet connection fees, particularly those provided by China Telecom and China Netcom (**Evidence for Sequence 7.1**: others, p.159). Given the rapid growth of broadband Internet connection in China in recent years, it can be concluded that “regulations” only played a partial role in this development. This explanation is therefore a

complementary one, rather than a competing one.

XII. Summary and conclusion

This chapter investigates the first proposition of the higher-level model: the WTO commitments can improve liberalization in telecommunication services and thus help e-commerce diffusion in China's coastal urban area. In developing the lower-level model, it first discusses findings for the theoretical constructs in the model for the telecommunications sector; then it investigates the sequences among these constructs, with a focus on chains of direct and indirect WTO effects and competing explanations.

Pawson and Tilley (1997) propose a formula "mechanism (M) + context (C) = outcome (O)" for causal explanation in realist evaluation. In other words, programs work (have successful "outcomes") only in so far as they introduce the appropriate ideas and opportunities ("mechanisms") in the appropriate social and cultural conditions ("contexts"). Using this formula, Table 5.14 summarizes the results of the investigation.

The entry of foreign telecommunications companies is categorized as a direct WTO effect. As a key industry of national security and sovereignty, telecommunications was strictly prohibited from foreign investment before 2001. China commits to progressively liberalize telecommunication services upon accession to the WTO. In basic services, foreign service providers may hold 49% of equity share from 2007. In value-added and paging services, foreign service suppliers may hold 50% from 2003. However, the entry of foreign telecommunications companies is restricted by the following contextual conditions: first, significant sunk costs and time are required to build a new telecommunications network for providing basic services; second, China's commitments only allow foreign companies to enter in the form of equity joint ventures. The domestic telecommunications operators with a strong position are not very interested in cooperating with foreign investors; third, many foreign carriers are still recovering from the "telecom bubble" during the 2000-2001 period and cannot afford to take high risks in investment or long-term effort to enter a market they know very little about and have no control over; fourth, the regulatory environment in China's telecommunications market is uncertain; fifth, uncertainty

lingers before the 3G licenses are issued in China; and last, the bursting of the Internet bubble has made foreign companies cautious in selecting business models in value-added projects. As a result, very few foreign telecommunications companies have come to the Chinese market and there is no direct effect on e-commerce diffusion at all.

The pressure of WTO liberalization on regulatory reforms is defined as one type of indirect WTO effect. Reforms in China's telecommunications sector were first initiated to meet increasing market demands, but later the pressure from China's entry into the WTO played a catalytic role to propel China's government to restructure China's telecommunications regulatory regime and industry. China has introduced controlled competition in basic services and liberalization in value-added services to foster a fair competition market and improve the competence of domestic operators in the forthcoming international competition. Competition resulted in improved service quality and decreased charges.

The government's effort to promote the Internet is considered as a complementary explanation for e-commerce diffusion. The Chinese government has taken a positive attitude to Internet and e-commerce development by promoting the Golden Projects and reducing telecommunication service fees. These resulted in lower access cost and faster Internet speed.

In conclusion, the WTO commitments have had both direct and indirect effects on telecommunication services in China's coastal area, but only indirect effects have so far had impacts on e-commerce diffusion. The first proposition is partly supported.

Table 5.14 WTO and e-commerce - telecommunication services

	Mechanisms	Contexts	Outcomes	
			Effects on telecommunication services	Effects on e-commerce
Direct WTO effects (Entry of foreign companies)	Foreign investment was strictly prohibited from China's telecommunications sector before 2001. China commits to progressively liberalize telecommunication services upon accession to the WTO. In basic services, foreign service providers may hold 49% of equity share from 2007. In value-added and paging services, foreign service suppliers may hold 50% from 2003.	<ol style="list-style-type: none"> 1. Significant sunk costs and time are required to build a new telecommunications network for providing basic services. 2. China's commitments only allow foreign companies to enter in the form of equity joint ventures. The domestic telecommunications operators with a strong position are not very interested in cooperating with foreign investors. 3. Many foreign carriers are still recovering from the "telecom bubble" during the 2000-2001 period and cannot afford to take high risks in investment or long-term 	Foreign companies haven't found their best way to enter Chinese market yet.	No effect.

		<p>effort to enter a market they know very little about and have no control over.</p> <p>4. The regulatory environment in China's telecommunications market is uncertain.</p> <p>5. Uncertainty lingers before the 3G licenses are issued in China.</p> <p>6. The bursting of the "Internet bubbles" have made foreign companies cautious in selecting business models in value-added projects.</p>		
Indirect WTO effects (Pressure to reform the telecommunications sector)	<p>A thorough reform on telecommunications industry was a part of China's plan of joining WTO. The targets of the reform were to foster a fair competition market and improve the competence of domestic operators in the</p>	<p>The reform was first initiated to meet increasing market demand, but later the pressure from China's entry into the WTO played a catalytic role to propel China's government to restructure China's</p>	<p>Competition resulted in improved service quality and decreased charges. Individual users do have choices to choose their ISPs from several providers in most cities.</p>	<p>The percentage of users getting disappointed by access cost has decreased. More users get satisfied with Internet speed.</p>

	forthcoming international competition. As a result, China has introduced controlled competition in basic services and liberalization in value-added services.	telecommunications regulatory regime and industry.		
Complementary explanations (The government's efforts)	Believing that Internet and e-commerce would facilitate China's integration into the global information economy and enhance the government's administrative efficiency, the central government launched in 1993 the Golden Projects to build the national information infrastructure. The government also cut basic telecommunication service fees and costs related to Internet access.	1. The MII retains a considerable degree of control over the sector through determining the price range for basic telecommunication services. 2. The price reduction was to address consumer complaints and was a part of the strategy to provide universal service.	Prices for telephone line installation, mobile network access, Internet access fees, telephone charges for Internet uses, and data communication have been cut a number of times over the past several years.	The percentage of users getting disappointed by access cost has decreased. More users get satisfied with Internet speed.

Chapter 6 Banking services

An efficient and sound financial structure is a service-sector infrastructure critical for the growth and development of electronic commerce. The multiple components of the financial system – banks and non-bank financial intermediaries and markets – play a very important role in supporting the development of firms that, on the one hand, participate in the global value-chain of production and, on the other, innovate electronic commerce products to best meet the needs of local users. Government policies that influence financial intermediaries and the range of financial products will materially affect the development of electronic commerce in a country (Mann et al., 2000).

Payment is considered the greatest e-commerce problem in China (Haley, 2002). A primary obstacle preventing the growth of e-commerce in China has been the “lack of a well-functioning electronic payment system” (Schlevogt, 2000, p.208), and the fact that “too few businesses use credit and too few customers hold credit cards” (Trappey and Trappey, 2001, p.203). Internet growth is doubling every six months (Richardson, 2000) but credit cards are only useable in the city where the issuing bank is located. For Internet vendors to accept credit card payments they must have offices located in the same cities as the banks that issued the credit cards; no nationally accepted credit cards exist in China (Haley, 2002).

The second proposition of the higher-level model argues that the WTO commitments increase competition in China’s banking industry, as China has to remove many existing restrictions on foreign banks after its accession to the WTO. That will stimulate foreign entry and increase competition between domestic banks and foreign banks (Lin, 2001; Wong and Wong, 2001). Foreign banks, with their advanced e-banking systems, capital and experience, are often seen as a future threat to domestic Chinese banks, in particular in the online or e-banking market (UNCTAD, 2001). Plastic money will also be an area of intense competition between foreign and domestic banks (Bonin and Huang, 2002). In developing the lower-level process

model, this chapter investigates the constructs and sequences of this process, and verifies the proposition.

I. Policy objectives

An interview informant from the China Banking Regulatory Commission (CBRC) stated:

Opening up its financial industry is a component of China's economic reform and opening up policy. The current banking reforms in China aim to mitigate the risks for state-owned banks, strengthen their market competitiveness, and thus help improve the whole financial service sector in China. **[Evidence for Sequence 1.1]**

The government has always played an important role in China's banking sector. After the establishment of the People's Republic in 1949 and prior to the initiation of economic reforms in 1978, China had a planned economy with heavy industry as its main target of development. The financial system was an integral part of the planned economy. Regular financial market activities were banned. The People's Bank of China (PBC) was the only financial institution, serving as the central bank and at the same time providing commercial banking services (Lin et al., 1996). The whole banking industry was regulated by strict cash and credit plans that were set in accordance with the production plans laid down by the State Planning Commission. Banks were part of the administrative hierarchy; they ensured that the national production plans would be fulfilled, and they had no incentive to compete with each other (Wong and Wong, 2001).

Following the decisions of the Third Plenary Session of the 11th Communist Party Congress in late 1978, the Chinese government has sought to steer the economy towards greater market orientation in a bid to raise economic efficiency. The rapid economic growth experienced by the country thereafter has been associated with expansion of its non-state sector activities, and growth in foreign trade and direct

investment (McKinnon, 1994; Lardy, 1995). To sustain this growth China needs to revitalize its key industries and to improve its physical infrastructure. In order to meet the country's increasing demand for working and investment capital, the government has been trying inter alia to reform the banking sector which has in the past failed to raise and supply capital efficiently (Pei, 1998). **[Evidence for Sequence 1.1]**

The introduction of foreign banks is part of this banking reform. Foreign capital from or through international banks is expected to bridge the gap between domestic savings and investment. Furthermore, foreign banks that operate in China are expected to help enhance competitive efficiency and improve the structure of the country's banking system (Leung, 1997). **[Evidence for Sequence 2.2]**

As China is determined to complete market-oriented reform and to integrate deeply into the global economic system, foreign competition in the domestic banking sector and capital market is an inevitable challenge that the domestic banks have to face. The WTO accession merely sets a definite timetable and clear deadline for that process (Bonin and Huang, 2002). **[Evidence for Sequence 1.3][Evidence against Sequence 1.4]** Though without an official blueprint, the Chinese authorities seem to be following a gradual approach to foreign banking. The logic is, as a foreign bank informant said:

...to allow the domestic banking sector sufficient time to improve its efficiency and to prevent it from being weakened further by foreign competition. **[Evidence for Sequence 1.3]**

Like banking reforms, the development of a national electronic payment system in China has also been a government-initiated effort. The Golden Card Project was created in 1993 as a response to former President Jiang Zemin's June 1993 call to accelerate the development of banking and credit card systems in China's major cities. The project aims to set up a credit card verification scheme and an inter-bank cross-region clearing system to create a modern, electronic, and cashless payment system. At the end of 2001 the then Vice Premier Wen Jiabao made a speech on the importance of bankcard networks interconnection for China's economic development

after the WTO entry. The Chinese government for the first time included the bankcard sector into the national economic development plan. In March 2002 China's UnionPay Shareholding Company was officially launched in Shanghai to further the goals of the Golden Card Project: expanding interconnection among commercial banks. **[Evidence for Sequence 1.2]**

Based on Kim's (2002) analysis on the evolution of China's economic system, Table 6.1 illustrates the relationships between China's economic system reforms, domestic banking reforms, entry of foreign banks as well as the development of a national electronic payment system.

II. Self-initiated reforms

1. Domestic banking reforms

As part of the economic reforms, the Chinese government has embarked on a series of financial reform programs since 1979. The programs in the 1980s focused on the establishment of a two-tier banking system that comprised primarily a central bank and four specialized banks – the Big Four banks that are owned fully by the central government.

Between February 1979 and January 1984, the Agricultural Bank of China (ABC), the China Construction Bank (CCB), the Bank of China (BOC), and the Industrial and Commercial Bank of China (ICBC) were split from the PBC. The PBC formally became the country's central bank. Each of the four specialized banks was to provide services to a designated sector of the economy. The ABC's main responsibility was to receive deposits in rural areas and extend loans to agricultural production projects and township industries. The CCB focused on appropriating funds for capital construction from the state budget through the Ministry of Finance. The BOC focused mainly on deposits and loans for foreign exchange and international transactions, and the ICBC focused on the financing of commercial and industrial activities in urban areas.

Table 6.1 Evolution of China's economic system, domestic banking reforms, entry of foreign banks, and development of a national electronic payment system

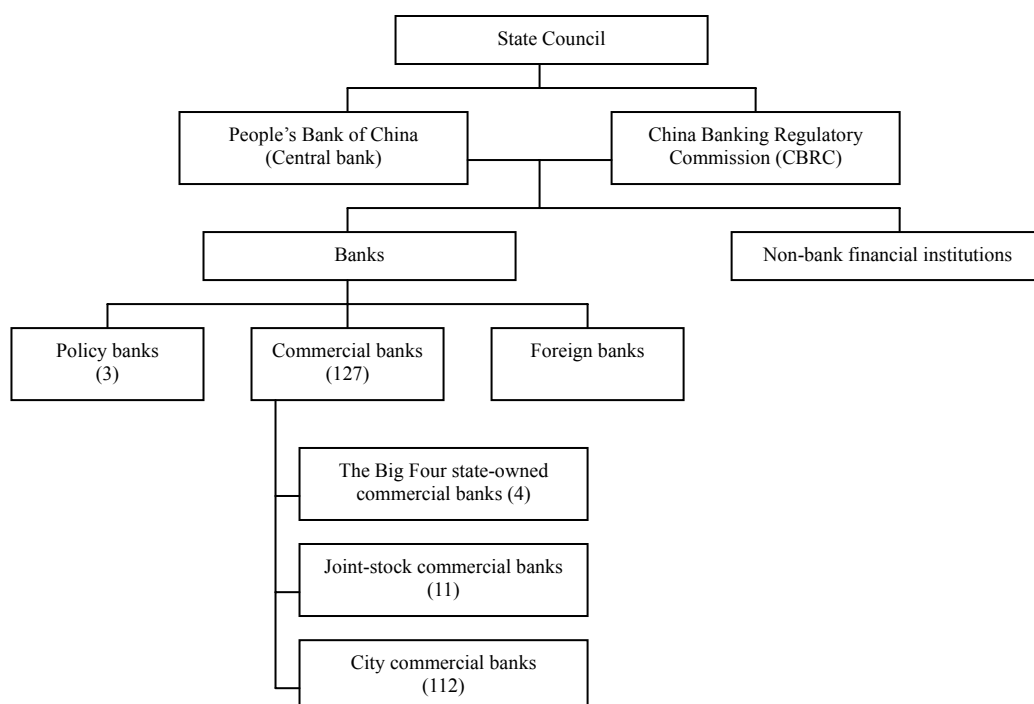
Year	1949-1978	1979-1991	1992-2001	After 2001
Economic system	Command economy	Planned commodity economy (1979-1983); Socialist commodity economy (1984-1991)	Socialist market economy	Preliminary market economy
Relationship between market and planning	Planning as principal, market as supportive means	Planning as principal, market as supportive means	Market as principal, planning as supportive means	Concept of fair competition introduced
Domestic banking reforms	In 1948 the People's Bank of China (PBC) was established; In 1951 Renminbi (RMB or yuan) started to be issued as China's currency	Between 1979 and 1984 the Big Four state-owned specialized banks – Agricultural Bank of China, Bank of China, China Construction Bank, and Industrial and Commercial Bank of China were split from the PBC; The PBC formally became the country's central bank	In 1994 three policy banks – State Development Bank, China Export-Import Bank and China Agricultural Development Bank were created; In 1995 the PBC was legalized as China's central bank by the Law of the People's Bank of China; In 1995 under the Commercial Banking Law the Big Four banks began to	In 2003 the China Banking Regulatory Commission (CBRC) was created

			operate as commercial banks; In 1996 China's first private bank – Minsheng Bank was founded	
Entry of foreign banks		In 1979 the Export-Import Bank of Japan became the first foreign bank allowed to open a representative office; In 1985 foreign bank branches were allowed to conduct foreign currency business in special economic zones; In 1990 Shanghai as the first coastal city was allowed for foreign banks' entry besides special economic zones	In 1992 seven other cities were opened to foreign banks; In 1994 11 inland central cities were opened to foreign banks; In 1997 and 1998 Qualified foreign banks were allowed to conduct local currency business on a trial basis in Shanghai and Shenzhen respectively	China commits to opening up its financial services on equal terms to foreign banks by 2006; In December 2001 HSBC Holdings became the first foreign bank to buy a stake in a mainland Chinese bank; In March 2002 Citibank became the first foreign bank to receive foreign currency deposits from local residents
National electronic payment system			In 1993 the Golden Card Project was created	In March 2002 China UnionPay was launched.

Source: Created by the author, on the basis of Kim, 2002 and other listed literature.

The Big Four banks began competing with one another in 1985, when the restrictions limiting each to its own designated sector were lifted. Competition among them was very limited from the mid-1980s to the mid-1990s, however, because they served mainly as policy-lending conduits for the government. **[Evidence for Sequence 2.1]**

Figure 6.1 Structure of China's banking sector



Source: Created by the author, on the basis of Li, 2004 and other literature.

Once the two-tier banking system was formed, the Government launched the second wave of financial reforms after 1994. Three policy banks were created in 1994 to help reduce the state-directed lending of the Big Four banks. The China Development Bank (CDB) was chartered to provide long- and medium-term lending to finance construction projects in infrastructure, and in basic and pillar industries. The Export-Import Bank of China was to provide loans for the export and import of capital goods. The Agricultural Development Bank of China (ADBC) was responsible for agricultural lending. With the establishment of the policy banks, the Big Four state specialized banks were officially named “commercial banks”. They were expected to operate on market principles and to improve their profitability. The rules governing

the new commercial banks were laid out within the Commercial Bank Law, which was passed in March 1995. The most important feature of the law is that it grants all commercial banks operational independence except in the case of a national emergency. **[Evidence for Sequence 1.1]**

The entry of new banks created a new source of competition in the industry. The Bank of Communications (BOCOM) was re-established in 1986 after 38 years of inactivity in China. In 1987, the Shenzhen Development Bank (SDB) and the China Merchants Bank (CMB) were established. The Guangdong Development Bank (GDB) was set up in 1988 and was converted into a joint-stock bank in 1992. In 1996, the China Minsheng Banking Corporation was founded. Shareholders representing private industry own the bank, making it the only private bank in China. As of the end-May 2004, there were 11 joint-stock commercial banks. In addition to the joint-stock commercial banks, 112 city commercial banks were established after the mid-1990s to serve customers in their own localities (Li, 2004). **[Evidence for Sequence 2.1]**

2. Entry of foreign banks

Gradually, China started to allow foreign banks to operate domestically in order to increase competition in the financial sector and to improve efficiency by introducing modern banking practices. It is also hoped that they might (by providing financial services to foreign businesses) serve as an additional inducement for foreign investment (Nanto and Sinha, 2002). **[Evidence for Sequence 2.2]**

To facilitate the growth of foreign trade and direct investment, China first allowed foreign banks to set up representative offices to engage in liaison service in Beijing soon after the reform program started. Since 1985, foreign banks have been allowed to engage in foreign currency business as branches in special economic zones and selected cities. In March 1997, the New Pudong area of Shanghai was designated as the first location to allow foreign banks to engage in Renminbi business, though on a very restricted basis. Those banks could undertake local currency business only with joint ventures in Shanghai; however, consumer banking with Chinese citizens was prohibited. Selected foreign banks in Shenzhen were also allowed to engage in Renminbi business after August 1998. **[Evidence for Sequence 2.2]**

China's central bank, the People's Bank of China (PBC), has allowed foreign

banks to increase their RMB deposits in proportion to their foreign exchange deposits from 35% to 50% since July 1999. They are also granted access to inter-bank markets for RMB funds. At the same time, the PBC loosened geographical restrictions on foreign banks' operations. Those originally located in Pudong could also do local currency business with joint ventures in the adjacent provinces of Jiangsu and Zhejiang. The Shenzhen-based foreign banks could do business in Hunan, Guangxi, and Guangdong (Leung, 2000). **[Evidence for Sequence 2.2]**

By the end of 2001, there were 214 representative offices of foreign banks and 158 foreign bank branches. Although the total assets of foreign banks (US\$ 45 billion) only accounted for about 2% of the whole bank assets in China, the percentage of foreign exchange loans lent by the foreign banks in all of China was about 15% of the total (PBC, 2002). **[Evidence for Sequence 2.2]**

3. Recent reforms

In the wake of the Asian financial crisis and in order for the domestic financial sector to survive the international competition brought about by WTO membership, China introduced a number of reform measures to improve the health of the banking sector, mainly through the introduction of better banking practices and a program to deal with the stock of bad loans in the four large banks (Bonin and Huang, 2002). **[Evidence for Sequence 1.1]**

In 1998, the Ministry of Finance issued RMB 270 billion yuan of special treasury bonds for recapitalisation of the Big Four banks to raise their average capital-adequacy ratio from 4.4% to the 8% required by the Commercial Bank Law (Huang, 2001). Four asset management companies were set up in 1999 to purchase the nonperforming loans (NPLs) of the SOEs from the Big Four banks. Finally, to forestall the influence of local governments over its supervisory role, in January 1999 the PBC replaced its 31 main branches in provinces, autonomous regions, and municipalities with nine regional offices, along the lines of the U.S. Federal Reserve System.

As the WTO entry drew closer in 2001, the government became anxious and decided to draw together a blueprint for reform of the financial sector for the next 5-10 years (Bonin and Huang, 2002). **[Evidence for Sequence 1.4]** In terms of banking reform, two major policies were decided. First, the China Banking

Regulatory Commission (CBRC) was created in 2003 to strengthen bank supervision. Second, state banks, including the Big Four, will all aim at public listing as a means of reform.

III. Regulations

For a long period, China treated the financial sector as a special industry, was very cautious in liberalizing the sector to foreign competition, and imposed many restrictions on the entry and operation of local financial institutions (Lin, 2001). **[Evidence for Sequence 1.2]** Although a series of reforms have been undertaken, many aspects of China's banking sector are still controlled by the government. Some of these regulations have constituted barriers for fair competition among banks and e-commerce development in China.

1. Interest rates

One example is the central bank's control over interest rates. The PBC has strictly controlled interest rates for different kinds of deposits, thus effectively ruling out price competition in the deposit market. When nominal interest rates paid on deposits by different banks are identical, depositors' choice of banks depends essentially on banks' financial fundamentals and on the quality of services they provide. Banks' financial fundamentals, however, have not been important in determining the distribution of deposits among domestic banks in China for two reasons. First, currently the Chinese government implicitly guarantees bank deposits (Bhattasali, 2002; Boin and Huang, 2002; Nanto and Sinha, 2002). Second, even if depositors in China have an incentive to put their deposits in banks with good financials, it is very difficult for them to ascertain a bank's true status. Current accounting, auditing, and reporting standards and practices do not provide sufficient information for making judgments about the profitability of China's financial institutions, the adequacy of their capital bases, and operational efficiency (Bhattasali, 2002). **[Evidence for Sequence 3.1]**

2. Foreign exchange control

China's closed capital account is another problem for Chinese businesses as well as consumers. One great advantage of the Internet marketplace is that a larger market means greater efficiency, with more choices, more information, and more perfect competition leading to more efficient outcomes for firms and consumers alike. But restrictions on the flow of capital into and out of China effectively cancel these efficiencies. Chinese consumers wishing to purchase a competitively priced product and Chinese exporters trying to fill an order from abroad will both lose if they must submit to clumsy financial controls before the transaction (Rosen, 1999).

For foreign banks, China's capital account control has limited their business advantages over their Chinese counterparts, and even put them in a disadvantageous position. One foreign bank informant said:

The capital account is not liberalized and cross-border fund flow is still heavily restricted. So, to local customers, there is no difference for them to deposit US\$ 1 million in a Chinese bank or in a foreign bank in China. **[Evidence for Sequence 3.2]**

Another foreign bank informant mentioned:

The Chinese monetary and financial regulatory departments imposed a much more rigorous supervision on foreign banks than Chinese ones. The inspection by the State Administration of Foreign Exchange (SAFE) on Chinese banks' business is not strict at all.

China is not the only country exercising foreign exchange control, but the regulations imposed by the government should be appropriate,

commented by another foreign bank informant. He gave an example for his argument:

On foreign currency loans borrowed by Chinese enterprises from foreign banks in China, from June 2004 the government has shifted the focus of foreign exchange control from Chinese enterprises to foreign banks in China. In the past, a Chinese enterprise had to obtain a foreign exchange quota first from the SAFE before it could borrow from a foreign bank branch in China, but there was no limit on how much the foreign bank branch could borrow from its overseas branches or international inter-bank markets. Now there is no more control on Chinese enterprises, but foreign banks have to apply for and obtain approval from the SAFE for their annual amount of foreign exchange debts. The point here is that Chinese banks are registered here and they

have a large amount of funds available for lending, while foreign banks have traditionally relied on overseas funds. Compared to China, mature inter-bank markets exist overseas, by borrowing from which we can significantly reduce the cost of our borrowing. On the contrary, the inter-bank market in China is much less developed. If we have to borrow from Chinese banks in the future, the cost will be much higher than at present. **[Evidence for Sequence 3.3]**

3. Regulations on foreign banks

Before China's entry into the WTO, competition from foreign banks was limited for two reasons. First, they were restricted to doing business in limited geographical cities. Second, they could only conduct local currency business with foreign enterprises and individuals. A foreign bank informant said:

The development of our bank's business in China has been closely related to China's WTO accession process. There are still quite many financial products we haven't introduced into the Chinese market. It is not because we don't want to, but we are not allowed yet. **[Evidence for Sequence 4.2]**

Another foreign bank informant commented:

After 2001, the government rescinded some restrictions on foreign banks which are obviously against the WTO rules, but on the other hand created some new regulations too. **[Evidence for Sequence 3.3]**

In an attempt to protect the domestic Chinese banks, new regulations introduced in February 2002 stipulate that foreign bank branches must have RMB 600 million yuan in operating capital to conduct the full range of services, including foreign currency and Renminbi lending to foreign and Chinese corporations and consumers. Furthermore foreign banks will be permitted to open only one new branch per year, severely restricting their ability to penetrate the Chinese market by a branch location strategy.

Foreign bank branches must also place 30% of their operating capital in interest bearing assets designated by the PBC. Foreign branch current assets (cash, local bank demand deposits, and PBC deposits) must continue to be greater than 25% of customer deposits. In addition, foreign banks' ratio of customer deposits in foreign

currency to domestic foreign currency loans may not exceed 70%, an increase from the 40% level mandated previously. Moreover, China has calculated prudential ratios and limits based on the local capital of foreign bank branches rather than on the global capital base of the bank (USTR, 2003). **[Evidence for Sequence 3.3]**

4. Credit card business

The credit card business is also not yet completely open. A Chinese bank informant said:

Not every bank in China can issue credit cards. Only when the number of debit cards reaches a certain amount, can a bank apply for a credit card license. Our bank is a small one and it is only a local bank. We haven't met the requirements. **[Evidence for Sequence 3.1]**

The informants from the CBRC explained:

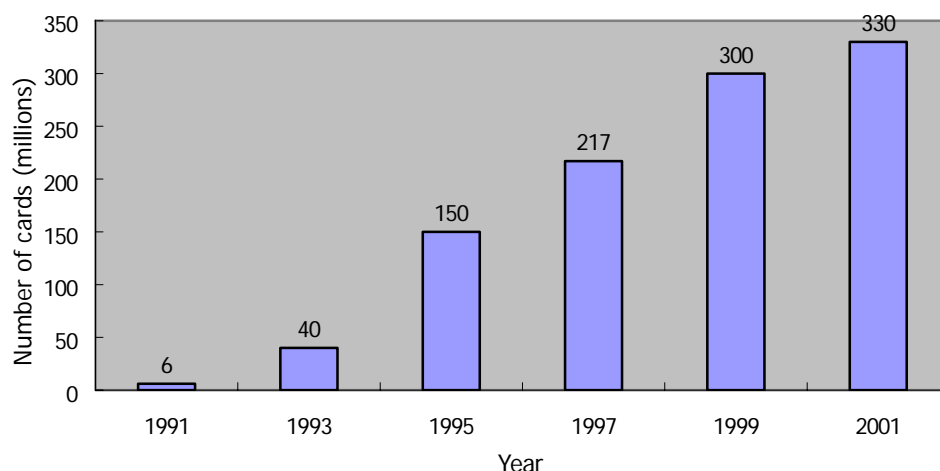
For banks, it is profitability that determines whether they can issue credit cards or not. For us, the market access of credit cards depends on a bank's performance.

The State Council is considering a new regulation for bankcard management. Before the new regulation is finalized, we will not consider any applications from foreign banks.

5. From the Golden Card Project to China UnionPay

The use of debit and credit cards in China has increased considerably during the past several years. This is largely because of the Golden Card Project. Measured by user adoption of banking cards and the promotion of an automatic teller machine (ATM)/points of sale (POS) architecture, it has been an enormous success. By 2002 88 financial institutions in China had issued 496.5 million bankcards and there were 48,966 ATMs and 285,990 POS terminals in operation across the country (The China Finance Society, 2003). Figure 6.2 shows the rapid growth of bankcards in China during the period 1991-2001.

Figure 6.2 Bankcards on issue in China (1991-2001)



Source: Worthington, 2003.

Despite the success in pushing banking institutions to issue bankcards to customers, the Golden Card Project has run into significant problems, specifically, the 10-year old project has failed to connect most Chinese banks for inter-regional authorization, clearance and settlement. **[Evidence for Sequence 3.1]** Due to its lack of ability to provide economic incentives for the adoption of open transaction standards, the PBC could not coerce commercial banks into interconnecting as quickly as desired. As a result, 55 bankcard-issuing authorities and 100,000 merchants have continued to operate separately and in ways incompatible with each other.

To force the pace of integration, in March 2002 the PBC established China UnionPay as a company responsible for creating a new common card standard for a nationwide bankcard network. China UnionPay has three objectives: to avoid the effort and expense of other card issuers building individual card networks; to create a unified national payment card network; and to fend off the threat of competition from foreign card issuers (Worthington, 2003). **[Evidence for Sequence 3.1]**

IV. WTO liberalization

1. WTO commitments

China's commitments to liberalize the financial services industry, as is true of its GATS commitments as a whole, are possibly the most radical offerings that have been negotiated in the history of the WTO and in the Uruguay Round (Bhattasali, 2002). All the commitments quoted here are from the Appendix to the WTO Report of the Working Party on the Accession of China (WTO, 2001).

(1) Types of services included

China commits to open the following banking services:

- Acceptance of deposits and other repayable funds from the public;
- Lending of all types, including consumer credit, mortgage credit, factoring and financing of commercial transactions;
- Financial leasing;
- All payment and money transmission services, including credit, charge and debit cards, travelers checks and bankers drafts (including import and export settlement);
- Guarantees and commitments;
- Trading for own account or for account of customers: foreign exchange.

(2) Licensing criteria

Criteria for authorization to deal in China's financial services sector are solely prudential (i.e., contain no economic needs test or quantitative limits on licenses). Within five years after accession, any existing non-prudential measures restricting ownership, operation, and juridical form of foreign financial institutions, including on internal branching and licenses, shall be eliminated.

Foreign financial institutions who meet the following condition are permitted to establish a subsidiary of a foreign bank or a foreign finance company in China:

- total assets of more than US\$ 10 billion at the end of the year prior to filing the application.

Foreign financial institutions who meet the following condition are permitted to establish a branch of a foreign bank in China:

- total assets of more than US\$ 20 billion at the end of the year prior to filing the application.

Foreign financial institutions who meet the following condition are permitted to establish a Chinese-foreign joint bank or a Chinese-foreign joint finance company in China:

- total assets of more than US\$ 10 billion at the end of the year prior to filing the application.

Qualifications for foreign financial institutions to engage in local currency business are as follows:

- three years business operation in China and being profitable for two consecutive years prior to the application, otherwise, none.

(3) National treatment principle

Except for geographic restrictions and client limitations on local currency business, foreign financial institutions may do business, without restrictions or need for case-by-case approval, with foreign invested enterprises, non-Chinese natural persons, Chinese natural persons and Chinese enterprises.

Foreign currency business

There will be no geographic restriction upon accession. Foreign financial institutions will be permitted to provide services in China without restriction as to clients upon accession.

Local currency (Renminbi) business

Within two years after accession, foreign financial institutions will be permitted to provide services to Chinese enterprises. Within five years after accession, foreign financial institutions will be permitted to provide services to all Chinese clients. Foreign financial institutions licensed for local currency business in one region of China may service clients in any other region that has been opened for such business.

The geographical restrictions on conducting Renminbi business will be phased out as follows:

Timing	Accession	1 year after accession	2 years after accession	3 years after accession	4 years after accession	5 years after accession
Areas opened up to Reminbi business	Shanghai, Shenzhen, Tianjin, Dalian	Guangzhou, Zhuhai, Qingdao, Nanjing, Wuhan	Ji'nan, Fuzhou, Chengdu, Chongqing	Kunming, Beijing, Xiamen	Shantou, Ningbo, Shenyang, Xi'an	No restriction

Source: WTO, 2001.

2. Implementation of WTO commitments

On 30 December 2001, the Chinese government announced revisions to the regulations on foreign financial institutions. The revised regulations permit the establishment of foreign bank branches anywhere in China so long as the applicant meets the listed criteria. These include gross assets of US\$ 20 billion for those foreign banks looking to establish branches in China. **[Evidence for Sequence 4.2]**

A 9 December 2001 PBC notice allowed foreign-funded financial institutions established in the cities of Shanghai and Shenzhen to engage in local currency business as of 1 December 2001. Foreign financial institutions located in the cities of Dalian and Tianjin were permitted to apply for permission to engage in local currency operations on the same day. On 1 December 2002, the PBC increased the geographic scope to include the cities of Guangzhou, Nanjing, Qingdao, Wuhan and Zhuhai. As of December 2003, four new cities were opened – Ji'nan, Fuzhou, Chengdu and Chongqing – bringing the total number to 13. Qualified foreign banks were allowed to conduct local currency business with Chinese enterprises for the first time in these areas. **[Evidence for Sequence 4.2]**

Effective on 1 December 2004, foreign-funded financial institutions were permitted to engage in Renminbi businesses in an additional five cities, namely Kunming, Beijing, Xiamen, Xi'an and Shenyang, thus bringing the number of opened cities to 18 from 13 (including the cities opened in previous years: Shanghai, Shenzhen, Tianjin, Dalian, Guangzhou, Zhuhai, Qingdao, Nanjing, Wuhan, Ji'nan, Fuzhou, Chengdu, Chongqing), in which Xi'an and Shenyang, with approval of the

State Council, were opened one year ahead of schedule in order to prompt foreign banks to provide better financial service for Chinese economic development, in particular to the western areas and the old industrial base in north-eastern China (CBRC, 2004). **[Evidence for Sequence 4.2]**

In December 2003, the Chinese government increased the stake a single foreign investor could take in a Chinese bank from 15% to 20%, with a total 24.9% allowed for all foreign investors. The CBRC also revised the Implementing Rules for the Regulations of the People's Republic of China on Foreign-funded Financial Institutions in the same year. The CBRC decided to make amendments to the previous six-level arrangement for operating capital requirements by reducing the minimum requirement for the highest level from RMB 600 million yuan to RMB 500 million yuan, and for the second highest level from RMB 400 million yuan to RMB 300 million yuan. In consequence, the six-level arrangement was replaced by a five-level arrangement in practice. With respect to the operating capital requirements for branches of locally incorporated foreign-owned banks and Sino-foreign joint venture banks, the CBRC decided to replace the current six-level arrangement with a three-level one and reduce the minimum requirement for each level to RMB 100 million yuan, RMB 200 million yuan and RMB 300 million yuan respectively. Besides, the CBRC also promised to further streamline the procedures and processes for market entry approval through the revision of implementing rules (CBRC, 2003). **[Evidence for Sequence 4.2]**

V. Competitive advantages

1. Foreign banks' advantages

(1) Financial soundness

When compared with banks in industrialized countries or by international standards, Chinese banks lag behind on many fronts. One structural weakness of Chinese banks is under-capitalization. The ratio of capital to assets of the entire banking sector at the end of 1999 was 4.7% and the average capital adequacy ratio of the Big Four banks was 4.27% at the end of 2002, which is below the international standard of 8% (The China Finance Society, 2003). Due to years of government-led

policy lending, all the Big Four state-owned commercial banks have accumulated a high level of NPLs. A foreign bank informant said:

Compared with Chinese banks, we have a much more complete risk management and credit evaluation mechanism. The NPLs ratio of HSBC or our bank only stands at 1-2% or 2-3%. That rate in the Big Four banks is as high as 30%.

(2) Management system

An international industry expert (Kynge, 2002, p.V) described the Big Four Chinese state banks as,

...technically insolvent, riddled with corruption and lumbered with management systems that still bear the imprint of socialist economic planning.

This has largely been caused by years of central planning in which banks were an intermediary through which the central government carried out its national plans.

One interview informant commented:

Chinese banks pay more attention to business volume, but not profit. In Chinese banks, the evaluation of each branch or sub-branch's performance is often based on business volume. For example, on bankcard business, their focus is on how many new cards they can issue, but not how much profit they can earn. We foreign banks can hardly understand this.

He then added:

Government policies still have a strong influence on Chinese banks. That's the historic reason for the high NPLs ratios of the Big Four banks. Foreign banks are pure commercial banks, but Chinese banks need not only to consider their relationship with governments at different levels, sometimes even a private relationship. This is almost impossible for us. **[Evidence for Sequence 3.1]**

Many foreign banks have a history of over 100 years. They have accumulated rich management experiences and their organization structures are efficient. A foreign

bank is in a better position to evaluate investment projects and protect the confidentiality of information about its clients' projects from its competitors. And it incurs lower costs of monitoring borrowers' behavior. Decision processes in foreign banks are quicker, and less bureaucratic. Thus, the cost of conducting banking business by foreign banks is lower.

(3) Information technology

Foreign banks' advantages in management are based on their advanced information technology. A foreign bank informant gave the following example:

All loan-granting business in our bank is carried out via a single credit management system on our bank's world-wide internal network. Records and related documents about application and approval of a client's loan then can be shared globally. For instance, through this system, we can get access to any information on previous and current banking business between Siemens headquarters, its subsidiaries and our branches located anywhere in the world. Besides the one on credit management, we have many other different systems on human resources, settlement, and trade finance. Compared with Chinese banks, we certainly have an advantage in this regard.

It is argued that foreign banks' advanced technology will put them in a more advantageous position in e-banking (UNCTAD, 2001). **[Evidence for Sequence 6.2]** For example, online banking has become a basic requirement in the competition for retail banking in the United States in the last couple of years (Tao, 2001). However, an informant from one of the Big Four banks emphasized:

The gap between Chinese banks and foreign banks in Internet banking is not as great as other services. Since online banking appeared quite recently, it will be easier for us to catch up.

(4) International business

According to a foreign bank informant:

The majority of Chinese banks have put their focus on local currency business so far. The only international-oriented bank – the BOC started its business about 20 years ago, while many foreign banks

have engaged in international banking business for over 100 years. Our bank boasts a global network and we have great advantages in carrying out cross-border business. Our bank is a member for U.S. dollar settlement in New York, a local currency issuance bank in Hong Kong, and a member for sterling pound settlement in London. And we are fully engaged in the international futures and currency market.

Naturally, for products that require a global stand, such as investment services, foreign exchange operations, mergers and acquisitions, multiple-currency management, cross-border underwriting, trade and project finance, derivatives trading operations, foreign banks have a competitive advantage.

(5) Human resources

A foreign bank informant mentioned,

In terms of quality of staff, foreign banks also have an advantage. Most of our staff worked at state-owned commercial banks previously.

Compared with Chinese banks, payment and other incentives offered by foreign banks are much more attractive. As a result, many experienced Chinese banking staff have moved from domestic banks to foreign ones. This has been recognized as one of the biggest challenges for state-owned banks. The Big Four banks are called “training centers” for foreign banks and joint-stock commercial banks.

2. Chinese banks’ advantages

(1) Physical networks

A CBRC informant said:

The biggest advantage for Chinese banks is their networks.

As of the end of 2002, among the Big Four banks, the ABC has 36,851 branches and subsidiaries, the ICBC has 24,360, the CCB 21,034, and the BOC 15,220. These vast branch networks present a formidable barrier to any foreign bank seeking to enter the Chinese market via a physical branch network presence (The China Finance

Society, 2003). **[Evidence for Sequence 6.2]**

Even in a small country like Hungary, success in retail banking depends on an extensive branch system. Estimates for Central Europe place the cost of building a new branch at US\$ 400,000 (Bonin and Huang, 2002). Clearly, domestic banks have a competitive advantage in the old bricks and mortar branch system that collects household deposits. This legacy explains the relatively strong market position maintained by domestic banks in retail banking. **[Evidence for Sequence 6.1]**

A foreign bank informant predicted:

I can say that except for several large banks such as Citibank, HSBC, Standard Chartered and some Hong Kong banks, no other foreign banks would like to adopt a multi-branch strategy in mainland China. The reason is simply that the cost will be too high to be recovered from profits made in that investment. **[Evidence for Sequence 6.2]**

(2) Localization

Through years of development, Chinese banks have accumulated abundant customer resources due to their familiarity with the situation in the country, particularly the cultural background. They have set up close relationships with some enterprise customers. As a Chinese bank informant said:

It will be easier for foreign banks to attract individual Chinese consumers, but not the state-owned enterprises. **[Evidence for Sequence 6.1]**

On the other hand, the uniqueness of the brand names of domestic banks has already been established. With the implicit government guarantee, local customers may think that the state-owned banks are more reliable.

(3) Government policy

A foreign bank informant said:

Compared with Chinese banks, the disadvantage of foreign banks is straightforward: protection of local banks by the government. So far

there is still a strict restriction on the products we can offer. Allocation of both our human and capital resources is also heavily regulated by the government. **[Evidence for Sequence 3.3]**

There are many ways for the Chinese government to control the pace of foreign banks' expansion without breaching the WTO agreements. Among these, for example, is when and how far the 'one city-one branch' restriction will be relaxed, which is entirely at the discretion of the authorities. **[Evidence for Sequence 3.3]**

VI. Domestic banks' strategy

1. Competitive pressure

After a series of domestic banking reforms, by the end of May 2004, 127 commercial banks (including the Big Four banks, 11 joint-stock commercial banks and 112 city commercial banks) and many other non-bank financial institutions had been established in China. They have competed with each other in both deposit and loan business. **[Evidence for Sequence 2.1]** Given the relatively weak performance of many domestic banks, the opening up of the banking market is set to make life more difficult for most of them.

One informant from a Chinese bank in Shenzhen (one of the first cities open to foreign banks) said:

Competition with foreign banks started right after they entered. They haven't got advantages in local currency business yet, but they still give us much pressure in retail banking. **[Evidence for Sequence 4.1]**

Another informant from a Chinese joint-stock commercial bank in Beijing (where local currency business was only opened to foreign banks on 1 December 2004) said:

Competition with foreign banks will surely come, but for the time being the competition with domestic banks is fiercer, especially among small- and medium-sized banks. **[Evidence for Sequence 4.1]**

A Big Four bank informant responded:

To compete with other banks, the most important thing we can do is

to provide better services to our customers. **[Evidence for Sequence 7.1]**

2. Retail banking

A major purpose of China's banking reforms has been to make its financial system more market- and profit-based. This process has been accelerated by China's entry into the World Trade Organization in December 2001 and the recent growth in retail banking business reflects this change. **[Evidence for Sequence 4.1]**

One Chinese joint-stock commercial bank informant said:

In the past Chinese banks paid more attention to corporate banking business, but now development of retail banking has become the trend. **[Evidence for Sequence 2.1]**

Deposits in retail banking are more stable, require fewer maintenance efforts, and offer more profits, so it has become a new growth area. Furthermore, personal loans are less risky and comparatively-speaking safer. **[Evidence for Sequence 7.1]**

Retail banking is a growth industry in China. Credit card, mortgage credit and other consumer credit for education, cars, durable goods, traveling, etc. have only started to develop in recent years in China. Most indicators – number of cheque accounts, share of personal loans, mortgages or automobile finance in total credit normalized by GDP, ATM/capita – show that Chinese banks lag substantially when compared to those in neighboring East Asian countries – thus presenting a big market potential (Bhattasali, 2002).

Credit cards are still in their infancy in China. As with much of Central Europe, China is likely to leapfrog the stage of instituting cheques and move directly to plastic money as a co-medium of exchange with cash. Consequently, bankcards and ATM machines are likely to be important vehicles for acquiring market share in retail banking in China. With their extensive branch networks, Chinese domestic banks are well positioned to capture a reasonable share of this new retail business (Bonin and Huang, 2002). **[Evidence for Sequence 6.1]**

Retail banking plays an important role in small- and medium-sized banks' development. On the one hand, the growth in retail banking can significantly increase

a bank's profit ratio; on the other hand, it can optimize a bank's capital structure. That's why many small- and medium-sized banks have followed the example of the China Merchants Bank to develop a bankcard-focused retail banking business. **[Evidence for Sequence 7.1]**

At the beginning of 2003 the Minsheng Bank announced that it would set up an independent retail-banking department under the direct supervision of the bank's headquarters. Its target is to increase the percentage of retail banking business to 30% of the total within five years. In the same year the CITIC Industrial Bank also established its own retail-banking department. Even the ABC, one of the Big Four banks, announced in September 2003 that it aims to become the largest retail bank in China (Liu, Y., 2004). **[Evidence for Sequence 7.1]**

3. Bankcard business and Internet banking

A Chinese bank informant explained:

The reason for banks to develop bankcard business is simple – profits. This is especially the case for credit cards, as a credit card issuing bank can not only charge transaction fees from merchants, but also annual fees, interest and fines directly from card-holders. **[Evidence for Sequence 7.1]**

Development of Internet banking comes more from competition. The same informant said:

To help overcome the competitive disadvantage caused by the lack of adequate bank branches, foreign banks will have to invest and rely more on various electronic means to attract and service their corporate and retail customers. Domestic banks have to respond to this challenge. **[Evidence for Sequence 6.2] [Evidence for Sequence 7.1]**

VII. Foreign banks' entry motivation

Literature identifies two main groups of factors influencing banks' decisions to go abroad: location specific and bank-specific (size and efficiency) (see, for example, Goldberg and Johnson, 1990; DeYoung and Nolle, 1996; Demirguc-Hunt et al., 1999; and Claessens et al., 2000). Based on the purpose of this research and due to

information restrictions, the discussion here is focused on location-specific factors.

1. Economic integration/follow clients

The first location-specific factor is economic integration and the motivation to follow clients. Broad consensus exists about the fact that foreign direct investment by banks is significantly correlated with the degree of economic integration between the home country of the parent company and the host country (Seth et al., 1998). An obvious explanation is that banks follow their home clients abroad in order to satisfy their banking needs in foreign countries. A fairly typical example is the Chase Manhattan Bank, which set up its first branch in Tianjin in 1993 to service its major corporate client, Motorola, which had moved into this market (Leung, 2000).

[Evidence for Sequence 5]

As of December 1999 before China's accession to the WTO, Asian banks, mostly from Japan, Hong Kong, Korea, and Singapore, accounted for more than half of the total number of foreign banks in China, reflecting the high level of trade and direct investment between China and Southeast Asia. The main purpose of Japanese, Korean and European banks offering services abroad is to serve operations of multinational firms in emerging markets that are headquartered in the banks' home market.

One foreign bank informant mentioned:

What we offer currently in the Chinese market is mainly traditional commercial banking services. The purpose is to support home-country companies' business in China. Some of our long-term customers have come to make investments in China and they need capital support from banks. To support those customers' overseas expansion, we established our branches in China. **[Evidence for Sequence 5]**

Another foreign bank informant said:

Most of our customers are foreign companies. There are three departments in our branch. Two of them serve Japanese companies in China, the other one serves European and American companies.

Some non-Asian banks that have established a large network of operations in Hong Kong, such as HSBC, Standard Chartered, Citibank, Chase, and Bank of America, have adopted a multi-branch strategy in China and maintain a competitive

edge. Their success may reflect the importance of cultural and geographic advantages, which help generate savings in information and negotiation costs when undertaking business in China. **[Evidence for Sequence 5]**

2. Local market opportunities

Although no conclusive evidence has been obtained on the relevance of local market opportunities, recent empirical studies provide support for the hypothesis (see, for example, Buch, 2000 on German banks, Focarelli and Pozzolo, 2000 on OECD countries, and Claessens et al., 2000 who model foreign entry across 80 countries). According to Focarelli and Pozzolo (2000), profit opportunities are the main driver for expansion abroad. Greater entry of foreign banks is found in destination countries with a higher expected rate of economic growth and less efficient banking sectors.

With a market size of 1.3 billion people, China is obviously of interest to many non-Chinese financial institutions, particularly those with aspirations to become true “global” players.

With China’s accession to the WTO, the prospects for foreign banks are promising. First, with current operations accounting for only a tiny segment of China’s banking market, there is still much room for foreign banks to grow. Second, both trade and direct investment in China are expected to increase, providing more and more foreign currency business. Third, given continued economic growth, the rising number of enterprises with modern corporate governance, and China’s huge population, opportunities for local currency business will virtually explode. **[Evidence for Sequence 5]**

China has a national saving rate of around 40% of GDP (Barth et al., 2004). Most of these savings are deposited in banks, with banks holding US\$ 1.25 trillion in household deposits at year-end 2003. The depth of this asset pool combined with the opportunities implied by China’s economic mass, continued growth, and rising personal income levels, means that leading foreign financial institutions will continue to make China a major target for their future growth. **[Evidence for Sequence 5]**

3. Regulatory restrictions

Regulatory restrictions also seem to considerably reduce the degree of

internationalization of a country's banking market. Especially straightforward are country regulations that limit competition and protect inefficient domestic banks. Furthermore, foreign banks tend to prefer countries with low taxes and less stringent capital requirements (Claessens et al., 2000).

In the case of China, as previously discussed in this chapter, foreign banks were initially allowed to follow their clients into the country and promote foreign direct investment. Significant restrictions on location and scope of business were imposed during this period. The WTO accession has stepped up China's banking reform and opening-up to foreign entry. China commits to opening up its financial services on equal terms to foreign banks by 2006.

VIII. Foreign banks' entry strategy

Based on their entry motivations, foreign banks of various backgrounds are likely to take different strategies in expanding their share in the Chinese market.

One interview informant said:

The Asian financial crisis still has an influence on foreign banks' policies in Asia. Except for a small number of banks such as Citibank, HSBC, and Standard Chartered that are taking proactive policies, all the other banks are quite protective and cautious in the Chinese market.
[Evidence for Sequence 5]

1. The protective approach

A foreign bank informant said:

Our bank's strategy in China, simply speaking, is: in terms of customers, enterprises are our focus; in terms of business, foreign currency is our focus.

He further explained:

We will not be a threat to Chinese banks' Renminbi business at all because it will not be possible for us to build our own Renminbi clearance system and networks. The investment would be huge and not

cost-effective. The only way we can do is to cooperate with Chinese banks. Since the source of our Renminbi relies mainly on the inter-bank market, compared with Chinese banks, our cost of doing Renminbi business is much higher than theirs. **[Evidence for Sequence 6.2]**

Retail banking will not be profitable if fewer than a hundred branches are established. On the other hand, this is also not our purpose to open a branch in China. **[Evidence for Sequence 7.2]**

The main purpose of Japanese, Korean and European banks' entry is to offer services to home-country companies' operations in China. Consequently, these banks offer no considerable service to local customers or multinationals with other origins than their own country. In addition, their extent of market presence or range of banking services cannot be compared with the ones offered by domestic banks. Therefore, these foreign banks presumably have little effect on the economy beyond the specified role (Pomerleano and Vojta, 2001).

2. The proactive approach

Other foreign banks have more consistently responded to globalization in terms of increasing international trade, foreign direct investment, and cross-border asset holdings. They have extended their foreign exposure in order to serve multinational clients with which they have global relationships and large domestic firms with need for sophisticated banking services. There are even some foreign banks that have become a genuine part of the domestic banking market, serving corporate and retail banking clients to a similar degree as domestic competitors (Pomerleano and Vojta, 2001).

Only a handful of banks – mainly with strong Hong Kong or other Asian institutional presence – have developed longer term strategies aimed at other local market segments (Bhattasali, 2002). **[Evidence for Sequence 5]**

In entering a new market, these foreign banks will first compete for the high profit, low cost, and less risky business. Profitable corporate clients and wealthy retail clients will be their target customers. High-profile profitable business clients will have alternatives to the domestic banking sector for raising funds. As the financial sector liberalizes, these companies will be able to access domestic and international capital markets for both equity and debt. Once the capital account is open, wealthy retail

clients will also have full access to international investment opportunities (Bonin and Huang, 2002). **[Evidence for Sequence 7.2]**

(1) Corporate banking products and services

The main focus of foreign banks entering developing countries has been wholesale products and services that have not been successfully offered, or not offered at all, by domestic banks, since foreign banks have advanced access to necessary components – such as international capital, human resources endowment, and technology – to provide sophisticated services for demanding multinational and domestic clients. Foreign banks will seek to compete in foreign exchange, derivatives, and international business relating to remittance, collection and settlement under letters of credit (L/Cs). In local currency business, foreign banks may target intermediary transactions. **[Evidence for Sequence 6.2] [Evidence for Sequence 7.2]**

(2) Consumer banking products and services

Few foreign banks have dared to directly compete with domestic banks and enter the domestic consumer banking market (Frauendorfer and Gantenbein, 2002).

A. Credit cards

There are attempts by the Chinese government to limit foreign banks' opportunities in bank branch development and entry via that channel will require large investments and a long timeframe. However, bankcards, particularly credit cards, are one retail-banking service that does not require a branch network. To enter that market requires only access to an ATM and POS network that will accept the cards issued by a foreign bank. If such card issuers can target certain segments of the card holder market, with value added card propositions, then they could establish a foothold in the Chinese market and then seek to cross-sell other financial service products. One of the key value added propositions that foreign card issuers can offer Chinese consumers is their internationally accepted marques of MasterCard and Visa. As increasing numbers of Chinese citizens travel abroad, so they will realize the limitations of their domestic-use only cards and will seek the convenience of the global card marques

(Worthington, 2003). **[Evidence for Sequence 7.2]**

Credit cards also offer a perfect opportunity to gather data on customers, via both the application process and the subsequent usage and repayment behavior, plus the opportunity to communicate regularly with these customers via the mechanism of the monthly statements, with all the attendant cross-selling opportunities that this offers for personal loans, insurance, saving and investment products (Worthington, 2003).

[Evidence for Sequence 6.2]

B. Strategic alliances

Foreign banks interested in retail banking in China may find it more attractive to buy into an existing branch network, than having to build one from scratch. However, foreign institutions are still restricted from buying majority stakes in key industries such as banking and thus the trend has been to form strategic alliances with existing Chinese banks as a way of entering the market in China. **[Evidence for Sequence 6.2]**

An example of this pattern of strategic alliance is provided by Citigroup who, through their subsidiary Citibank, have in April 2003 acquired a 5% share of Shanghai's Pudong Development Bank, with the option of increasing this stake, subject to regulatory approval, in future years. Pudong Development Bank is the ninth biggest issuer of bankcards in China and the focal point of the new alliance will be the development of credit card business. Citigroup currently operate only four branches in China and hence have difficulty in developing customer reach via a branch centric distribution strategy. The credit card market by comparison offers a nationwide distribution channel, in a country where the card centric distribution of financial services can only grow, as China becomes more of a market-oriented society and as Chinese nationals see the effectiveness of card based transactions as they travel beyond China (Worthington, 2003). **[Evidence for Sequence 6.2]**

C. Internet banking

Foreign banks will find Internet banking particularly attractive as it substitutes for building branches from bricks and mortar to attract retail clients. Even though Internet banking is available to only a very small number of people in China currently, it is an area in which the foreign banks could engage in significant cream skimming (Bonin

and Huang, 2002). [Evidence for Sequence 6.2] [Evidence for Sequence 7.2]

IX. Market changes

1. Domestic competition

Before China's 1978 economic reform there was only one bank – the PBC – offering banking services. Between 1979 and 1984 the Big Four banks were established and they began competing with one another in 1985, when the restrictions limiting each to its own designated sector were lifted. Competition among the four banks increased after they were granted operational independence by the Commercial Bank Law in 1995. The entry of new banks from the late 1980s created a new source of competition in the industry. Currently, there are four state-owned banks (the Big Four), 11 joint-stock commercial banks, 112 city commercial banks, over 700 urban credit cooperatives and about 35,000 rural credit cooperatives competing with each other (Tang, 2004). [Evidence for Sequence 2.1] [Evidence for Sequence 7.1]

(1) Market share

Table 6.2 The Big Four banks' concentration ratios of assets, deposits, and loans in selected years

	Concentration ratio (%)		
	Assets	Deposits	Loans
1995	92.00	89.54	92.39
2001	75.76	76.93	74.97
2003	55	57	55

Source: Created by the author. Year 1995 figures from Wong and Wong, 2001; Year 2001 calculated by the author based on figures from the China Finance Society, 2002; and Year 2003 figures from Tang, 2004.

Market competition in China's banking industry has been in the form of non-price competition as the PBC has strictly controlled interest rates for different kinds of

deposits. **[Evidence for Sequence 3.1]** Table 6.2 shows the concentration of assets, deposits, and loans by the Big Four banks among all commercial banks in China. In 1995, the Big Four banks accounted for around 90% of all three indicators. When China became a WTO member in 2001, their concentration ratios in assets, deposits, and loans decreased to 75.76%, 76.93%, and 74.97% respectively. In 2003, their figures were further reduced to 55%, 57%, and 55%.

(2) Products and services

Anyone observing Chinese financial institutions over the past few years will appreciate the progress already made in improving competitiveness (Harner, 2000). Bank services have vastly improved both for individuals and corporate customers – ATM machines and debit cards, and remittance and balance reporting services are now widely available. Banks have also improved their products. Besides traditional Renminbi and foreign currency deposits services, most commercial banks now offer a wide range of other personal banking products, such as personal consumer loans, personal housing loans, personal foreign exchange business, personal intermediary business, and personal e-banking business, which were not available at all a decade ago. Related to e-commerce, bankcard and Internet banking are two new services that have also attracted Chinese banks' attention. **[Evidence for Sequence 7.1]**

A. Bankcard business

The first domestic Chinese credit card was launched by the BOC in 1985. After the BOC joined both of the international credit card associations of MasterCard and Visa in 1987, the BOC issued its first internationally usable Great Wall MasterCard in 1988. The example of the BOC was rapidly followed by the other three of the Big Four banks. Since then the number of card-issuing banks has increased considerably although the Big Four still dominate in terms of cards issued, Renminbi spent, merchants recruited, ATMs and POS terminals installed (see Table 6.3).

The Golden Card Project initiated by the government and led by the PBC added great impetus to the issuance of bankcards by commercial banks. The number of bankcards has grown at a rapid rate over the years. Since 1995, the growth rate for the number of bankcards on issue has been at least 40% each year. However, the Golden

Card Project has failed to connect most Chinese banks for inter-regional authorization. As a result, China UnionPay was established to further the goals of the Golden Card Project: expanded interconnection among commercial banks. **[Evidence for Sequence 3.1]**

Table 6.3 Market share of the Big Four bankcards in 2002

Bank	Number of cards (millions)	Spending (RMB billion yuan)	Merchant network (thousands)	ATMs (thousands)	POS terminals (thousands)
Total	496.52	18.75	436.01	48.97	285.99
ICBC	79.46	6.76	76.25	12.04	57.05
ABC	97.61	3.38	82.40	7.19	47.25
BOC	47.90	3.04	100.38	5.85	54.25
CCB	121.22	2.90	84.02	8.98	60.43
Market share	69.72%	85.76%	78.68%	69.55%	76.57%

Source: The China Finance Society, 2003.

Table 6.4 Transaction volume and value via China UnionPay

Year	Inter-bank transactions		Transaction value		Same city transaction success rate	Cross-region transaction success rate
	(millions)	Growth rate	(RMB billion yuan)	Growth rate		
2002	628	102.6%	179.1	94.7%	73.1%	48.7%
2003	1,200	90%	380.5	112%	88.2%	81.2%

Source: Created by the author, on the basis of various issues of *Cards World* and *China Credit Card*.

Since its inauguration in March 2002, China UnionPay has so far made great progress. By the end of 2003, same city and cross-region transaction success rates have increased to 88.2% and 81.2% from 73.1% and 48.7% when China UnionPay was launched. In 2003 inter-bank transactions reached 1.2 billion and transaction value totaled RMB 380.5 billion yuan, which were 3.8 and 4.1 times the figures in 2001 respectively. President Wan Jianhua of China UnionPay said (Qi and Zhao, 2004, p.51):

The transaction growth in 2002 was due to network interconnection. The increase in 2003 was because bankcards were more convenient to use.

Table 6.5 Bankcard business in Beijing, Shanghai, and Shenzhen in 2003

City	Number of Cards (millions)	Bankcard spending of total retail sales	ATMs	POS terminals	Merchant network
Beijing	42.15	14%	3,930	30,782	26,000
Shanghai	38.00	15.3%	3,077	30,000	25,684
Shenzhen	3.00	18%	2,300	9,000	5,600

Source: He, 2004.

Furthermore, China UnionPay established its Renminbi card acceptance in Hong Kong and Macao respectively on 18 January and 8 September 2004. On 10 January 2005 China UnionPay initiated its Renminbi card acceptance in South Korea, Thailand and Singapore. As the PBC (2004) said, this represented a strategic move in upgrading the overall competitiveness of China's bankcard industry.

As of the end of 2003, the per capita number of bankcards in China was 0.5 and the average transactions per card was 6.92 (*Cards World*, 2004). Beijing, Shanghai, and Shenzhen are the most developed area for bankcard business in China. Table 6.5 illustrates bankcard business in these three cities.

B. Internet banking

In June 1996 – eight months later than in the United State, Internet banking appeared in China. By the end of 2002, eight Chinese commercial banks offered transaction services via the Internet. In 2000 there were only 410,000 customers using Internet banking with a transaction value of RMB 650 billion yuan. By 2002 the number of Internet banking customers reached 3.5 million and the transaction value amounted RMB 5,000 billion yuan (The China Finance Society, 2003). Most Chinese Internet banking websites provide both corporate customer services and personal

Internet banking service, including B2B and B2C payment. The ICBC maintains a leading position in e-banking services among Chinese banks. In 2002 the ICBC's website (<http://www.icbc.com.cn/>) was awarded by London - based *The Banker* as "Best Bank Website" (The China Finance Society, 2003). It was also awarded "Best Corporate/Institutional Internet Bank of China" in 2002 and "Best Consumer Internet Bank in China" in 2003 by *The Global Finance* of the U.S. (*China Internet Weekly*, 2004; ICBC, 2004).

2. Foreign competition

(1) Overview

As of end-October 2004, 62 foreign banks from 19 countries established in China 204 operating entities, 105 of which were permitted to conduct Renminbi business. Ever since the CBRC announced on 1 December 2003 that eligible foreign banks could provide Renminbi business to Chinese corporations, 61 foreign banks have been approved to offer Renminbi business to Chinese corporations. Starting from 2004, 24 foreign banking organizations were allowed to conduct derivatives activities. By the end of August 2004, foreign banks could offer around 100 products under 12 broad categories of business activity. Apart from the operating entities, foreign banking institutions established 223 representative offices in China as well. As of end-July, 2004, the total assets of foreign banks reached US\$ 64.3 billion, including US\$ 30.1 billion in loans, representing 1.8% of total banking assets and 18% of foreign exchange lending market in China (1.4% and 13% in 2003). Their local currency loans reached RMB 85.7 billion yuan, an increase of 48% over 2003. They reported a before-tax profit of US\$ 210 million in the first ten months of 2004. On the other hand, nine Chinese banks have been permitted to receive equity investment by international banks, and four foreign automobile financing firms were approved to prepare for their incorporation, two of which have already commenced business (CBRC, 2003; CBRC, 2004; Liu, 2004).

(2) Deposits and loans

Competition between foreign banks and Chinese banks in traditional business areas has already started. On 21 March 2002 Citibank's Shanghai branch was granted

the first license by the PBC to receive foreign currency deposits from local residents. During the same month, Ericsson's affiliate in Nanjing suddenly collected money to pay off up to RMB 1.99 billion yuan (US\$ 240 million) of loans from the Nanjing ICBC and the Bank of Communications while borrowing the same amount from Citibank's Shanghai branch (Bonin and Huang, 2002). This was when lots of restrictions on foreign banks still existed. **[Evidence for Sequence 7.2]**

In Shanghai, Tianjin and other early open cities, foreign banks have already obtained their own market share. **[Evidence for Sequence 7.2]** This situation is described in Table 6.6 and 6.7.

Table 6.6 Foreign exchange business comparison between Chinese and foreign banks in Tianjin (at the end of June 2002)

	Deposit (US\$)	Deposit share	Loan (US\$)	Loan share
Big Four banks	2.989 billion	82%	1.981 billion	67%
Foreign banks	0.65 billion	18%	0.969 billion	33%

Source: The China Finance Society, 2003.

Table 6.7 Comparison between Chinese and foreign banks in Shanghai

	Foreign exchange deposit share at the end of 2001	Foreign exchange loan share at the end of 2001	Deposit growth rate at the of September 2002
Big Four banks	88%	51%	18%
Joint-stock commercial banks			21%
Foreign banks	12%	49%	25%

Source: The China Finance Society, 2003.

(3) Internet banking and credit card business

By the end of August 2004, 13 out of the total 62 foreign banks in China were engaged in Internet banking.

Foreign banks have also started their credit card business with their strategic alliance Chinese partners. In January 2004, the HSBC and the Bank of Shanghai

jointly issued a U.S. dollar credit card. On 17 February 2004, the first Chinese credit card with a foreign bank's logo on it was jointly issued by Citibank and Shanghai's Pudong Development Bank. It can make payment both in U.S. dollars and Renminbi. However, since the very beginning, foreign banks have taken a different strategy in issuing bankcards from their Chinese counterparts. The card issued by the Pudong Development Bank and the Citibank charges as high as a RMB 180 yuan annual fee, which has been the highest and several times that of other existing cards. It clearly shows that the target user group of the card is mid- or high-income earners. (Li, X., 2004). **[Evidence for Sequence 7.2]**

X. Effects on e-commerce diffusion

Table 6.8 Payment methods for e-commerce transactions

	Jan-05	Jan-04	Jan-03	Jan-02	Jan-01
Cash-on-delivery	42.02%	27.9%	33.3%	42.8%	42.02%
Online payment (credit/debit cards)	41.5%	36.0%	31.1%	28.1%	25.87%
Postal order	16.7%	22.7%	28.4%	24.0%	23.66%
Bank transfer	16.7%	13.2%	6.9%	4.9%	4.13%
Others	0.4%	0.2%	0.3%	0.2%	4.32%

Source: CNNIC, various years.

According to the CNNIC surveys, cash-on-delivery was still the most often-used payment method for e-commerce transactions in 2004 (the Jan-05 survey data in Table 6.8). Cash-on-delivery overcomes the online payment barriers, particularly the cumbersome authentication process, so it is the most obvious alternative form of payment in China. Chinese customers are also more comfortable with this method as Internet security now is a major concern to them. The company uses either its own delivery network or that of a dedicated express delivery company to deliver goods directly to the customer. The customer then makes a cash payment to the person who delivers the goods, and the money is processed through the company's own delivery system, or passed on by the relevant express delivery company. The only year

cash-on-delivery method was used less frequently than online payment was 2003, when the Severe Acute Respiratory Syndrome (SARS) attacked China.

Compared with other methods, online payment has grown steadily and rapidly over the years. This evidences that more bankcards (credit or debit cards) have been issued and their uses have become popular. In the meantime, adoption of bank transfer also increased continuously. **[Evidence for Sequence 8.1]** All these show that banking services in China have improved in recent years. As analyzed previously in this chapter, this could be on the one hand due to the government's efforts in building a nation-wide electronic payment system, on the other hand because Chinese banks pay more attention to bankcard business now under the increasing competitive pressure after domestic banking reforms and the WTO accession. This change can hardly be attributed to the direct impacts of entry of foreign banks, as one e-commerce company interview informant said:

I cannot see any direct effects of entry of foreign banks after the WTO entry on e-commerce business in China. There are so many bankcards issued by Chinese banks. Since interest rates and others are still regulated by the CBRC after foreign banks enter the Chinese market, foreign banks can hardly offer any more favorable conditions to their customers than Chinese banks. The advantage of foreign banks is in foreign currency business, and their target customers are high-end users. So, in terms of B2C e-commerce and online shopping, the entry of foreign banks will not have much influence. **[Evidence against Sequence 8.2]**

XI. Sequence analysis of the lower-level model

In developing the lower-level process model (Figure 4.6, Chapter 4, p.111), this chapter discusses the second proposition related to the theoretical model for higher-level analysis (Figure 4.5, Chapter 4, p.105): how the WTO commitments can influence the banking services in China's coastal urban area and help facilitate e-commerce diffusion.

Following the same methods used in the previous chapter, Table 6.9 shows the results of examining sequences of the model. Figure 6.3 illustrates the lower-level model developed from data for the banking sector, leaving only the theoretical constructs and the arrows of supported sequences.

Table 6.9 Sequence analysis for banking sector

Sequence No.	Support or not	Evidence source
Sequence 1.1	Strongly supported	Document (p.174; p.181); Interview (p.173); Others (p.180)
Sequence 1.2	Supported	Document (p.182); Others (p.175)
Sequence 1.3	Supported	Document (p.174); Interview (p.174)
<u>Sequence 1.4</u>	<u>Contradictory evidence</u>	<i>Positive evidence: Document (p.181)</i> <i>Negative evidence: Document (p.174)</i>
Sequence 2.1	Strongly supported	Document (p.180; p.204); Interview (p.196); Others (p.179; p.195)
Sequence 2.2	Supported	Document (p.174; p.180; p.181); Others (p.180)
Sequence 3.1	Strongly supported	Document (p.182; p.186); Interview (p.185; p.191); Others (p.186; p.205; p.206)
Sequence 3.2	Supported	Interview (p.183)
Sequence 3.3	Supported	Document (p.185); Interview (p.184; p.195)
Sequence 4.1	Supported	Interview (p.195); Others (p.196)
Sequence 4.2	Strongly supported	Document (p.190); Interview (p.184); Others (p.189)
Sequence 5	Strongly supported	Document (p.198; p.201); Interview (p.198; p.200); Others (p.199)
Sequence 6.1	Strongly supported	Document (p.196); Interview (p.194); Others (p.194)
Sequence 6.2	Strongly supported	Document (p.192; p.194; p.203; p.204); Interview (p.194; p.197; p.201); Others (p.202; p.203)
Sequence 7.1	Strongly supported	Document (p.197; p.204); Interview (p.196; p.197); Others (p.197; p.205)
Sequence 7.2	Strongly supported	Archival record (p.209); Document (p.202; p.203; p.204; p.209; p.210); Interview (p.201); Others (p.202)
Sequence 8.1	Supported	Archival record (p.211)

<i>Sequence 8.2</i>	<i>Negative evidence</i>	<i>Negative evidence: Interview (p. 211)</i>
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1. WTO effects

Figure 6.3 The lower-level model for the banking sector

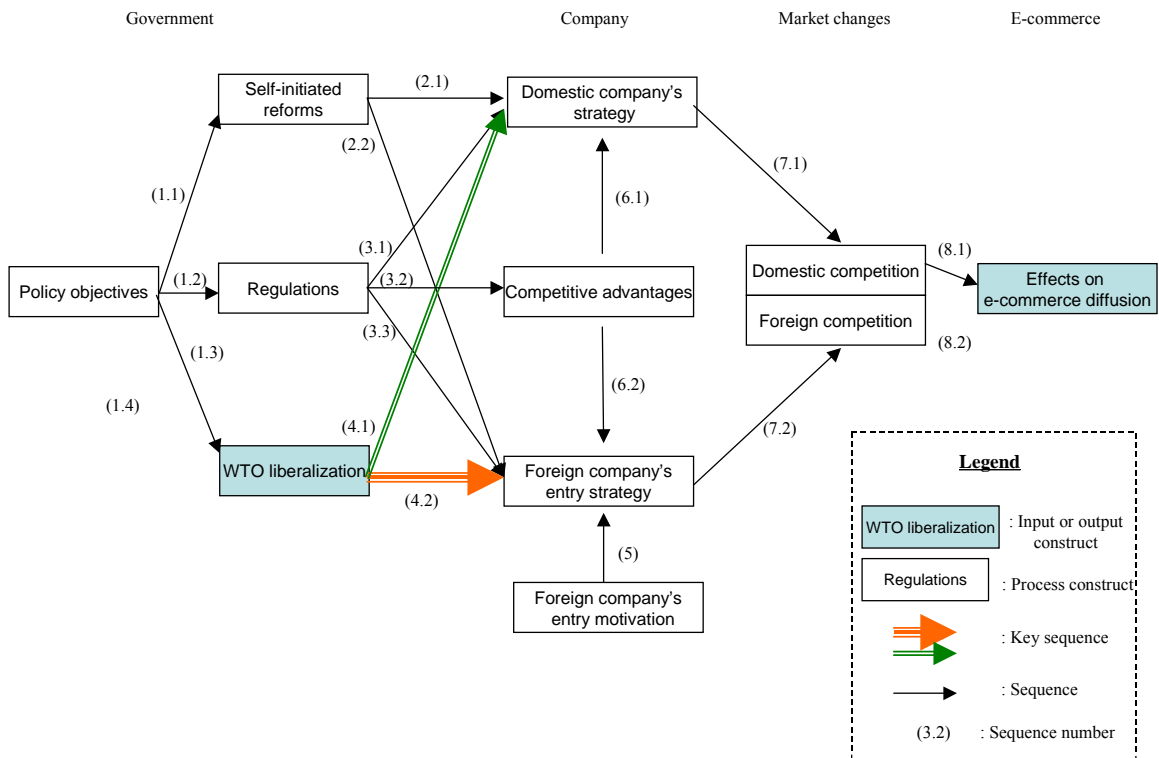


Figure 6.3 shows that, among the three key sequences departing directly from the input construct “WTO liberalization”, Sequence 4.2 and Sequence 4.1 are supported, the other one – Sequence 1.4 is not supported.

(1) Direct WTO effects: “WTO liberalization” → Sequence 4.2 → Sequence 7.2 → Sequence 8.2 → “effects on e-commerce diffusion”

The chain departing from the input construct “WTO liberalization” first with Sequence 4.2 to the output construct “effects on e-commerce diffusion” is defined as direct WTO effects in Chapter 4. As Figure 6.3 shows, the last arrow Sequence 8.2 is missing. So the causal chain is not supported for the banking sector.

Table 6.9 indicates that there is negative evidence for Sequence 8.2. The advantage of foreign banks is in foreign currency business (**Evidence for Sequence**

6.2: interview, p.201), and their target customers are profitable high-profile business clients and wealthy retail customers (**Evidence for Sequence 7.2:** document, p.202; p.210). So, at least for B2C e-commerce, the entry of foreign banks will not have much influence (**Negative evidence for Sequence 8.2:** interview, p.211).

(2) Indirect WTO effects 1: “WTO liberalization” → Sequence 4.1 → Sequence 7.1 → Sequence 8.1 → “effects on e-commerce diffusion”

The chain departing from the input construct “WTO liberalization” first with Sequence 4.1 to the output construct “effects on e-commerce diffusion” is defined as one link of the indirect WTO effects in Chapter 4. Table 6.9 and Figure 6.3 show that all the three sequences of the chain are supported. However, before drawing the conclusion, competing explanations need to be examined.

As Figure 6.3 shows, besides Sequence 4.1, three other arrows – Sequence 2.1, Sequence 3.1, and Sequence 6.1 also lead to the construct “domestic company’s strategy”. Previous discussion about theoretical constructs indicates two competing explanations exist here: one is from “self-initiated reforms”; the other is related to the Golden Card Project and China UnionPay in the construct of “regulations”. An examination of the evidence listed in Table 6.9 finds that although all the three constructs “self-initiated reforms”, “regulations”, and “WTO liberalization” influence “domestic company’s strategy”, each has its own focus. “Self-initiated reforms” created competition among Chinese banks and made them more market- and profit-oriented (**Evidence for Sequence 2.1:** document, p.204; others, p.195). The Golden Card Project and China UnionPay under the “regulations” were to create a unified national payment card network and promote bankcard issuance (**Evidence for Sequence 3.1:** document, p.186; others, p.206). The pressure of “WTO liberalization” intensifies the competition among banks (**Evidence for Sequence 4.1:** interview, p.195; others, p.196). This finding is also supported by evidence for Sequence 7.1 (interview, p.196, p.197; others, p.197). Thus both the link of indirect WTO effects and the two competing explanations are supported.

(3) Indirect WTO effects 2: “WTO liberalization” → Sequence 1.4 → Sequence 1.1 → Sequence 2.1 → Sequence 7.1 → Sequence 8.1 → “effects on e-commerce diffusion”

The other link of indirect WTO effects defined in Chapter 4 is the chain departing

from the input construct “WTO liberalization” first with Sequence 1.4 to the output construct “effects on e-commerce diffusion”. As the discussion of “self-initiated reforms” shows, China’s banking reforms started from as early as 1979 and foreign banks began to conduct foreign currency business in China from 1985. The WTO accession merely sets a definite timetable and clear deadline for China’s banking reforms (**Evidence for Sequence 1.3 and negative evidence for Sequence 1.4:** document, p.174). The arrow of Sequence 1.4 is missing and this link of indirect WTO effects is not supported.

2. Competing explanations

Two competing explanations for e-commerce diffusion appeared from the early discussion of theoretical constructs in this chapter. One is about the government’s self-initiated reforms and it follows this process chain: “policy objectives” → “self-initiated reforms” → “domestic company’s strategy” → “domestic competition” → “effects on e-commerce diffusion”. The other comes from the construct “regulations” – the Golden Card Project and China UnionPay and it goes through this process: “policy objectives” → “regulations” → “domestic company’s strategy” → “domestic competition” → “effects on e-commerce diffusion”.

Figure 6.3 shows that the links of both explanations are complete. As discussed above, they and the first type of indirect WTO effects complement each other, rather than compete with each other. So all the three explanations are supported.

XII. Summary and conclusion

This chapter investigates the second proposition of the higher-level model: the WTO commitments can improve liberalization in banking services and thus help e-commerce diffusion in China’s coastal urban area. In developing the lower-level model, it first discusses findings for the theoretical constructs in the model for the banking sector; then it investigates the sequences among these constructs, with a focus on chains of direct and indirect WTO effects and competing explanations. Using Pawson and Tilley’s (1997) formula for causal explanation in realist evaluation “mechanism (M) + context (C) = outcome (O)”, Table 6.10 summarizes the results of

the investigation.

The entry of foreign banks is categorized as direct WTO effects. Regulations have been the major barriers for fair competition among banks in China. The WTO accession requires that China open up its financial services on equal terms to foreign banks by 2006. Based on their advantages and disadvantages, foreign banks have formulated their strategies after many restrictions previously imposed on them have been lifted by the WTO liberalization. Due to their different motivation in entering the Chinese market, their strategies in further expanding their business in China are also different. Most foreign banks have taken a cautious approach by keeping their focus on corporate customers and on foreign currency business. Because of their disadvantage in lacking of physical networks, a few international banks willing to expand in retail banking have to rely more on credit card and Internet banking business and forge strategic alliances with Chinese banks. So far, foreign banks have taken a relatively big share in foreign currency loans - the business that they first started in China and that foreign banks are more advantageous. However, on credit card business – the one more closely related to e-commerce, foreign banks have focused more on a group of elite customers than on ordinary customers, thus having little effect in improving the online payment for e-commerce adoption in China.

The competitive pressure imposed by foreign banks' entry on domestic banks is a type of indirect WTO effect and self-initiated reforms is a complementary explanation. As a part of its economic reform program, China started its banking reforms over two decades ago. Foreign banks were allowed to enter initially to follow their clients. But later when China decided to use its WTO accession as external pressure to accelerate reforms and improve its banking sector, restrictions on foreign entry were gradually relaxed. Reforms in domestic banks have increased the competition among different commercial banks. Competitive pressure based on foreign banks' competitive advantages has further induced domestic banks to be more market-oriented and profit-seeking. As a result, retail banking has attracted attention from Chinese banks. The government's efforts in promoting the Golden Card Project and China UnionPay constitute another complementary explanation.

Due to the above explanations, the number of bankcards issued has increased sharply and network interconnection among banks has been improved, thus creating a

friendlier environment for e-commerce adoption. The percentage of using online payment method by Chinese Internet users has increased steadily.

In conclusion, the WTO commitments have both direct and indirect effects on banking services in China, but only indirect effects have impacts on e-commerce diffusion.

Table 6.10 WTO and e-commerce - banking services

	Mechanisms	Contexts	Outcomes	
			Effects on banking services	Effects on e-commerce
Direct WTO effects (Entry of foreign banks)	<p>1. Regulations have been the major barriers for fair competition among banks in China. The WTO commitments require that China open up its financial services on equal terms to foreign banks by 2006.</p> <p>2. The competitive advantages and disadvantages decide that credit card business and Internet banking are foreign banks' priority services in retail banking business.</p>	<p><u>Positive:</u> Introduction of foreign banks is part of China's banking reforms. The WTO accession sets a definite timetable and clear deadline for this process.</p> <p><u>Negative:</u> 1. Competition from foreign banks will continue to be limited by regulations on their location and business until 2006. 2. Most foreign banks take the follow clients strategy. Only a few banks are attracted by the market opportunities in China. Profit-seeking is the main purpose for foreign banks to enter.</p>	Foreign currency business and corporate banking services are foreign banks' business focus. Their retail banking (credit card) business target high-end customers.	No effects.

Indirect WTO effects (Competitive pressure on domestic banks)	The entry of foreign banks exerts great competitive pressure on Chinese banks, forcing them to be more market-oriented and profit-seeking. Retail banking services, including bankcard business, have become the new profit-growth area.	<u>Positive:</u> 1. Self-initiated reforms have already liberalized Chinese banking sector. 2. China's current economic development offers an opportunity in retail banking services. 3. The government tries to build a nation-wide electronic payment system.	The number of newly-issued bankcards increased sharply in recent years.	Adoption of online payment has increased steadily.
Complementary explanation (Self-initiated reforms)	China has undertaken a series of banking reforms since 1979. Foreign banks started to offer foreign currency business from 1985. Competition was created since then.	China's current economic development offers an opportunity in retail banking services.	The number of newly-issued bankcards increased sharply in recent years.	Adoption of online payment has increased steadily.
Complementary explanation (Regulations)	The government tries to build a nation-wide electronic payment system by promoting the Golden Bridge Project and China Union-Pay.	The Golden Bridge Project and China Union-Pay were enforced on commercial banks by the central bank.	Number of bankcards has increased sharply. An inter-bank cross-region electronic payment system has been established.	Adoption of online payment has increased steadily.

Chapter 7 Logistics and express delivery services

Logistics is the process of planning, implementing and controlling the efficient flow and storage of goods, services, and related information from the point of origin to the point of consumption to meet customers' requirements (Novack et al., 1994; Chan, 2001; Luo and Findley, 2002). The provision of logistics services requires inputs from a number of service providers, including the providers of transport and warehousing as well as other value-adding activities. Therefore, terms such as "distribution", "supply chain management", "transportation", and "delivery" often appear in logistics literature.

Logistics is another service-sector infrastructure critical to the development and growth of electronic commerce (Mann et al., 2000). In physical stores, it is the customer who often handles and pays for order fulfillment (by choosing the goods and paying for them at the cash register) and delivery (by transporting those goods home), at the expense of the customer's own time. In electronic stores, however, it is the seller's responsibility to coordinate order fulfillment and delivery.

China's relatively primitive and unreliable logistics capabilities present additional difficulties to the development of electronic commerce in China for large-scale B2B and small-scale B2C transactions. Many companies embarking on B2B and B2C e-commerce are forced to build distribution pickup centers, contract delivery through the post office, or use express delivery services (Ho and Chen, 1999).

Of all the service-sector infrastructures important for electronic commerce, perhaps the most difficult for policymakers to liberalize is logistics, precisely because it is the most protected (Mann et al., 2000). However, the WTO accession is argued to have significant implications for logistics in China (Chan, 2001; Easton, 2003a; 2003b; Jiang and Prate, 2002; Loo, 2002; Luo and Findlay, 2004; McKinsey, 2001). As Mattoo (2003, p.317) said, "China has agreed to open up the whole logistical chain of related services, including inventory management; assembly, sorting and grading of

bulk lots; breaking bulk lots and redistributing into smaller lots; delivery services; refrigeration, storage, warehousing and garage services; sales promotion, marketing and advertising, installation and after sales services including maintenance and repair and training services. No other WTO member has made such deep commitments in this sector.” The third proposition of the higher-level analysis implies that the WTO commitments can improve liberalization in logistics sector and thus help e-commerce diffusion in China’s coastal urban area.

The express delivery services (or courier services) industry comprises firms that provide expedited movement of documents, parcels, and other goods. These firms maintain control over the shipments throughout the delivery process and often use technology to monitor the location of each item. The industry includes large firms that integrate ground and air networks to provide a broad range of door-to-door delivery services and smaller firms that compete within niche industry segments, such as same-day or specialized freight delivery services (USITC, 2004). In an effort to provide “one-stop-shopping” to their customers, express delivery firms have expanded their service offerings beyond document and parcel delivery services to include logistics and supply chain management services.

Due to the broad range of sectors covered by logistics and the fact that express delivery firms are playing an increasingly important role in both B2B and B2C transactions over the Internet (USITC, 2004), the discussion in this chapter focuses more on express delivery services even though it covers the logistics industry in China generally. It uses the same structure as the previous two chapters.

I. Policy objectives

1. Logistics

Compared with its counterparts in more developed countries, the logistics industry in China is still in its infancy. Up until 20 years ago, manufacturing,

distribution and commerce in China were dominated by state-controlled production planning. Since 1978, the central government has taken a series of reform activities to establish a new logistics system, in which enterprises under all forms of ownership – state, collective, and private – are allowed equal footing to engage in logistics activities, and manufacturers are given a greater degree of autonomy to appoint logistics providers (Luk, 1998). In 1992, China’s economic reforms accelerated under the guidance of the late senior leader Deng Xiaoping: foreign investments were allowed in more sectors, including those related to the logistics industry.

Despite some advances and reforms, the development of China’s logistics infrastructure and transportation systems has lagged behind its unprecedented economic development in other areas. In addition, the logistics industry is plagued by problems such as the need for multiple approvals from different central and local departments, and protection from local governments. However, the Chinese government has been quick to acknowledge that a lack of development in the logistics and transportation sectors is a major impediment to industrial growth (Easton, 2003a). Modernization of logistics and transportation has been put as one of the top three priorities in China’s Tenth Five-Year Plan (2001-2005). This current blueprint for the modernization of China contains clearly stated intentions to upgrade road, rail, air and seaport capabilities, as well as integrated services (third party logistics – 3PL services). The country’s central and provincial governments are making significant investments to upgrade infrastructure and build logistics centers and hubs to promote consolidation and collaboration. **[Evidence for Sequence 1.1]**

2. Express delivery services

For historical reasons, administration of international express delivery services and domestic express delivery services in China are separate. International express delivery services fall under the category of international freight forwarding under the Ministry of Commerce (MOFCOM), while there is neither a single regulator nor clear regulation of domestic express delivery services.

The informant from China International Freight Forwarders Association said:

Express delivery services did not exist during the centrally planned economy period. During that time, all mail services were monopolized by China Post under the Ministry of Post and Telecommunications (MPT). After the economic reforms started in 1979, some multinational enterprises came to China, many of which had strategic partnerships with world leading express delivery services providers. In 1978 FedEx and UPS contacted the Chinese Embassy in the U.S. about opening operations in China, but their proposals were refused by the MPT. The Embassy then discussed the matter with the China National Foreign Trade Transportation Corporation (Sinotrans) under the Ministry of Foreign Trade (now MOFCOM). Sinotrans believed that express delivery services were a good business and Sinotrans should start it in China.

In June 1980, approved by the then Ministry of Foreign Trade and the General Administration of Customs, Sinotrans signed an agency agreement with Japan's Overseas Courier Service (OCS), which introduced express delivery services into China for the first time (Sinotrans, 2001). On 15 July 1980 China Post also introduced its world Express Mail Service (EMS). Its domestic express mail services started in 1984. To further meet market demand, and approved by the Ministry of Foreign Trade, China Post established the China Courier Service Corporation in 1985.

Based on Kim's (2002) analysis on the evolution of China's economic system, Table 7.1 illustrates the relationships between China's economic system reforms, logistics system reforms, and development of express delivery services.

Table 7.1 Evolution of China's economic system, logistics system reforms, and development of express delivery services

Year	1949-1978	1979-1991	1992-2001	After 2001
Economic system	Command economy	Planned commodity economy (1979-1983); Socialist commodity economy (1984-1991)	Socialist market economy	Preliminary market economy
Relationship between market and planning	Planning as principal, market as supportive means	Planning as principal, market as supportive means	Market as principal, planning as supportive means	Concept of fair competition introduced
Logistics system reforms	Three-tier distribution system; Monopoly by state-owned transportation and logistics enterprises.	Hybrid of planned and free market distribution system; In 1983 the Ministry of Communications (MOC) set a new policy of "roads for all vehicles and rivers for all ships"; private companies increased since; In 1985 foreign investment allowed in port construction	In 1992 less restrictive regulatory framework was made applicable to the entire transportation and logistics areas; foreign investment increased since; In 1992 foreign investment allowed in retail distribution; In 1998 foreign investment allowed in wholesale distribution	In January 2002 China International Maritime Regulations became effective; In November 2002 majority foreign-owned joint ventures were allowed in road transport, packaging, storage and warehousing, and freight forwarding; In June 2002 Notice on Relevant Issues Concerning the Experimental

				Establishment of Foreign-Invested Logistics Enterprises was issued.
Express delivery services		<p>In June 1980 Sinotrans signed an agency agreement with Japan's OCS, introducing international express delivery services into China;</p> <p>In July 1980 China Post introduced its worldwide Express Mail Service (EMS);</p> <p>In 1984 China Post started domestic express mail service;</p> <p>In 1986 Sinotrans – DHL joint venture was established;</p> <p>In 1987 TNT entered</p>	<p>In 1992 Chinese private companies started intra-city and inter-city express delivery services;</p> <p>In 1995 Fedex entered; China Rail Express was established;</p> <p>In 1996 UPS entered; China Air Express was established</p>	

Source: Created by the author, on the basis of Kim, 2002 and other listed literature.

II. Self-initiated reforms

1. Logistics

Under a centrally planned economy, the Chinese government established a three-tier distribution system to control the flow of commodities. Logistics arrangements centered on wholesalers who undertook the task of fulfilling distribution goals set by the central government. State-owned logistics firms provided transportation and warehousing services but rarely performed value-added and other logistics activities (Powers, 2001). Private businesses were largely banned. Meanwhile, most manufacturing firms established in-house transportation and warehousing departments to serve themselves because of the shortage of third-party supply. Two conventional production models of “large scale and fully-fledged” and “small scale and fully-fledged” created a self-sufficient market.

The state-owned transportation and logistics enterprises were granted with monopolies or some government departments themselves monopolized rail, shipping, and freight forwarding. Examples of these dominant, asset-intensive players are China Ocean Shipping Company (COSCO, in shipping), China Material Storage and Transportation Company (in warehousing and trucking), Sinotrans (in air freight forwarding and shipping), China Post (in mail and parcel post) and the Ministry of Railways (in rail).

Since the economic system reforms initiated in 1978, and as China grew more interested in trading with the outside world, state leaders recognized the need to liberalize this system. Reforms have been undertaken in the sectors related to logistics since then. **[Evidence for Sequence 1.1]**

(1) Distribution

China’s distribution networks during the pre-reform period were organized along rigid, vertical lines. Tier-1 distributors were located in Beijing, Shanghai, Tianjin, and

Guangzhou; tier-2 consisted of wholesalers in the provincial capitals and medium-sized cities; and tier-3 wholesalers operated in smaller cities and towns (Chen, 2001).

Since 1979, economic reforms have shattered the vertical, closed commercial system and allowed diverse channels to develop. The objective was to improve the efficiency of goods distribution by lessening state control and allowing the market mechanism to direct materials flow. An approach referred to as the “two track price system” was implemented. Under this dual price system, planned prices were only applied to some important raw materials such as iron, steel, and coal (Peng and Vellenga, 1993). Today, China’s distribution systems lie somewhere between a rigid planned structure and a free market system (Jiang and Prater, 2002, Zhang, 2001). The nationwide state system still exists, but the rigid demarcations between each level, and between different parts of the system, have broken down.

Before 1992, foreign direct investment was prohibited from entering into China’s distribution sector. On 23 November 1992, the State Council issued the Foreign Investment in Retailing Provisions, opening this sector to foreign investors for the first time. Since 1998, foreign investors have been able to establish equity and contractual joint ventures in the retailing and wholesaling sectors upon receipt of approval, while wholly foreign-invested enterprises are still prohibited. **[Evidence for Sequence 2.2]**

(2) Transportation

As part of continued efforts to establish a free market system, the Chinese government has encouraged private firms in all business areas, including logistics, since 1978. **[Evidence for Sequence 1.1]**

In the transportation sector, privatization has grown very rapidly although private services are still limited relative to the size of the economy. In 1983, the Ministry of Communications (MOC) set a new policy of “roads for all vehicles and rivers for all ships” so that anyone could register as a carrier by showing evidence of sufficient funds, adequate equipment, and the need for the service (Lu, 1991). This policy has

brought about an unprecedented growth of private shipping and trucking businesses. Between 1983 and 1990, the number of people engaged in private transportation services increased from 38,000 to 364,000 (Peng and Vellenga, 1993). **[Evidence for Sequence 2.1]**

The passage of the Provisional Regulations on Preferential Treatment for Sino-Foreign Joint Venture Construction of Ports and Wharfs in September 1985 was the first move in opening logistics and transportation to foreign investment. The less restrictive regulatory framework was made applicable to the entire transportation and logistics areas in 1992. Under the new policy, foreign firms are allowed to enter into an equity or a contractual joint venture in rail, trucking, warehousing and terminal operations. Foreign shipping companies are permitted to operate a wholly foreign-owned company or operate joint ventures with Chinese carriers engaged in inland water transportation related business such as freight forwarding services, consolidations and billing. In addition, foreign firms are encouraged to invest in transportation infrastructure construction projects such as railroads, highways, bridges, and terminals. **[Evidence for Sequence 2.2]**

2. Express delivery services

In 1986 Sinotrans and DHL established the first international express delivery services joint venture in China. Then other world leading express delivery service providers entered the Chinese market one after another - TNT in 1987, Fedex in 1995, and UPS in 1996 – all on the basis of Sino-foreign joint ventures. **[Evidence for Sequence 2.2]**

Attracted by the great market potential, some non-postal state-owned enterprises (SOEs) started to provide domestic express delivery services. China Rail Express (CRE) and China Air Express (CAE) were established in 1995 and 1996, respectively. Besides cooperating with foreign companies, Sinotrans started to provide its own express services – SES in 1996. **[Evidence for Sequence 2.1]**

Since 1992, many private companies have also started to provide intra-city or

inter-city express delivery services in China. However, since the very beginning of their existence, they have often been accused and banned by local post offices for intruding into China Post's monopoly in letter delivery. **[Evidence for Sequence 3.1]**

III. Regulations

1. Logistics

(1) Government efforts

Recognizing the importance of logistics in economic growth, the Chinese government is taking measures to stimulate the development of the transportation and logistics sectors. The agreements the government has made as part of the conditions for entry into the WTO are intended to open the sector to foreign participation over a three-to-four-year timeframe. **[Evidence for Sequence 1.3]** Further, the government is itself investing in infrastructure and encouraging change in the industry structure that will enable faster acceptance and development of third-party logistics (3PL).

The Chinese government aims to increase outsourced logistics in SOEs' manufacturing and distribution functions, create sophisticated logistics centers and networks by promoting the consolidation of and collaboration among logistics companies, actively encourage manufacturers to adopt supply chain management through 3PL firms, and reduce logistics costs.

(2) Fragmented regulatory system

Unfortunately, logistics is still not a well-defined industry in China. A Chinese logistics company informant said:

Regulatory oversight of the sector is highly fragmented. Different components of logistics services are under the jurisdiction of different government departments. Air freight belongs to the Civil Aviation Administration of China (CAAC), rail freight is under the Ministry of

Railways (MOR), shipping and road transport are under the Ministry of Communications (MOC), warehousing used to belong to the previous Ministry of Materials and Equipment (don't know where it belongs to now). Other involved departments include the MOFCOM, the General Administration for Quality Supervision Inspection and Quarantine (AQSIQ), the General Administration of Customs, and so on. But the trend in logistics industry is to provide integrated services. It should be governed by a single department. **[Evidence for Sequence 1.2]**

“Even the academic circle is the same,” he added.

Besides the China Logistics Association, there are also the China Federation of Material and Purchasing and the China Warehousing Association. However, this situation is difficult to change, as each department has its own interests.

As a result, a foreign 3PL firm intending to provide a full range of logistics services faces the challenge of applying for a multitude of licenses from different government agencies. One foreign logistics company informant complained:

Our company's major difficulty in China comes from government policies. China's WTO commitments did not cover airfreight, customs services, quality inspection and quarantine. We have got licenses in domestic logistics and customs clearing, but it is too difficult to obtain a license from the CAAC. **[Evidence for Sequence 3.3]**

(3) Geographical restrictions

China's licensing regulations require firms to obtain a separate business license for each province in which they operate. In many localities, out-of-province trucks are arbitrarily stopped at city borders and subjected to tolls that local trucks are not required to pay. In many cases, this necessitates expensive unloading and reloading onto local carriers.

2. Express delivery services

Currently, foreign express delivery companies doing business in China must wait one year before establishing branch offices and five years before entering into a second joint venture. These limitations have constrained the ability of foreign express delivery companies to develop on a national basis. **[Evidence for Sequence 3.3]**

In addition, China Post's dual role as operator and regulator has hampered the efforts of both domestic and foreign express companies to service their Chinese and multinational customers. Facing a serious threat from foreign competition, China Post has been trying hard to strengthen its monopoly in letter delivery, including rolling back some of the rights extended to private operators upon China's accession to the WTO (USTR, 2003). **[Evidence for Sequence 1.2] [Evidence for Sequence 3.1] [Evidence for Sequence 3.3]**

In December 2001 China Post issued its Notice 629, requiring firms wishing to deliver letters to apply for entrustment from it. Notice 64 issued in February 2002, extended China Post's monopoly on letters by creating weight and rate restrictions on letters delivered by private firms. Following high-level U.S. intervention, in September 2002, Notice 472 eliminated the weight and rate restrictions on letter deliveries and streamlined the entrustment application procedure (USTR, 2004a). **[Evidence for Sequence 3.1] [Evidence for Sequence 3.2] [Evidence for Sequence 3.3]**

In July 2003, however, China circulated draft amendments to its postal services law that generated two immediate concerns among both domestic and foreign companies. First, the draft amendments purported to give China Post a monopoly over the delivery of letters under 500 grams, which would have constituted a new restriction on the scope of activities of existing foreign-invested express delivery companies, contrary to China's horizontal "acquired rights" commitment. Second, the draft amendments did not address the need for an independent regulator. **[Evidence for Sequence 3.1] [Evidence for Sequence 3.3]**

Up to now, five sets of the draft amendments have been circulated, but still not approved. At the same time, this has aroused a wide range of discussion in China on

how the postal services sector should be reformed. One informant from the MOFCOM mentioned:

Views on how the postal services sector should be reformed are quite different within the government now. There is no final decision yet. What the government considers more now is that it shouldn't let the postal system go bankrupt.

IV. WTO liberalization

1. WTO commitments

Logistics is not treated as a distinct category in the GATS. Rather than granting market liberalization commitments under the single heading of logistics, China made separate commitments with respect to numerous, distinct sub-sectors falling within the remit of logistics. Table 7.2 is a summary of these commitments and Table 7.3 gives a comparison of pre-WTO regulations and terms of WTO Agreement.

2. Implementation of WTO commitments

Post-WTO-accession has witnessed many new regulations introducing foreign investment in logistics-related sectors.

China's international maritime transportation regulations became effective on 1 January 2002. In November 2002, China issued regulations allowing majority foreign ownership of road transportation firms, as it was required to do within one year of its WTO accession. China was also obligated to issue regulations allowing majority foreign-owned joint ventures to enter the fields of packaging services, storage and warehousing, and freight forwarding one year after its accession; it issued timely regulations allowing 75% of foreign-owned joint ventures in these fields (USTR, 2004a). **[Evidence for Sequence 4.2]**

Table 7.2 China's WTO commitments in logistics-related sectors

	By 2002	By 2003	By 2004	By 2005	By 2006	By 2007
Distribution	Minority ownership/joint ventures (JVs) to engage in wholesale of both import and domestic products; Foreign investment enterprises (FIEs) can distribute products made in China	Lifting of foreign majority, geographic, and quantitative restrictions; Some geographic restrictions for retailing	Lifting all restrictions; Establish wholly owned foreign enterprises (WOFEs); All geographic restrictions lifted for retailing		Books, chemical fertilizers, crude oil, and processed petroleum phased in over 3 to 5 years; Few limitations; No restrictions for retailing	
Freight forwarding		Majority ownership			Wholly owned subsidiaries; Foreign companies	

					not limited to international freight business	
Maritime cargo handling, customs clearance	Sino-foreign ventures permitted					
Rail transport	Minority ownership/JVs		Majority ownership			Wholly owned subsidiaries
Road transport	Minority ownership/JVs	Majority ownership		Wholly owned subsidiaries		
Storage and warehousing	Minority ownership/JVs	Majority ownership		Wholly owned subsidiaries		
Courier services		Majority ownership			Wholly owned subsidiaries	

Source: Easton, 2003b.

Table 7.3 Comparison of pre-WTO regulations and terms of WTO agreement

Pre-WTO	Post-WTO
<p><i>Freight forwarders</i></p> <p>Freight forwarders need “Class A” license to issue bills of lading (B/Ls), invoices and to collect payments.</p> <p>Foreign forwarders have to be in business for at least 3 years to qualify for a first joint venture (JV) of maximum 50% share and are required to invest at least US\$ 1 million.</p> <p>Foreign forwarders have to wait five years before forming a second JV, and a year before establishing branches. An investment of US\$ 120,000 is required for each new branch.</p>	<p><i>Freight forwarders</i></p> <p>Licensing requirements will be phased out.</p> <p>Majority ownership in JVs is allowed a year after accession.</p> <p>Wholly owned subsidiaries are allowed 4 years after accession.</p> <p>Within two years of accession, a second JV is allowed.</p>
<p><i>Ocean carriers</i></p> <p>Ocean carriers require permission from the MOC to offer new services.</p> <p>Issue of B/Ls, invoices and collection of payments is only allowed at a limited number of licensed branch offices.</p> <p>Ocean carriers can only operate container terminals, warehouses, trucking and inter-modal services through JVs</p>	<p><i>Ocean carriers</i></p> <p>Carriers will be free to offer single-source logistics management.</p>
<p><i>Ground transportation providers</i></p> <p>Only Chinese nationals and Chinese-owned companies are permitted to conduct ground transportation.</p> <p>JV partnership is required for foreign</p>	<p><i>Ground transportation providers</i></p> <p>For road transport, foreign transportation providers can establish JVs upon accession, hold majority shares with two years, and be free of restrictions within four years.</p>

participation in cross-boundary operations with Hong Kong.	For rail transport, foreign transportation providers can establish JVs upon accession, hold majority shares within a year, and be free of all restrictions within three years.
<p><i>Express operators</i></p> <p>Foreign express operators are prohibited from taking a majority share in a JV, and need to invest at least US\$ 1 million in an entity whose term may not exceed 20 years.</p> <p>There is a one-year waiting period for establishing branches and five years for forming a second JV.</p>	<p><i>Express operators</i></p> <p>Commitments include land-based international courier services and all services related to an international shipment handled by express operators.</p> <p>Majority ownership in JVs will be allowed a year after accession.</p> <p>Wholly owned subsidiaries will be allowed four years after accession.</p>
<p><i>Storage and warehousing providers</i></p> <p>Foreign firms are permitted to own warehouses in foreign trade zones, only if such warehouses are required to store materials necessary to their production and service activities in China.</p>	<p><i>Storage and warehousing providers</i></p> <p>Foreign providers are allowed to have minority ownerships in JVs upon accession and hold majority equity shares within one year.</p> <p>Restrictions to be phased out within three years.</p>

Source: Goh and Ling, 2003.

In June 2002, the MOFCOM's predecessor, the Ministry of Foreign Trade and Economic Cooperation (MOFTEC), also issued a Notice on Relevant Issues Concerning the Experimental Establishment of Foreign-Invested Logistics Enterprises, which provided that a foreign-invested logistics company "shall, according to actual requirements, be able to provide clients with multi-functional integrated supply-chain services of storage, loading and unloading, processing, packaging, delivery, information-handling, import and export, or other fields in a complete network for unified commodity shipment." (USTR, 2004a, p.80) **[Evidence for Sequence 4.2]**

V. Competitive advantages

1. Logistics

According to a recent survey by the China Federation of Logistics and Purchasing on the third-party logistics (3PL) market in China among both shippers and providers, foreign 3PL providers are viewed as strong in IT systems, industry/operational expertise, standardized operating processes, and international networks. Chinese 3PL providers are viewed as offering lower prices and as having strong local knowledge, domestic network coverage, and good central/regional government relationships (Huang and Kadar, 2003).

Domestic companies in China are more familiar with the local market and able to provide low-cost operations in China, but they are not able to cope properly with strategic alliances in the supply chain, such as global inter-modal networks, high tech warehousing, services for process integration (such as just-in-time and processing trade), sophisticated information and communication technology, or logistics consulting.

Foreign companies have access to international freight forwarding networks and customers. Nearly half the value of China's trade is accounted for by firms with international backing while most foreign-funded enterprises work closely with their long-term logistics services providers (Loo, 2002). **[Evidence for Sequence 6.2]**

Lastly, the quality of the logistics services provided by domestic carriers is seriously affected by the lack of educated and trained staff. The inadequacy of logistics management skills on the part of the local staff is exacerbated by the fact that only very few people in China know what logistics is. Vocational training opportunities are limited because most colleges and universities in China do not offer enough courses on logistics or integrated supply-chain management.

2. Express delivery services

The informant from the China International Freight Forwarders Association said:

All major foreign express delivery services companies have entered into the Chinese market for a dozen of years. They not only have access to their worldwide international networks, but have also established relatively complete national networks in the urban area of China. In addition, to compete one another, they have brought the most advanced tracking and tracing technologies into China.

The China Post informant admitted:

In international express services, it is true that we are not as strong as UPS or FedEx; they have their own airplanes.

Then he added:

But we have our advantages in domestic services. Except DHL, no others can compare with our networks. Furthermore, we are state-sponsored and therefore have a good reputation. For example, most people would use post offices to deliver things like identification cards. **[Evidence for Sequence 6.1]**

The prices of private companies are cheaper because they have lower costs. But most of them are limited in intra-city services. **[Evidence for Sequence 6.1]**

VI. Domestic company's strategy

1. Logistics

The informant from a Chinese logistics company said:

Domestic companies face great pressure after the WTO entry. **[Evidence for Sequence 4.1]** Although quite a number of Chinese 3PL firms have appeared in the market, most of them offer a low standard of service and efficiency. We are still at the stage of learning advanced management expertise and experiences from foreign companies.

[Evidence for Sequence 6.1]

In fact, most of the local firms only provide simple delivery and warehousing services. Value-added services like information services, inventory management, logistics cost control, or logistics system design are not offered. The scale of the firms is usually small and most of them come from among traditional firms with weak network and organization capabilities. **[Evidence for Sequence 6.1]**

The situation is more or less the same for large state-owned enterprises, such as Sinotrans and COSCO. They are strong in transportation and warehouse assets, have national networks, and typically maintain good relationships with central and provincial governments. The problems these companies face include overstaffing, a lack of customer orientation, and the need to improve service levels. Many are in the process of or about to start restructuring to improve efficiency and economics. Some are also upgrading their capabilities, such as IT systems, to enhance their competitiveness.

2. Express delivery services

The informant from the China International Freight Forwarders Association said:

Facing increasing competition from both big foreign players and small private companies, China Post has been using two strategies. **[Evidence for Sequence 4.1]** One is to strengthen its monopoly via regulatory measures. The other is to improve its own express services. **[Evidence for Sequence 3.2]**

The China Post informant summarized the reforms China Post had undertaken as:

First, accelerating delivery speed. Since 2003, China Post has introduced overnight domestic delivery services among all major cities in China. Second, since 30 August 2003, the base weight for domestic services has been expanded from 200 grams to 500 grams with no price increase. Third, taking advantage of traditional relationship with government departments, China Post has introduced a number of new

services, such as identification cards, passports, and driver's licenses delivery. Fourth, China Post has intensified its marketing efforts by implementing a customer manager system and by stationing representatives at major office buildings, shopping malls or key enterprises. [Evidence for Sequence 6.1] [Evidence for Sequence 7.1]

VII. Foreign company's entry motivation

Literature indicates that the internationalization and globalization of service firms has been encouraged by the economies of scale and scope, by the internationalization and globalization of the competitors and by "customer following" i.e. the internationalization of manufacturing firms, which "may demand that the service supplier provides a global network and/or global experience" (Arvidsson, 1997, p.74; Bjorkman and Kock, 1997; Gronroos, 1999).

In the case of transport and logistics, other factors have also played an important role in the internationalization and globalization process of the firms. Deregulation of the market, privatization of transport chains, and technological improvements in transport and communication systems have encouraged such development (Lemoine and Dagnaes, 2003).

The use among manufacturing firms of concepts such as outsourcing, just-in-time, the reducing cycle/lead-time, and the new global view on storage and distribution within manufacturing firms have also been responsible for the increasing internationalization, globalization and networking organization of transport and logistics firms. Manufacturers have realized that the delivery system is an integral part of the product strategy. Within this context logistics "is being increasingly viewed as a driver of differentiation" (Schmitz Whipple and Gentry, 2000, p.316).

At the same time, manufacturers want to enhance their core competencies. Cooperative network arrangements of a vertical type between manufacturers and suppliers of transport and logistics services give the opportunity to achieve this goal. In the new global economy, manufacturing firms consider their logistics service

providers as partners, the industry wants to work with a few “global” freight and forwarding firms, and delegate responsibility of transport management to a third party (Lemoine and Dagnaes, 2003).

The entry of HAVI Group LP into China serves as just such an example. When McDonalds entered China in 1992, its need for high-tech logistics meant it did not have the option of outsourcing to local underdeveloped logistics firms. So McDonalds convinced its longtime logistics provider HAVI to come with it (Jiang, 2002). **[Evidence for Sequence 5]** HAVI is responsible for ensuring that hundreds of McDonalds around China receive their frozen food at the right temperature and their napkins and packages in nice shape. Furthermore, this must occur on time.

The same logic applied when UPS, FedEx and other international express delivery services companies first entered China, but they are now more attracted by the huge market. Over the previous 11 years, China and India were the fastest growing markets for the U.S. airfreight services exports. China accounted for the largest share of the U.S. airfreight imports in 2002 (USITC, 2004). **[Evidence for Sequence 5]**

The U.S.-based carriers have been expanding their international operations to meet growing demand for international air cargo services, of which express delivery is a part, and to diversify their revenue base beyond the mature U.S. market. Projected growth rates for air cargo services are highest for domestic China, intra-Asia routes, and specific routes between North America and Asia on one hand, and North America and Latin America on the other (USITC, 2004). To meet this growth the U.S.-based express delivery service firms have invested heavily in Asia and Latin America, and are steadily increasing operations in the emerging and potentially lucrative Chinese market. **[Evidence for Sequence 5]**

VIII. Foreign company’s strategy

1. Logistics

Foreign logistics companies in China serve primarily multinational companies, generally in export- and import-related logistics. They have the access to international freight forwarding networks and customers. An informant from a foreign logistics company said:

Our company is one of the five largest global logistics companies. We have over 1,300 subsidiaries all over the world. Our major clients in China now include BMW, Siemens, Mercedes Benz, and HP. Compared with Chinese companies, high-end customers and high quality services are our advantages. **[Evidence for Sequence 6.2]**

According to the survey conducted by the China Federation of Logistics and Purchasing, foreign 3PL providers receive nearly all of their revenues from multinationals (Huang and Kadar, 2003). Besides providing extended logistics services to their original customers to help them build businesses in China, international logistics companies also outsource logistics services to other professional service providers in the Chinese market. The foreign logistics company informant explained:

What worries us is not that we don't have enough projects to carry out in China, but there is too much work to do that we cannot finish it by ourselves. In the future, most probably many Chinese logistics companies will work for international logistics companies.

McKinsey (2001) also finds that increasingly, non-Chinese logistics players are trying to expand on two fronts: (1) extending their export-import services further into China using several transport modes and linking these services into their already strong global supply chain networks, and (2) developing workable domestic solutions for their largely multinational clients. They are also trying hard to develop total supply chain solutions for the most advanced Chinese manufacturers. **[Evidence for Sequence 6.2]**

2. Express delivery services

With their Chinese partners, the global air express companies are all present in China and active in the market for expedited international shipments (The US-China Business Council, 2003). Four global express services providers – DHL, FedEx, UPS and TNT have rapidly expanded their business in China. **[Evidence for Sequence 7.2]**

In April 2001, UPS became the first U.S. cargo carrier to fly directly from the U.S. to China. In 2004 UPS announced that it would pay US\$ 100 million to its Chinese partner Sinotrans to take over their joint venture's operations in 23 regions in China by the end of 2005. FedEx has also considered relocating its Asian hub from the Philippines to Guangzhou, China in order to serve China's burgeoning market for express delivery services (USITC, 2004).

IX. Market changes

1. Logistics

It is believed that some 16,000 companies in China are registered as logistics providers. However, the market is highly fragmented – even among the market leaders surveyed by the China Federation of Logistics and Purchasing, none have more than a 1.4% market share (Huang and Kadar, 2003). **[Evidence for Sequence 7.1] [Evidence for Sequence 7.2]**

Compared to overall logistics services, which are growing by about 7.5% annually, outsourced logistics services in China are reported to be growing by 25% per year. Several of the most promising providers in the Chinese market say that they have experienced annual doubling of revenues in the past couple of years. Shippers surveyed said that while only about 22% of logistics expenditure is spent on 3PL today, they expect outsourcing to account for 50-60% of total expenditures in 3-5 years (Huang and Kadar, 2003).

Table 7.4 China transportation/logistics providers

	SOEs	Private companies	Foreign providers	In-house logistics
Who	Large government-owned logistics services providers	Regional and local; Sector specific	US, European, Asian logistics service providers	Shippers using their own freight as a platform to get into logistics business directly or via JVs with foreign carriers
Strengths	Large presence in China; Strong brand awareness locally; Relationship with SOEs/ government; Access to financial resources; JVs with foreign leaders	Focused on verticals/regions/ modes; Own assets, e.g., warehouses and capacity	Network reach outside China; Financial resources; Sophistication (IT, SCM)	Captive freight as “bait” for foreign carriers; Deep financial resources
Weakness	Cumbersome organizational structure/incentives; Distracted with substantial restructuring imperatives; Relatively low sophistication (IT, SCM)	Limited financial resources; Little name recognition	Still have to rely on local partners to provide many services in China; “Necessary” evil for big Chinese JV partners	Hard to sell functional expertise; Hard sell to some verticals (no trust from competitors); Likely not a long term trend
Number of companies	50 players	2,000 freight forwarders; 7,000 barge companies; 2.5 million trucking firms	25-30 leading international companies	Unknown
Most representative examples	Sinotrans, Cosco, China Post/ EMS	PGL, EAS, Da Tian	UPS, Exel, Maersk, DHL	Haier, Lenovo, Guo Mei

Source: UPS, 2004.

There are currently four distinct types of transportation and logistics competitors in China, each with very different characteristics. Table 7.4 gives a summary. [Evidence for Sequence 7.1] [Evidence for Sequence 7.2]

2. Express delivery services

Currently, as many as 1,500 express delivery firms operate in China. But only 130 participate in the international express industry, and many of these serve only as traditional freight forwarders or as agents for the leading international air express integrators (The US-China Business Council, 2003). [Evidence for Sequence 7.1] [Evidence for Sequence 7.2]

With higher charges and slower speed, China Post has lost its market shares in both international and domestic express delivery services significantly since non-postal providers entered the market. Table 7.5 compares the international services between China Post's EMS and FedEx. Table 7.6 compares the within-Beijing services between China Post's EMS and Red Pony, a local private express delivery company. [Evidence for Sequence 7.1] [Evidence for Sequence 7.2]

Table 7.5 Comparison of international services between China Post and FedEx

Destination Country	China Post's EMS		FedEx	
	Price (RMB yuan)	Days	Price (RMB yuan)	Days
Australia	195	5-6	175	4
Brazil	375	9-10	360	5-6
Germany	232	5-6	210	4
Japan	135	3-4	120	3
Singapore	150	5-6	130	3
South Africa	375	9-10	360	5-6
U.S.	217	5-6	195	3

Source: Shi, 2003.

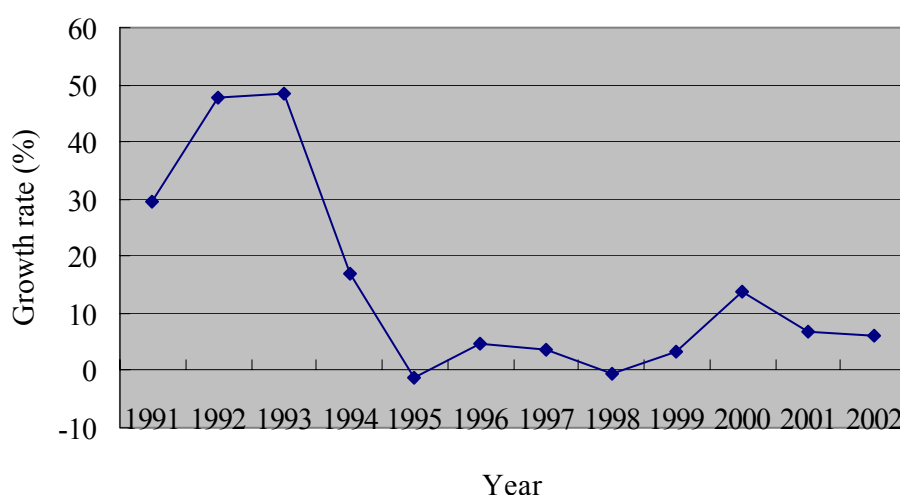
Table 7.6 Comparison of within Beijing services between China Post's EMS and Red Pony (a parcel weighs within 500 grams)

Destination	China Post's EMS		Red Pony	
	Time	Price (RMB yuan)	Time	Price (RMB yuan)
City proper	2-3 days	12	Same day	10
	5 hours	20		
	3 hours	40		
Outskirts	2-3 days	12	Next day	10

Source: Lu, 2004.

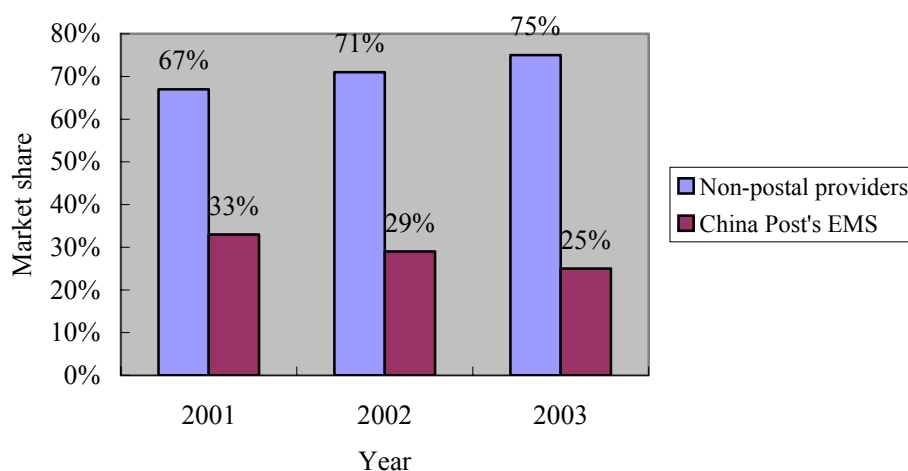
Since 1993, the annual growth rate of China Post's international EMS has been lower than 20%. It was below 5% from 1995 to 1999 (see Figure 7.1). Besides the factor of slower economic growth during this period, it was strongly related to FedEx and UPS's entry in 1995 and 1996, respectively (Shi, 2003). Up to now, EMS's share in international services market has been decreased from the historic high – 80% to the current 20% or so. Its domestic services share has shrunk from 97% in 1997 to about 40% in 2004 (Lu, 2004). **[Evidence for Sequence 7.1] [Evidence for Sequence 7.2]**

Figure 7.1 Annual growth rate of China Post's international EMS from 1991 to 2002



Source: Shi, 2003.

Figure 7.2 Market share of international express delivery services in China from 2001 to 2003



Source: Lu, 2004.

For the time being, except for DHL, other international express delivery services companies have not officially entered domestic services, but the informant from the China International Freight Forwarders Association said:

If China Post does not reform, it will not have a future in its domestic express delivery services either. **[Evidence for Sequence 7.2]**

X. Effects on e-commerce diffusion

Digital products such as CDs and software can be delivered directly online. The delivery methods for physical products in China vary from one operator to another and can be described as following: (1) some team up with the post office by using the regular postal services to reach out to the entire nation; (2) some link up with chain stores to go beyond their primary line of business; and (3) some link up with domestic express delivery carriers, China Post's EMS, private express delivery companies, or foreign giants such as DHL, to offer delivery within 24 to 48 hours.

Currently, postal parcel is still the most common delivery method in China. However, the shares of EMS and other express delivery services have been increasing steadily in recent years (see Table 7.7). **[Evidence for Sequence 8.1]** As analyzed previously in this chapter, this can be attributed to price reduction and service

improvement under the increasing competitive pressure enforced by entry of both foreign and domestic service providers. No clear evidence can be seen that this is due to entry of foreign express delivery service providers, as their business is so far still limited to international services. In addition, a B2C e-commerce company informant argued that compared with private express delivery companies, foreign companies would be too expensive to use:

Foreign companies charge higher prices because of their expensive information systems and high labor costs. On the contrary, most private express delivery companies have very low operational costs. For example, bikes are the most common transportation method used by private companies in providing intra-city services. **[Evidence against Sequence 8.2]**

Table 7.7 Delivery methods for e-commerce transactions

	Jan-05	Jan-04	Jan-03	Jan-02	Jan-01
Postal parcel	34.8%	38.1%	38.8%	25.5%	28.50%
EMS	26.8%	20.1%	15.5%	20.5%	19.80%
Home delivery	24.6%	29.9%	35.9%	44.4%	38.24%
Other express delivery	11.8%	9.8%	7.6%	7.1%	8.13%
Railway/other shipping	1.2%	1.5%	1.6%	2.2%	3.27%
Others	0.8%	0.6%	0.6%	0.3%	2.06%

Source: CNNIC, various years.

XI. Sequence analysis of the lower-level model

In developing the lower-level process model (Figure 4.6, Chapter 4, p.111), this chapter discusses the third proposition related to the theoretical model for higher-level analysis (Figure 4.5, Chapter 4, p.105): how the WTO commitments can influence the logistics and express delivery services in China's coastal urban area and help facilitate e-commerce diffusion.

In the previous parts of this chapter, findings about each theoretical construct of the lower-level model have been discussed. Because the logistics and express delivery sector was opened to foreign companies a comparatively long time ago, in discussing market changes, the constructs “domestic competition” and “foreign competition”

were not clearly distinguished, but they are differentiated in the sequence analysis. Table 7.8 shows the results of examining sequences of the model. Figure 7.3 illustrates the lower-level model developed from data for the logistics and express delivery sector, leaving only the theoretical constructs and the arrows of supported sequences.

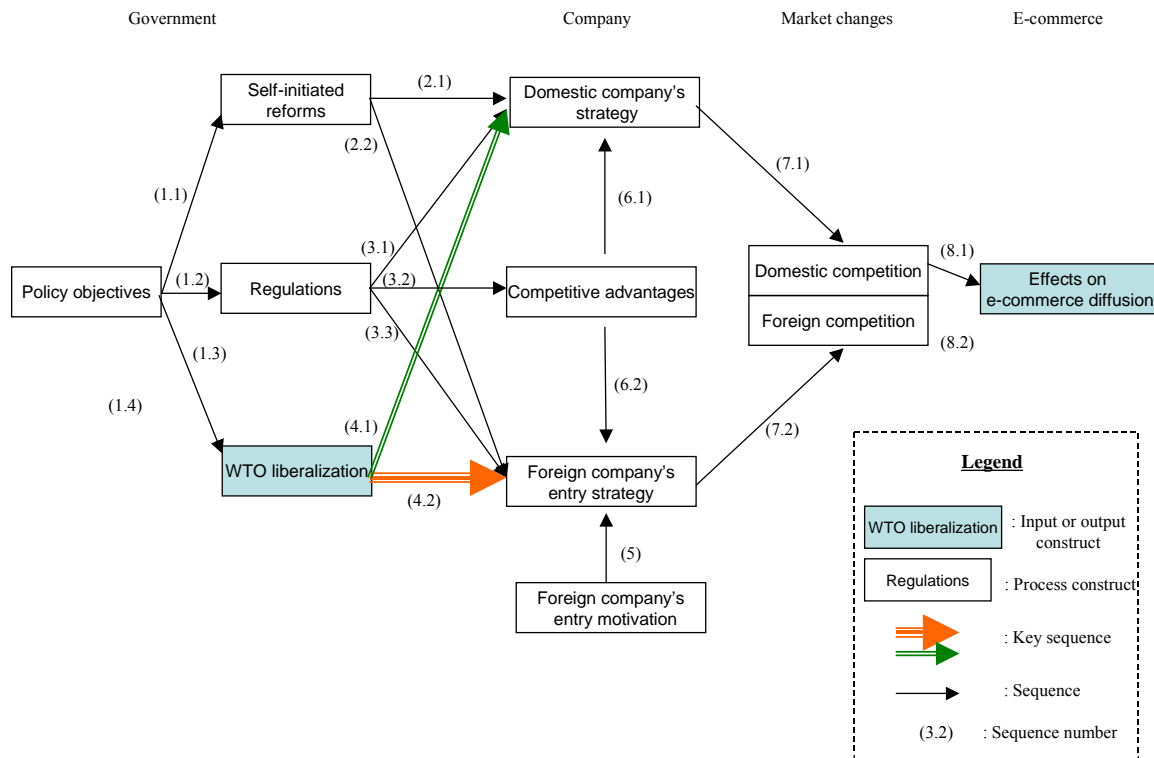
Table 7.8 Sequence analysis for the logistics and express delivery sector

Sequence No.	Support or not	Evidence source
Sequence 1.1	Supported	Others (p.222; p.226; p.227)
Sequence 1.2	Supported	Interview (p.230); Document (p.231)
Sequence 1.3	Supported	Others (p.229)
<i><u>Sequence 1.4</u></i>	<i><u>No evidence found</u></i>	
Sequence 2.1	Supported	Document (p.228); Others (p.228)
Sequence 2.2	Supported	Others (p.227; p.228)
Sequence 3.1	Supported	Document (p.231); Others (p.229; p.231)
Sequence 3.2	Supported	Document (p.231); Interview (p.239)
Sequence 3.3	Strongly supported	Document (p.231); Interview (p.230); Others (p.231)
Sequence 4.1	Supported	Interview (p.238; p.239)
Sequence 4.2	Supported	Document (p.232; p.236)
Sequence 5	Supported	Document (p.241)
Sequence 6.1	Supported	Interview (p.238; p.239; p.240); Others (p.239)
Sequence 6.2	Supported	Document (p.237; p.242); Interview (p.242)
Sequence 7.1	Supported	Document (p.243; p.245; p.246); Interview (p.240)
Sequence 7.2	Supported	Document (p.243; p.245; p.246); Interview (p.247)
Sequence 8.1	Supported	Archival record (p.247)
<i><u>Sequence 8.2</u></i>	<i><u>Negative evidence</u></i>	<i>Negative evidence: Interview (p.248)</i>

1. WTO effects

Figure 7.3 shows that, among the three key sequences departing directly from the input construct “WTO liberalization”, Sequence 4.2 and Sequence 4.1 are supported, the other one – Sequence 1.4 is not supported.

Figure 7.3 The lower-level model for the logistics and express delivery services sector



(1) Direct WTO effects: “WTO liberalization” → Sequence 4.2 → Sequence 7.2 → Sequence 8.2 → “effects on e-commerce diffusion”

The chain departing from the input construct “WTO liberalization” first with Sequence 4.2 to the output construct “effects on e-commerce diffusion” is defined as direct WTO effects in Chapter 4. As Figure 7.3 shows, the last arrow Sequence 8.2 is missing. So this causal chain is not supported for the logistics and express delivery sector.

(2) Indirect WTO effects 1: “WTO liberalization” → Sequence 4.1 → Sequence 7.1 → Sequence 8.1 → “effects on e-commerce diffusion”

The chain departing from the input construct “WTO liberalization” first with Sequence 4.1 to the output construct “effects on e-commerce diffusion” is defined as one link of the indirect WTO effects in Chapter 4. Table 7.8 and Figure 7.3 show that all the three sequences of the chain are supported. However, before drawing the conclusion, competing explanations need to be examined.

As Figure 7.3 shows, besides Sequence 4.1, three other arrows – Sequence 2.1, Sequence 3.1, and Sequence 6.1 also lead to the construct “domestic company’s strategy”. Previous discussion about theoretical constructs indicates one competing explanation exists here: “self-initiated reforms”. An examination of the previous discussion of theoretical constructs and the evidence listed in Table 7.8 finds that although both the constructs “self-initiated reforms” and “WTO liberalization” influence “domestic company’s strategy”, each has its own focus. In express delivery services, Sequence 2.1 refers to the fact that express delivery services have not been strictly regulated since they first appeared in China. Except for China Post, other players, including private companies and foreign companies, have all engaged in competition since the 1990s, although foreign companies could only provide services on a joint venture basis and operate international delivery services. Gradually, China Post lost its market share in domestic services to private companies and in international services to foreign joint ventures (**Evidence for Sequence 7.1**: document p.246). Sequence 4.1 is related to China’s commitment to fully liberalize the express delivery services sector after the WTO entry by allowing foreign firms to establish wholly foreign-owned subsidiaries and operate domestic services. The pressure of potential competition from foreign companies in domestic services and existent competition from private companies forced China Post to use all strategies, including reducing prices and increasing delivery speed, to protect its own market share (**Evidence for Sequence 4.1**: interview, p.239). This consequently improves the delivery services for e-commerce (**Evidence for Sequence 8.1**: archival record, p.247). The competing explanation and the link of indirect WTO effects complement, rather than compete with each other.

(3) Indirect WTO effects 2: “WTO liberalization” → Sequence 1.4 → Sequence 1.1 → Sequence 2.1 → Sequence 7.1 → Sequence 8.1 → “effects on e-commerce diffusion”

The other link of indirect WTO effects defined in Chapter 4 is the chain departing from the input construct “WTO liberalization” first with Sequence 1.4 to the output construct “effects on e-commerce diffusion”. As the discussion of “policy objectives” and “self-initiated reforms” shows, logistics reforms in China started from as early as 1979 and foreign investments have been allowed in the entire transportation and logistics areas since 1992. The agency agreement between Sinotrans and OCS introduced international express delivery services into China in 1980. These reforms happened long before the WTO negotiation, thus there is no evidence found supporting Sequence 1.4. This link of indirect WTO effects is not supported.

2. Competing explanation

One competing explanation for e-commerce diffusion appeared from the early discussion of theoretical constructs in this chapter is the government’s self-initiated reforms. It follows this process chain: “policy objectives” → “self-initiated reforms” → “domestic company’s strategy” → “domestic competition” → “effects on e-commerce diffusion”.

Figure 7.3 shows that this link is complete. As discussed above, this explanation and the first type of indirect WTO effects complement each other, rather than compete with each other. Both explanations are supported.

XII. Summary and conclusion

This chapter investigates the third proposition of the higher-level model: the WTO commitments can improve liberalization in logistics and express delivery services and thus help e-commerce diffusion in China’s coastal urban area. In developing the lower-level model, it first discusses findings for the theoretical constructs in the model for the logistics and express delivery services sector; then it investigates the sequences among these constructs, with a focus on chains of direct and indirect WTO effects and competing explanations.

Transportation and logistics were less developed during China’s centrally planned economy era. The previously state-controlled sectors could no longer meet the rapid economic growth after China initiated its economic reforms. Recognizing the sectors’

significance in economic development, besides making a huge investment by itself, the Chinese government has opened the sectors to domestic private sector and foreign investors since the early stages of China's reform programs. China has agreed in its commitments in WTO agreements to open up the whole logistical chain of related services. Although the sectors are still fragmentally regulated and some industries are even monopolized, with their advantages in management expertise and information technologies, foreign companies have expanded their business in China rapidly.

Express delivery services are more closely related to e-commerce. Using Pawson and Tilley's (1997) formula "mechanism (M) + context (C) = outcome (O)" in realist evaluation, Table 7.9 summarizes the effects of WTO commitments on e-commerce, with a focus on express delivery services.

The entry of foreign express delivery companies is categorized as the direct WTO effect. China commits to allow foreign majority ownership within one year after accession and wholly foreign-owned subsidiaries within four years. International express delivery companies entered China as early as the 1980s to follow their customers, thanks to a supportive attitude adopted by the international express delivery services regulator – the MOFCOM. Although China Post has been trying hard to use regulatory measures to protect its market share, foreign companies have taken a majority market share in international services. But the domestic services provided directly by foreign companies are argued not to influence e-commerce diffusion very much, as they are too expensive compared with the much cheaper services provided by private companies.

The indirect WTO effect is that the entry of foreign companies exerts great pressure on China Post. It has to improve its own services to retain its own market share, which results in faster delivery speed and reduced prices. Consequently, more people have adopted China Post's EMS as the delivery method for e-commerce.

A complementary explanation comes from self-initiated reforms. Many other domestic express delivery service providers, including private companies have entered the market to compete with China Post. The entry of these companies has also improved delivery for e-commerce.

In conclusion, the WTO commitments have both direct and indirect effects on express delivery services in China, but only indirect effects have impacts on e-commerce diffusion.

Table 7.9 WTO and e-commerce – express delivery services

	Mechanisms	Contexts	Outcomes	
			Effects on banking services	Effects on e-commerce
Direct WTO effects (Entry of foreign companies)	Courier services, except for those currently specifically reserved to Chinese postal authorities by law, upon accession, foreign service suppliers will be permitted to establish joint ventures with foreign investment not exceeding 49%; within one year after China's accession, foreign majority ownership will be permitted; within four years after China's accession, foreign service suppliers will be permitted to establish wholly foreign-owned subsidiaries.	<u>Positive:</u> 1. International express delivery companies entered the Chinese market as early as 1980s. They first took a follow-client strategy, then aimed at the growth of the Chinese market. 2. The international services regulator - MOFCOM has taken a positive attitude in opening up the sector. <u>Negative:</u> 1. China Post has been trying hard to use regulatory measures to protect its market share. 2. Domestic services are not	Foreign companies have taken a majority share in international express delivery services.	No clear effect so far.

		officially open yet. 3. Private companies offer much cheaper prices in domestic services because of their low operation costs.		
Indirect WTO effects (Competitive pressure on China Post)	The entry of foreign companies exerts great competitive pressure on China Post.	The postal services sector is under pressure to reform.	China Post on the one hand has strengthened its monopoly via regulatory measures, on the other hand has improved its own express services by reducing prices and improving delivery speed.	Adoption of EMS as delivery method has increased in recent years.
Complementary explanations (Self-initiated reforms)	Attracted by the market potential, other domestic players, including private companies entered the market. They compete with China Post in domestic services.	1. There is neither a single regulator nor a clear regulation on domestic express delivery services. 2. China Post has been trying hard to use regulatory measures to protect its market share.	Private companies offer faster services at lower prices. China Post lost its share in domestic services to newcomers.	Adoption of other express delivery methods has increased in recent years.

Chapter 8 Other WTO-related topics

In the previous three chapters, the first three propositions of the higher-level model, i.e., the WTO impacts on each of the three service-sector infrastructures that argued by Mann et al. (2000) as comprising many of the technologies and processes that create the Internet marketplace – telecommunications, banking, and logistics and express delivery – are examined together with the development of the lower-level process model. The rest propositions related to the higher-level model are discussed in this chapter, including the one developed from field data – business desire.

“The implementation of the Information Technology Agreement (ITA) is relatively simple – it is to reduce customs duties on imported information technology (IT) products,” said by one Ministry of Commerce (MOFCOM) informant.

However, to fully understand the impacts of tariff reduction on China’s IT products market, it is necessary to have a review on the development of IT industry in China. As a component of China’s IT industry, the computer and related services sector – better known as IT services in China – is also covered in this section. The rest sections of this chapter cover topics such as intellectual property rights protection, educational services, taxation on e-commerce, and business desire.

I. IT industry

I. Policy objectives

During the interviews, almost all the informants agreed:

China's IT industry has been opened to foreign companies for a long time. There are not many differences in the sector before and after China's WTO accession. **[Evidence against Sequence 4.1] [Evidence against Sequence 4.2]**

Computer technologies have been a Chinese government priority since it introduced the first long-term science and technology development plan in 1955 (Kraemer and Dedrick, 2002). Due to the international political situation during the 1960s and 1970s, China adopted a self-reliant technology development strategy. Since 1978, China has been transforming its centrally-planned socialist economy into a market system. At the same time, it has revised its nationalist technology strategy aimed at achieving self-reliance to a more pragmatic approach of requiring foreign companies to transfer technology in return for market access, directing domestic research and development (R&D) toward commercial purposes, and supporting local companies in high-technology markets (Kraemer and Dedrick, 2001). **[Evidence for Sequence 1.1]**

Since the mid-1980s, the government has focused on promoting production of personal computers (PCs), peripherals, and software, by not only allowing foreign firms into the market but also promoting domestic PC makers. **[Evidence for Sequence 2.1] [Evidence for Sequence 2.2]** In addition, China has made large investments in a series of projects aimed at creating information infrastructure and stimulating computer use.

China's industrial policies have favored the development of the computer hardware industry, leading to the emergence of successful PC makers, such as Lenovo (its previous English name was Legend) and Founder. Their success is evidenced not only in China but also throughout the Asia-Pacific region. In 2002, Lenovo and Founder were among the top five PC makers in the region, along with multinationals Hewlett-Packard (HP), IBM, and Dell. In the same year, China also surpassed Japan to become the second largest PC market in the world, behind only the United States (USDOC, 2003).

However, the software industry in China lags significantly behind world market

leaders. In recent years China's top leaders have recognized this disparity and have shifted industrial policies in favor of the development of the software industry.

2. Self-initiated reforms

The Chinese government began to emphasize IT use throughout the economy after 1986 when the seventh five-year plan started. China's leaders view the diffusion of information technology as an accelerator for economic development and modernization of all industry sectors. As part of China's ten-year and five-year plans, greater resources are targeted for promoting the industry and promoting the application of IT throughout the economy (Kraemer and Dedrick, 1995).

At the beginning, domestic production was not able to satisfy the increasing demand for PCs in China. Hence, relevant government agencies opened the door to foreign enterprises in the hope that imported foreign information products would stimulate China's domestic PC technology development and accelerate the rate of domestic PC adoption. **[Evidence for Sequence 1.1]**

Direct import of foreign-made PCs suffered from high tariffs as well as government regulations prohibiting foreign IT companies from trading directly with Chinese distributors. That market, in addition to China's pool of computer professionals and abundance of cheap unskilled labor, has been a powerful attraction to companies which control needed technologies. Consequently, beginning in the 1990s, foreign PC makers began to set up production in China and work with local distributors (see Table 8.1). In the early years, they held as much as 60% of the market, but their share has subsequently declined as local manufacturers moved to the fore (Kraemer and Dedrick, 2002). **[Evidence for Sequence 2.2]**

The Chinese government has also lowered trade barriers to encourage IT diffusion. **[Evidence for Sequence 1.1]** Import duties were reduced from 82% in 1992 to 35% in 1993, and 17% in 1999. Consequently, Chinese imports of U.S. high-tech IT products expanded by 500% between 1990 and 1998 (Spulber, 2004).

[Evidence for Sequence 2.2] In the year 2000, tariffs on U.S. IT products imported by China averaged 13%. These changes put China’s domestic PC companies under severe competition, as Lenovo’s founder Liu Chuanzhi observed (Spulber, 2004, p.1), “Legend Group is a young and dynamic enterprise born amidst the tidal wave symbolizing China’s reform and open door policy. We have grown in a market of intense competition, and witnessed the vigorous speed at which China’s information industry has developed.” **[Evidence for Sequence 2.1]**

Table 8.1 Major foreign PC company activities in China

Foreign company	Joint venture (JV) or wholly owned (WO)	Chinese partner	Products/operations
IBM	JV WO	Great Wall	Desktop and notebook PCs, storage products, motherboards Servers
Compaq	JV JV	Stone Group Star Group	Desktop PCs Notebook PCs
Hewlett-Packard	JV	Lenovo	Desktop PCs, inkjet printers
Dell	WO		Desktop and notebook PCs
Acer	WO (3 separate units)		Monitors, peripherals, motherboards, software, networking equipment
Toshiba	JV	Tontru	Servers
NEC	JV	N/A	Desktop PCs
LG Electronics	JV	Tontru	Monitors
Siemens	WO	N/A	Desktop PCs

Source: Kraemer and Dedrick, 2002.

3. Regulations

In the early years domestic IT producers benefited from Chinese government

trade restrictions, which included quotas, tariffs, value added taxes (VAT) on imports, restrictions on foreign companies' access to distribution, and restrictions on ownership and investment. These trade restrictions conferred potential competitive advantages on Chinese computer makers. However, most of these regulations have been liberalized in China as part of its process in entering the WTO. **[Evidence for Sequence 1.4]** During the interviews, all the informants from foreign IT companies believed that their companies currently do not have any policy barriers or difficulties in the Chinese market. **[Evidence against Sequence 3.3]**

Prior to its WTO accession, China did not generally permit foreign companies to distribute products through wholesale and retail systems in China or to provide related distribution services, such as repair and maintenance services. During its accession negotiation, China promised to phase out these prohibitions over three years for most products, including those covered by the ITA. However, for wholesaling services and commission agents' services provided by foreign-invested enterprises with respect to goods that they manufacture in China, China did not have to take any further steps to implement its commitments. Joint ventures have had the right to supply wholesaling (and retailing) services for the goods they manufacture in China since the issuance of the Regulations for the Implementation of the Law on Chinese-Foreign Equity Joint Ventures in December 1987. Similarly, wholly foreign-owned enterprises have this same right under the Detailed Rules for the Implementation of the Law on Wholly Foreign-Owned Enterprises, issued by the Ministry of Foreign Trade and Economic Cooperation (MOFTEC) in April 2001. **[Evidence for Sequence 4.2]**

In the past, providing access to technologies developed by state R&D institutions was a key government resource. The local market leader Lenovo was closely affiliated with the Chinese Academy of Sciences. Likewise, Founder was affiliated with Beijing University, and Great Wall was a spin-off of the Ministry of Electronics Industry. However, each of these enterprises was restructured into joint-stock companies and went public on either the Hong Kong or local stock exchange. Despite their status as state-owned or collective enterprises, each is clearly managed in an entrepreneurial, market-oriented manner (Kraemer and Dedrick, 2002). **[Evidence for Sequence 2.1]**

When international competitors complained that Chinese companies such as Lenovo benefited from connections with Chinese government, Lenovo's CEO Yang Yuanqing thought that these criticisms were just not well founded and commented (Spulber, 2004, p.12), "It's because the operations staff of those multinational players in China have no other excuse to report to their bosses overseas."

Exceptions might be in some core technologies encouraged by the government, such as integrated circuits (ICs). China began to encourage the development of China's domestic IC industry through the announcement of discriminatory VAT policies beginning shortly before its WTO accession. Pursuant to a series of measures, China provided for the rebate of a substantial portion of the 17% VAT paid by domestic manufacturers on their locally produced ICs, while China charged the full 17% VAT on imported non-China-designed ICs. **[Evidence for Sequence 1.2]**

The United States initiated the WTO dispute settlement in March 2004 by requesting formal consultations with China. Shortly thereafter, China signaled its willingness to discuss a possible resolution of this matter. A series of bilateral meetings subsequently took place in Washington and Beijing, and in July 2004 a settlement was reached. China agreed to immediately cease adding Chinese IC manufacturers to the list of entities eligible for the VAT rebate and to issue the necessary regulations to eliminate the VAT rebate entirely by 1 November 2004, to be effective no later than 1 April 2005 (USTR, 2004b). **[Evidence for Sequence 1.4]**

4. WTO liberalization

(1) Information Technology Agreement (ITA)

Upon accession to the WTO in December 2001, China agreed to sign the Information Technology Agreement (ITA). This means that China would eliminate tariffs on two-thirds of the products under the ITA by 1 January 2003 and for all the remaining products by 1 January 2005.

Before China became the 58th member of the ITA on 24 April 2003, quotas on all ITA products were eliminated by 2002. In line with the China's tariff reduction implementation schedule, the arithmetical average of customs duties on IT products under the 251 Harmonized System Codes (HS Codes), classified under the electronic products category, has been reduced from 12.47% in 2001 to 3.4% in 2002. Of the 251 HS Codes, 122 have been tariff-free in China since 1 January 2002 (Tsui and Lu, 2002). Examples include computers, laser-jet printers, fax machines, and integrated circuits.

The tariff reduction was continued in 2003 and 2004, on schedule with China's commitment to achieve the elimination of all ITA tariffs by 1 January 2005. China's largest IT products importing country - U.S. exports of ITA goods continued to perform well, as they increased by 45% from January through September 2004 and were projected to exceed US\$ 6 billion by the end of the year (USTR, 2004b).

[Evidence for Sequence 4.2]

However, an interview informant indicated that tariff elimination would not change current market shares by major players, as most IT products have already been produced locally. **[Evidence against Sequence 4.1] [Evidence against Sequence 4.2]**

An informant from the Ministry of Information Industry (MII) said:

The tariff elimination under the ITA will benefit China's IT exports more. China now is an important part of global IT production network and a major IT exporter. Tariff reduction will lower the operating costs of the Chinese IT manufacturers that currently rely on imported electronic components, thus improving the competitiveness of these firms' exports.

(2) Computer and related services

Table 8.2 lists China's WTO commitments relating to computer-related services. Some computer-related services can be undertaken by wholly foreign-owned companies. However, as Mattoo (2003) indicated, this is the one sector where some

China's commitments actually became less liberal than before. In China's 1994 negotiation offers, there were no restrictions on establishment in software implementation, systems and software consulting, and systems analysis. Now, establishment can only take place through joint venture though foreign majority ownership is permitted (Mattoo, 2003).

Table 8.2 Commitments on computer-related services

Computer and related services	Limitations on foreign investment
Consultancy services related to the installation of computer hardware	No restrictions are applicable. Foreign companies can establish joint ventures or wholly owned subsidiaries to provide such services.
Software implementation services <ul style="list-style-type: none"> - Systems and software consulting services - Systems analysis services - Systems design services - Programming services - Systems maintenance services Data processing services <ul style="list-style-type: none"> - Input preparation services 	Providers are allowed to form joint ventures and foreign majority ownership is permitted. Wholly owned subsidiaries are not permitted.
Data processing services <ul style="list-style-type: none"> - Data processing and tabulation services - Time-sharing services 	No restrictions are applicable. Foreign companies can establish joint ventures or wholly owned subsidiaries to provide such services.

Source: Leigh, 2002.

5. Competitive advantages

(1) Foreign company's advantages

International IT companies in China benefit from established global brands, economies of scale, substantial financial resources, access to technology, and relationships with hardware and software providers (Spulber, 2004). During the interviews, all the informants agreed that foreign-brand IT products are more reliable; therefore, these brands would be chosen for key equipment or high-end products.

In addition, although China has emerged as the second largest IT hardware producer in the world behind the United States (USDOC, 2003), it still lacks core technologies for almost all the products it produces. For instance, China is the top producer of mobile handsets, but core chips needed to produce the phones must be imported. The same is true for other products, including DVDs, high-end color TVs, computers, and monitors. Foreign products also monopolize the high-end operating system, high-end server system, database management system, and system networking management software markets. **[Evidence for Sequence 6.2]** Although the government has promulgated policies to encourage the development of ICs and software, China's heavy reliance on imports for high-end chips, parts, and components for most of the electronics and information products is not expected to significantly change for as long as a decade (NCD, 2004).

(2) Domestic company's advantages

A. Prices

Due to the low income levels in China and intense competition among local vendors, Lenovo and other top Chinese brands had substantially undercut imported PCs by around 20%. Some models undercut IBM and Compaq by 30% (Spulber, 2004). **[Evidence for Sequence 2.1]** In 1997 alone, Lenovo lowered its PC prices four times at an average of 15% each time. In 1999, responding to weak domestic

demands, the war of price-cutting to promote sales among domestic PC vendors substantially escalated (Pecht and Liu, 2000). **[Evidence for Sequence 6.1]**

In the field of enterprise resources planning (ERP) systems, the prices of global vendors are significantly more expensive than those of domestic vendors. A SAP or an Oracle application usually costs more than RMB 5 million yuan, while domestic ERP systems cost as little as RMB 700,000 yuan (Liang et al., 2004). Even with their “high-quality” images in China, foreign vendors found it difficult to compete against domestic vendors, especially in the market for small and medium-sized companies. **[Evidence for Sequence 6.1]**

B. Distribution

Lenovo’s growth in China was anchored to its strong domestic distribution network. Lenovo sold through its own retail outlets and about 3,700 distributors and resellers. Given that Chinese consumers required substantial amounts of information about computers, Lenono’s distribution system conferred a distinct competitive advantage. Customers relied on demonstrations and advice from retail sales personnel (Spulber, 2004). **[Evidence for Sequence 6.1]**

Due to previous ownership restrictions in wholesale and retail and limited experience operating distribution channels in China, international enterprises found it hard to distribute their computers in China. **[Evidence for Sequence 3.2]** As a result, foreign entries still rely on local distributors and dealers to sell their products. Establishing joint ventures or strategic alliances with local manufacturers or even competitors is one way to distribute products in China. For example, Lenovo manufactures its own PCs and is also the largest distributor for AST. **[Evidence for Sequence 6.2]**

6. Domestic company’s strategy

The country’s domestic PC makers have grown by focusing on the middle and

lower end of the market and taking market share from foreign vendors and clone makers. Lenovo has become the low-cost PC producer in China, taking advantage of local production costs and low overhead levels to undercut foreign PC makers. In a very price sensitive consumer market, this cost advantage, combined with Lenovo's distribution reach and strong customer service capabilities, are an impossible combination for foreign firms to match (Dedrick and Kraemer, 2001). **[Evidence for Sequence 6.1]**

Domestic companies are trying hard to move to high-end products market as well. For example, China's Langchao has become the leader in server market and Lenovo has targeted the server market (Dedrick and Kraemer, 2001).

The local PC market leader – Lenovo has also adopted a strategy to expand abroad. The company's first step was to change its brand name from Legend to Lenovo. The old brand name of Legend would have posed a barrier to international expansion because other companies in many other countries were already using the name as a registered trademark (Spulber, 2004). In December 2004 Lenovo and IBM announced that the two companies have entered into a long-term strategic alliance. Lenovo bought IBM's PC division. Starting from the date of the acquisition, Lenovo will have five years use of the IBM and "Think" trademarks. As the return, IBM will take an ownership stake of 18.9% in Lenovo (IBM, 2005).

7. Foreign company's entry motivation

The computer industry has long been one of the most global industries. The PC production network took on a global nature almost from the beginning (Dedrick and Kraemer, 2002). In order to tap these emerging supply networks and gain access to foreign markets, IBM and other PC makers began locating assembly plants around the world and sourcing many parts and complete systems from foreign suppliers.

Globalization in the PC industry is driven by two factors (Dedrick and Kraemer, 2002). First is the need to continually cut costs in this highly price-competitive

industry. Second is the desire to reach new markets around the world. This drives PC makers to seek locations that balance direct production costs (mainly labor) with logistics and depreciation costs. It also leads them to locate production either regionally or in some cases, in specific countries, to serve important markets. The result has been the creation of a global production network with a significant amount of local specialization.

By the mid-1990s, a relatively mature global industry structure was in place, with the U.S. specializing in design, advanced components such as microprocessors, software and services, Asia providing much of the hardware manufacturing, and Europe mostly producing hardware, software and services for its own markets (Dedrick and Kraemer, 2002).

For the past two decades, many foreign investors have moved manufacturing including IT production operations to China for both tax and non-tax reasons, favorable political development schemes, and the huge potential market. Another important factor is the comparatively lower operating costs, including, but not limited to labor. **[Evidence for Sequence 5]**

8. Foreign company's strategy

The IT industry has followed the pattern of other technology markets in China, with foreign firms enjoying solid profit margins until domestic firms become competitive, at which time foreign firms abandon the low end of the market and try to move up the ladder to higher value products. **[Evidence for Sequence 7.1] [Evidence for Sequence 7.2]**

Foreign IT firms continuously face challenges from local competitors and have to cut their prices. In 2002, Dell Computer was selling a low-end model on the market for RMB 4,798 yuan (approximately US\$ 586) and cut prices on mid- to high-end models as well in order to gain market share. These price cuts resulted in an increase of 38% in PC units sold over the previous year and an 8% growth in sales in the first

nine months of 2002. Dell's strategy to lower prices has also been countered by Lenovo's 14% price cut on its high-end Tianlin PC to RMB 7,999 yuan (approximately US\$ 976), which underscores the degree of competition in China as Lenovo and the other domestic PC makers maintain the lion's share of the domestic PC market (USDOC, 2003). **[Evidence for Sequence 7.1] [Evidence for Sequence 7.2]**

Competition gets fiercer in high-end products market as well, such as network equipment market. One interview informant said:

Cisco's high-end routers and switches are well recognized in the network equipment industry and it charged extremely high prices in the Chinese market before. But in recent years local manufacturers, such as Huawei, also started to produce high-quality network equipment. Under this pressure, Cisco began to reduce its prices. **[Evidence for Sequence 7.2]**

Besides price reduction, Dell brought its direct-sales business model into China, while IBM is making a worldwide shift toward software and services.

9. Market changes

According to International Data Corporation (IDC), China's market for IT products and services reached US\$ 22 billion in 2002 and is expected to exceed US\$ 40.2 billion by 2006. In 2002, hardware accounted for 73% of the market, followed by packaged software (10%) and IT services (17%) (USDOC, 2003).

Although U.S. companies still dominate much of the high-end hardware market in China's fast-growing computer market – such as high-end servers, printers, routers, and network equipment – their dominance is severely challenged by fledgling local players such as Lenovo. U.S. companies such as IBM and HP and software giants Microsoft, Oracle, Sybase, and BEA keep dominance on China's system software, platform software, applications, and IT consulting services market (NCD, 2004).

(1) Hardware

China's personal computer market, once dominated by foreign firms such as IBM, Compaq and Hewlett-Packard, is now firmly in the grip of domestic firms, most notably Lenovo, which controls over 30% of the fast-growing market (see Table 8.3). Lenovo's success in China has made it the number one PC vendor in the Asia-Pacific (non-Japan) market, according to IDC (see Table 8.4). Dell, which only entered the market in 1998, reached sixth place in 2000 with 3.5% of the market, and has reached 3.9% in 2001.

Table 8.3 Top PC brands and their market share in China

Company	2000	2001
Lenovo (China)	32.7%	30.1%
Founder (China)	10.4%	9.9%
IBM	6.0%	4.8%
Great Wall (China)	5.2%	<3.3%
Dell	3.5%	3.9%
Hewlett-Packard	4.2%	3.3%

Source: Dedrick and Kraemer, 2001.

Table 8.4 Top five PC makers in Asia-Pacific region (excluding Japan) in 2002

Company by rank order	Market share
1. Lenovo (China)	13%
2. Hewlett-Packard	9%
3. IBM	6%
4. Dell	6%
5. Founder (China)	5%

Source: USDOC, 2003.

Multinationals such as IBM, Hewlett-Packard, and Cisco still maintain the market lead in the high-end server or network equipment market, whereas domestic server makers control the middle- to low-end markets.

Table 8.5 shows the trend of China's IT hardware import and export market. Except imports from U.S., all other indicators in the table increased from 2001 to 2002. In 2002, China's IT exports exceeded its imports; and this trend would continue in 2003.

Table 8.5 China's IT hardware import and export market (in US\$ million)

	2001 (actual)	2002 (actual)	2003 (estimated)
Total market size	178,052	215,046	258,055
Total local production	178,028	215,496	258,596
Total exports	5,449	7,845	9,414
Total imports	5,473	7,394	8,873
Imports from U.S.	706	642	706

Source: NCD, 2004.

IT hardware trade between the United States and China nearly tripled between 1998 and 2002. During this period, U.S. exports to China grew much more slowly (2%) than imports from China (34%), leading to a significant U.S. trade deficit with China in this product area. **[Evidence against Sequence 4.2]** China's accession to the WTO will contribute to the increased volume of trade between the two countries as U.S. and Chinese IT suppliers will be able to take advantage of the tariff reductions on certain IT equipment and receive equal legal and regulatory treatment as domestic suppliers (USDOC, 2003).

Because of the import quota elimination and tariff reduction, imports of electronic products to China, especially electronic components, increased significantly in 2002. As a result, the prices in domestic market for electronic components were reduced by

an average 5-8% during the first half of 2002. Unit import prices for some products like computers, monitors, and CD-ROM were also lower than the average level in 2002 (SIC, 2003). **[Evidence for Sequence 7.2]**

(2) Software

Table 8.6 shows the trend of China's software import and export market. Both the total market size and local production increased significantly from 2001 to 2002. During this period, China continued to import more software than it exported.

Table 8.6 China's packaged software import and export market (in US\$ million)

	2001 (actual)	2002 (actual)	2003 (estimate)	2004 (estimate)
Total market size	9,538	13,864	16,635	18,899
Total local production	9,077	13,253	15,903	18,289
Total imports	781	847	954	900
Total exports	320	236	222	290
Imports from U.S.	223	195	198	200

Source: NCD, 2004.

Within the software market, applications software accounted for 64.5% of the total market; middleware accounted for 6.6%; and platform software accounted for 28.9% (NCD, 2004). In line with China's overall rapid development in the IT sector, market competition has become more intense.

For the applications software market, China's domestic products are the fastest-growing segment. Most domestic software developers have focused on developing low-end applications software (e.g., accounting and financial management software), where they have captured 90% of the market. Foreign software companies, such as SAP and Oracle, continue to control the high-end market, such as the customer relationship management (CRM) and supply chain management (SCM)

segments (USDOC, 2003).

For the middleware market, the domestic products and foreign products have an equal share. Foreign products monopolized the system software market. In 2002, foreign products accounted for a 95.3% market share. Foreign products should continue to monopolize the high-end operating system, high-end server system, database management system, and system networking management software markets. These products will continue to be the leading sector in the coming year (NCD, 2004). However, the ITA would hardly have any effects on the import of system software, as one interview informant said:

In the past the nominal import duty for software was 15%, but in reality it was zero; because hardware producers have traditionally bundled software into the hardware as part of the total package to be sold on the market. **[Evidence against Sequence 4.2]**

(3) IT services

The IT services market is underdeveloped in China. According to one informant, two years ago, no one knew what IT services were, but now people see it as a sector with good potential. However, unlike in the U.S. or Europe, where companies such as IBM offers a wide range of services from consulting and system integration to complete outsourcing, China has a very limited range of services and providers.

The interview informants attributed this to the fact that Chinese companies do not like to pay for services. This is partly for lack of trust in outsiders handling critical corporate information. It is also because the cost is considered high, and organizations find it cheaper to hire relatively low-cost engineers and IT professionals and have them handle system integration, customization, and maintenance.

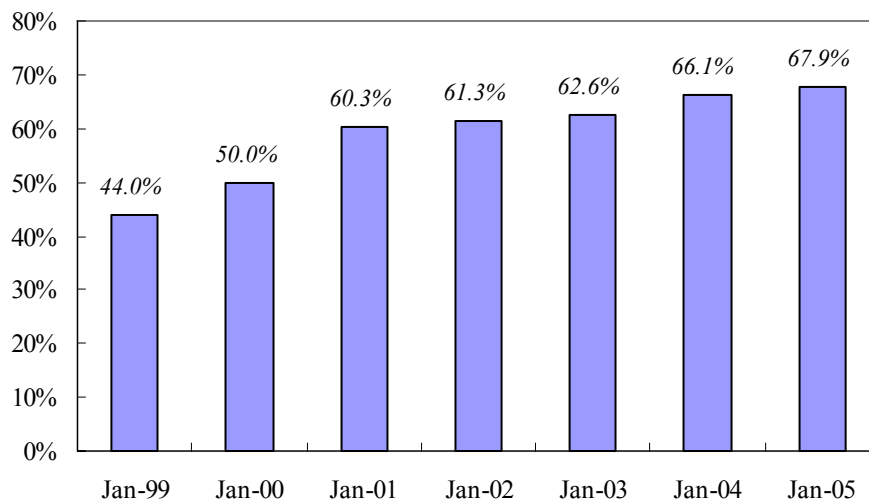
Currently many domestic and foreign companies are competing with one another in the China's IT services market, but most of them are small in size and the market concentration rate is quite low. In 2002 the total market share of the top five IT

service providers was only 8.2%. HP, IBM, and Digital China were the three largest, each with a market share of 3.1%, 3.0%, and 0.7% respectively. Finance and telecommunications are the two major markets for IT services in China (SIC, 2003).

10. Effects on e-commerce diffusion

The International Telecommunication Union (ITU, 2003) statistics show that the overall PC penetration rate in China increased from 1.9 per 100 people in 2001 to 2.76 per 100 people in 2002. However, in the more affluent urban areas the penetration rate is much higher. **[Evidence for Sequence 8.1]**

Figure 8.1 Percentage of users getting online at home



Source: CNNIC, various years.

According to the CNNIC (various years), in 1998 only 44% of users went online at their home. This number went up steadily to 67.9% in 2004 (see Figure 8.1). **[Evidence for Sequence 8.1]** This indicates that the prevalence of home PCs have made more people get access to Internet at home. As analyzed earlier in this chapter, this can be attributed to the rapid development of domestic IT manufacturing industry

and fierce competition in the local market. There is no clear evidence to show that this is related to the implementation of the ITA.

Among the four e-commerce companies interviewed, only one of them outsourced its systems implementation to a local IT company. This corresponds the general IT services market situation introduced above.

11. Sequence analysis of the lower-level model

In developing the lower-level process model (Figure 4.6, Chapter 4, p.111), this section discusses the fourth and the fifth propositions related to the theoretical model for higher-level analysis (Figure 4.5, Chapter 4, p.105): how the WTO commitments can influence the IT sector in China's coastal urban area and help facilitate e-commerce diffusion.

In the previous parts of this section, findings about each theoretical construct of the lower-level model have been discussed. Because the IT sector was opened to foreign companies comparatively long time ago, in describing market changes, the constructs "domestic competition" and "foreign competition" were not clearly distinguished, but they are differentiated in the sequence analysis. Since computer and related services are rather underdeveloped in China, the sequence analysis is focused on the fourth proposition. Table 8.7 shows the results of this analysis. Figure 8.2 illustrates the lower-level model developed from data for the IT sector, leaving only the theoretical constructs and the arrows of supported sequences.

Table 8.7 Sequence analysis for the IT sector

Sequence No.	Support or not	Evidence source
Sequence 1.1	Supported	Document (p.257); Others (p.258)
Sequence 1.2	Supported	Others (p.261)
<u>Sequence 1.3</u>	<u>No evidence found</u>	

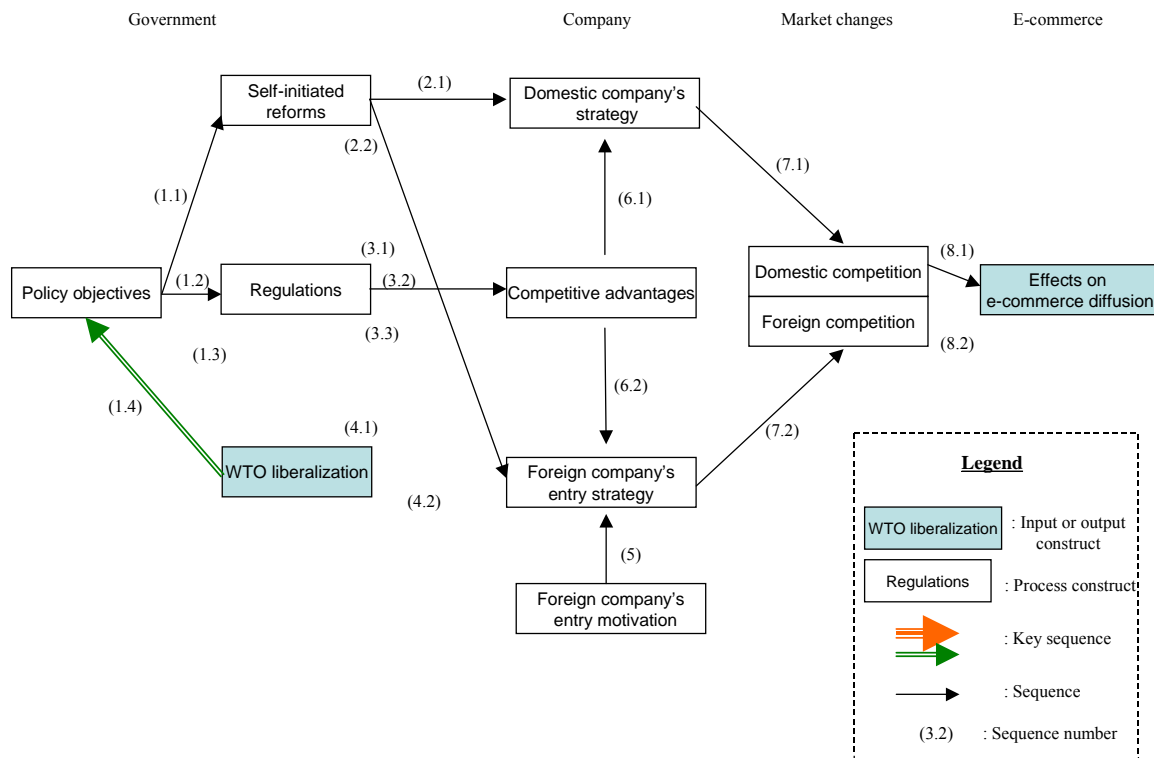
Sequence 1.4	Supported	Document (p.261); Others (p.260)
Sequence 2.1	Supported	Document (p.259; p.260; p.264); Others (p.257)
Sequence 2.2	Supported	Document (p.258; p.259); Others (p.257)
<u>Sequence 3.1</u>	<u>No evidence found</u>	
Sequence 3.2	Supported	Others (p.265)
<u>Sequence 3.3</u>	<u>Negative evidence</u>	Negative evidence: Interview (p.260)
<u>Sequence 4.1</u>	<u>Negative evidence</u>	Negative evidence: Interview (p.257; p.262)
<u>Sequence 4.2</u>	<u>Contradictory evidence</u>	<i>Positive evidence:</i> Document (p.262); Others (p.260); Negative evidence: Document (p.270); Interview (p.257; p.262; p.272)
Sequence 5	Supported	Others (p.267)
Sequence 6.1	Supported	Document (p.265; p.266)
Sequence 6.2	Supported	Others (p.264; p.265)
Sequence 7.1	Supported	Document (p.268); Others (p.267)
Sequence 7.2	Supported	Document (p.268; p.271); Interview (p.268); Others (p.267)
Sequence 8.1	Supported	Archival record (p.273)
<u>Sequence 8.2</u>	<u>No evidence found</u>	

(1) WTO effects

Figure 8.2 shows that, among the three key sequences departing directly from the input construct “WTO liberalization”, only Sequence 1.4 is supported, the other two - Sequence 4.2 and Sequence 4.1 are not supported.

A. Direct WTO effects: “WTO liberalization” → Sequence 4.2 → Sequence 7.2 → Sequence 8.2 → “effects on e-commerce diffusion”

Figure 8.2 The lower-level model for the IT sector



The chain departing from the input construct “WTO liberalization” first with Sequence 4.2 to the output construct “effects on e-commerce diffusion” is defined as direct WTO effects in Chapter 4. It goes across four constructs from “WTO liberalization” first to “foreign company’s entry strategy”, then to “foreign competition”, and finally to “effects on e-commerce diffusion”. If the chain is complete, it should be connected by three process sequences: Sequence 4.2, Sequence 7.2, and Sequence 8.2. However, as Figure 8.2 shows, neither Sequence 4.2 nor Sequence 8.2 is supported. So the causal chain is not supported for the IT sector.

The evidence listed in Table 8.7 gives the reasons why these links are missing. China’s IT industry has been opened to foreign companies for a long time. There are not many differences in the sector before and after China’s WTO accession (**Negative evidence for Sequence 4.2:** interview, p.257). As required by the WTO liberalization, China commits to eliminate all ITA tariffs by 1 January 2005. This has indeed increased some ITA goods import to China (**Evidence for Sequence 4.2:** document,

p.262). However, the tariff reduction is expected to benefit more to China's exports than its imports, as China now is an important part of global IT production network. Most IT products have been produced locally and China is currently a major IT exporter. (**Negative evidence for Sequence 4.2:** document, p.270; interview, p.262) For the past two decades, many foreign investors have moved manufacturing including IT production operations to China for both tax and non-tax reasons, low production costs, and the huge potential market (**Evidence for Sequence 5:** others, p.267). The current situation and foreign companies' strategy in China's IT market is that foreign firms enjoy solid profit margins until domestic firms become competitive, at which time foreign firms abandon the low end of the market and try to move up the ladder to higher value products (**Evidence for Sequence 7.1 and Sequence 7.2:** others, p.267). Thus the entry of foreign companies has neither close relationship with WTO liberalization, nor it has direct influence on e-commerce in China.

B. Indirect WTO effects 1: "WTO liberalization" → Sequence 4.1 → Sequence 7.1 → Sequence 8.1 → "effects on e-commerce diffusion"

The chain departing from the input construct "WTO liberalization" first with Sequence 4.1 to the output construct "effects on e-commerce diffusion" is defined as one link of the indirect WTO effects in Chapter 4. This explanation is not supported as Sequence 4.1 of the chain is not supported.

The evidence listed in Table 8.7 indicates that all the big Chinese IT companies are managed in an entrepreneurial, market-oriented manner and they have grown in a market of intense competition (**Evidence for Sequence 2.1:** document, p.259; p.260). Foreign IT companies currently do not have any policy barriers or difficulties in the Chinese market (**Negative evidence for Sequence 3.3:** interview, p.260). There are not many differences in the sector before and after China's WTO accession (**Negative evidence for Sequence 4.1:** interview, p.257).

C. Indirect WTO effects 2: “WTO liberalization” → Sequence 1.4 → Sequence 1.1 → Sequence 2.1 → Sequence 7.1 → Sequence 8.1 → “effects on e-commerce diffusion”

The other link of indirect WTO effects defined in Chapter 4 is the chain departing from the input construct “WTO liberalization” first with Sequence 1.4 to the output construct “effects on e-commerce diffusion”. It goes across six constructs from “WTO liberalization” first to “policy objectives”, then to “self-initiated reforms”, “domestic company’s strategy”, “domestic competition”, and finally to “effects on e-commerce diffusion”. As Figure 8.2 shows, the whole chain is complete and all its five process sequences – Sequence 1.4, Sequence 1.1, Sequence 2.1, Sequence 7.1, and Sequence 8.1 – are supported. However, before drawing a conclusion, the time order and logic between Sequence 1.4 and Sequence 1.1 need to be examined.

Computer technologies have always been a Chinese government priority (**Evidence for Sequence 1.1:** document, p.257) Since the mid-1980s, the government has focused on promoting production of personal computers (PCs), peripherals, and software, by not only allowing foreign firms into the market but also promoting domestic PC makers (**Evidence for Sequence 2.1:** others, p.257). While the evidence for Sequence 1.4 listed in Table 8.7 indicates that the influence of WTO liberalization happened much later. So the argument for this indirect WTO effects is not supported.

(2) Competing explanation

One competing explanation for e-commerce diffusion appeared from the early discussion of theoretical constructs in this section is the government’s self-initiated reforms. It follows this process chain: “policy objectives” → “self-initiated reforms” → “domestic company’s strategy” → “domestic competition” → “effects on e-commerce diffusion”. Figure 8.2 shows that this link is complete and there is no contradictory evidence against any sequence of this link. So this explanation is supported.

Computer technologies have always been a Chinese government priority

(**Evidence for Sequence 1.1:** document, p.257) Since the mid-1980s, the government has focused on promoting production of personal computers (PCs), peripherals, and software, by not only allowing foreign firms into the market but also promoting domestic PC makers (**Evidence for Sequence 2.1:** others, p.257). Taking advantage of low production costs, China has emerged as the second largest IT hardware producer in the world. Local producers have used a price-cutting strategy to compete with overseas brands (**Evidence for Sequence 7.1:** document, p.268). PC penetration rate has increased. More people get access to Internet at home (**Evidence for Sequence 8.1:** archival records, p.273).

12. Conclusion

This section discusses two propositions related to the IT sector in China. The first one states that implementation of the ITA can improve liberalization of IT product imports and thus help e-commerce diffusion in China's coastal urban area. This proposition is not supported as according to the analysis above, neither direct nor indirect WTO effects is supported.

The second proposition states that the WTO commitments can improve liberalization of computer and related services and thus help e-commerce diffusion in China's coastal urban areas. It is not supported either, as IT services market is rather underdeveloped and few companies would like to outsource their IT services.

II. Intellectual property rights protection

The sixth proposition of the higher-level model states that the WTO commitments can improve intellectual property rights protection and thus help e-commerce diffusion in China's coastal urban areas.

1. Regulation changes

Through a series of dramatic reforms of its intellectual property laws, China now has a complete legislation on intellectual property rights (IPRs) protection. This is in response both to changes in internal preferences and to considerable external pressure (Maskus, 2002).

In the early 1980s China introduced modern laws to protect IPRs in trademarks and patents, and in 1991 promulgated the copyright law. More recently China has legislated in the areas of unfair competition, trade secrets, protection for pharmaceuticals and agrochemicals, computer software, new plant varieties, domain names and electronic publications. The country has also joined nearly all major international IPRs conventions and is a member of international agreements on classification of patents and trademarks and the deposit of microorganisms.

The reasons behind this, as the interview informants indicated, are: on the one hand, an effective IPRs regime is also of strong interest to China as it also protects domestic firms which start to shift to knowledge-based activities; on the other hand, as a developing country with perceived weak protection on IPRs, China has been faced with considerable pressure mounted by the developed countries to upgrade its IPR-related laws and, more importantly, to strengthen the enforcement during the past decade. An informant from the Ministry of Commerce (MOFCOM) mentioned that many of these changes were made as a result of three agreements, each a Memorandum of Understanding, with the United States. Thus, external pressure has been an important impetus for legal change (Maskus, 2002).

Because of these, especially in preparation for its entry into the WTO, China has made significant progress on the legislative end of intellectual property rights. Just prior to China's accession to the WTO at the Doha Ministerial Meeting in November 2001, there remained some differences with standards required by the Agreement on Trade-Related Intellectual Property Rights (TRIPS). Most of these discrepancies arose in the trademark and copyright areas. For this reason, on 27 October 2001 the

People's Congress of China enacted a substantial revision to its trademark and copyright laws to make both consistent with TRIPS obligations (Maskus, 2002).

In 2002, after it had acceded to the WTO, China issued regulations for the trademark law and the copyright law. China also issued various sets of implementing rules covering specific subject areas, such as integrated circuits, computer software and pharmaceuticals. In 2003, China issued several other new measures. In the patent area, the State Council issued the Amendments to the Patent Law Implementing Measures. In the trademark area, the State Administration of Industry and Commerce issued the Rules on the Determination and Protection of Well-Known Trademarks, the Measures on the Implementation of the Madrid Agreement on Trademark International Registration and the Measures on the Registration and Administration of Collective Trademarks and Certification Marks. In the copyright area, the National Copyright Administration of China issued the Measures on the Implementation of Administrative Penalties in Copyright Cases. These regulations and implementing rules have generally been well received as steps toward full compliance with China's TRIPS Agreement obligations (USTR, 2004a).

2. Enforcement

The shortfall in China's intellectual property protection lies not in its legal framework but more in the area of intellectual property rights enforcement.

In its accession agreement with WTO members, China agreed to implement intellectual property laws that are fully consistent with TRIPS. The specific standards it has adopted across the range of intellectual property regimes are largely consistent with what might be recommended for middle-income developing countries with strong innovation potential. However, in some dimensions the new Chinese standards may be overly protective for an economy that remains largely a net importer of new technology and information (Maskus, 2002). As a result, China continues to experience severe enforcement problems.

One interview informant said:

China's IPRs legislation goes too fast; it is beyond the economic development level of China. For a developing country, it cannot afford to enforce IPRs protection too strictly, otherwise it can no longer develop its economy.

An MOFCOM informant commented:

China has made significant progress in its efforts to make its framework of laws, regulations and implementing rules WTO-consistent. Its IPRs legislations is much more complete than most other developing countries. Now the problem is in enforcement.

The difficulty in enforcement is because the legislation has been changed so fast that that it is beyond China's reality. At the present economic development stage in China, there are always some people infringing the IPRs laws. But the laws should not be so strict that the majority people in the country cannot accept them. So what the government is currently doing focuses more on undertaking anti-counterfeiting programs and establishing education and training programs in IPRs.

The central government is under great external pressure now. But IPRs protection is a global issue and China is not the only country facing this problem. There is not any problem in terms of Chinese government's determination. The point here is that IPRs protection should be improved together with economic development level.

Plasmans and Tan (2004) argue that Chinese cultural tradition itself seems to be at odds with providing protection to IPRs, because imitation works of master pieces are regarded as showing respect to the original and an art form in its own. This cultural difference in understanding IPRs has been one of the main obstacles to overcome in improving the public's awareness on IPRs protection.

Victims of IPRs infringement in China complain that weak monetary and civil penalties, delays in administrative and court procedures, and "local protectionism" make enforcement difficult in regional jurisdictions. Maskus (2002) argue that the weak enforcement is due to several structural sources of weak enforcement. First,

trademark infringement and illegal copying remain profitable and face little opposition, especially in rural and inland regions. Second, enterprises engaged in infringement often are important employers and sources of revenue for local governments. Third, low salaries for public officials may reduce their effectiveness as enforcement agents, while administrative programs may be under-funded. Fourth, legal and technical expertise for administrative and judicial operations is limited despite the existence of special training programs in IPRs.

3. IPRs protection in e-commerce

Protection for both online and off-line intellectual property rights has been a top priority for Chinese lawmakers in recent years. Intellectual property legislation is viewed as a vital base for the healthy development of the software industry and audio-video industry, as well as e-commerce. The State Council published China's Directive for Computer Software Protection back in 1991. Relevant laws on copyright protection of online publications and audio-video products have also been published. However, during the interviews, e-commerce company informants mentioned that because of the poor enforcement, IPRs protection was still a concern to them.

In conclusion, with considerable external pressure including WTO requirements, China has made significant progress in IPRs law-making. But the major challenge now is the poor enforcement, which is closely related to the general income and culture of consumers. No explicit evidence could be found supporting the link between IPRs law-making and e-commerce diffusion. Thus the fifth proposition is not supported.

III. Educational services

The seventh proposition of the higher-level model states that the WTO commitments can improve educational services and thus help e-commerce diffusion in China's coastal urban areas.

1. Policy objectives and self-initiated reforms in China's higher education

(1) Overview

The role of higher education in China has been as a mechanism for Maoist political, social and economic modernization from 1949-1978; and as a mechanism for market, social, political and economic reform since 1978 (Turner and Acker, 2002).

Following the establishment of the Peoples' Republic of China in 1949, the university system developed, strongly based on the Soviet Model (Wang, 2000). Private universities were merged with public institutions and universities were charged with carrying out Communist Party policy (Fraser, 2002).

After the decade of the Cultural Revolution (1966-1976) in which virtually all educational activities ground to a halt, universities opened again in the 1970s, initially for workers, peasants, and soldiers or their children. Later in the decade the national examination system was re-instituted and Chinese higher education shifted from red (political criteria) to expert (academic achievement) once again (Mohrman, 2003). The policies and procedures of earlier years resumed – students were assigned to institutions and specific programs by the national government based on exam scores; graduates were assigned by government to lifetime jobs based on performance, social need, and connections.

As the economic sector took the lead in reform since 1978, dramatic changes have taken place in the human resource sector, which is closely related to the higher education system. Since then universities have been heavily influenced by pressures

for modernization and internationalization arising from the new government policies for economic reform and opening to the outside world. Universities were encouraged to expand enrolments and new institutions were established to produce urgently needed new skills and talents for economic reform and modernization. The human resource needs of the socioeconomic development as signaled by labor market supply and demand have become the primary importance to universities.

(2) Private education

There is a gap between supply and demand in education. China has a total of 2.6 million secondary school graduates each year, of which only 1.3 million can enter tertiary institutions. While government investment in education has appeared to be increasingly inadequate, Chinese economists strongly insist that solutions to the above problem lie in the commercialization of education (Rui, 2001). With the phasing out of a planned economy, Chinese higher education has moved toward reforms similar to those in other parts of the world, including a proliferation of non-government-supported institutions of higher education (Postiglione, 2001).

In 1997, the State Council promulgated the Regulations on Running Schools by Social Initiatives, stipulating clearly on the school running and administrative management of private education. China's private education entered a stage of quick development since the Third National Education Conference was held in 1999. In December 2002, the National Congress passed the Law on Promotion of Private Education. The law clearly states the legal status of the private education in the nation's education system, stipulates the policy of encouragement and support as well as the management of private education.

Up to now, there are 214 private institutions of higher education (13.8% of the total) that grant academic qualification certificates independently, and 1,104 other private tertiary private higher education institutions (Wang, 2004).

(3) Chinese-foreign cooperation in education

Educational collaborations and exchanges with foreign countries is a significant part of China's opening up policy. Sending students to study abroad came from the strategic decision of later senior leader Deng Xiaoping.

Since 1978, the Chinese government has been encouraging importation of high-quality educational resources of various kinds from foreign countries to provide educational services in China. These educational resources include education concepts, capital, management, talent people and teaching materials, etc.

As early as the 1980s, efforts were being made by several leading universities in China to provide various training courses and programs on economics, international law, and foreign languages in cooperation with U.S. universities. By the beginning of the 1990s, many Chinese higher education institutions were beginning to undertake various joint programs in cooperation with foreign partners. The Ministry of Education (MOE) issued an Interim Provisions for Chinese-Foreign Cooperation in Running Schools in January 1995.

2. WTO liberalization

On entering the WTO, China made partial commitments for educational services that it would open the service trade to the outside world under certain conditions and in a step-by-step way. The commitments China made for educational services are as follows (Zhou and Shi, 2003):

(1) No limitations for market access and national treatment in mode of consumption abroad, which means China takes no measures to confine its citizens to study or receive training abroad. China's consistent principle with regard to studying abroad was stressed again in the schedule, i.e. "support study abroad, encourage returning to homeland, free to come and go."

(2) Joint schools will be established, with foreign majority ownership permitted.

(3) Teachers are expected to have the following qualifications: possession of bachelor's degree or above and an appropriate professional title or certificate, with two years' professional experiences.

(4) Services of compulsory education and special education (military, police, political and party school education) are excluded.

(5) Made no commitments for market access and national treatment in mode of cross-border supply.

(6) Schools or other educational institutions established independently by foreign institutions will not be permitted.

In March 2003, the State Council promulgated the Regulations on Chinese-Foreign Cooperation in Running Schools. In June 2004, the MOE promulgated its detailed implementation rules. With a basic principle of opening wider to the outside world and introducing more high-quality foreign educational resources, the regulations and its detailed rules explicate all the preferential policies for private schools stated by the Law on Promotion of Private Education.

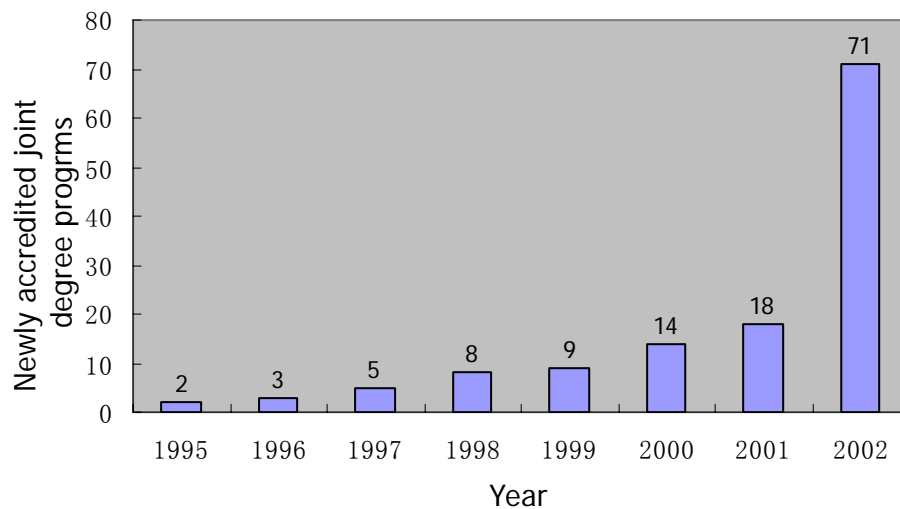
3. Market changes

Chinese-foreign joint educational programs increased sharply after China's accession to the WTO. In 2002 (the first full year after WTO entry) alone about 71 Chinese-foreign joint degree programs were newly authorized by the MOE (Fraser, 2003), several times over the previous year (see Figure 8.3).

The WTO entry means that at some point Chinese universities and colleges will face increasing competition from foreign institutions. With limited funding for higher education from central government, there is real enthusiasm for academic collaborations between Chinese and foreign universities. The hope is that these new hybrid programs can enhance quality, raise standards to international levels, and also ease the enormous demand for spaces that are being placed on traditional universities (Mohrman, 2003).

By the end of 2002, there had been 712 Chinese-foreign joint degree or non-degree programs (In 1995, there were only more than 70) (MOE, 2004). In terms of specialty, these projects were distributed in management of business administration (36%), foreign language and culture study (19%), information technology (13%), economics (10%), and art (5%).

Figure 8.3 Newly accredited joint degree programs from 1995 to 2002



Source: Huang, 2003 and Fraser, 2003.

However, presently some problems exist in Chinese-foreign cooperation in education, such as: quality of the programs is far from satisfactory; the setting of specialty is irrational; lack of high-quality resources and capital; imbalanced geographical distribution; some institutions seek only the maximum of economic benefits; and overcharging (Wang, 2004).

4. IT training

The enrollment in higher education increased rapidly after 1998. Total enrollment in Chinese universities had by 2002 reached more than 9 million and continues to

increase. More than one third of all university students study engineering and including science students the share is close to 40%. Thus, Chinese universities will in the predictable future every year graduate at least one million students in science and engineering, the latter with a focus on electronics (Sigurdson, 2004).

Due to the outflow of its IT talents and other problems, the development of China's software industry is still seriously handicapped by manpower shortages. As an indication of its IT aspirations, the Chinese government and domestic software firms have offered many training program to increase its homegrown talents. Currently, there are more than 400,000 students in the 400 or so Chinese universities that offer courses on software engineering. To further cultivate internationally competent IT professionals, and to meet the country's economic needs for global competition, China's Ministry of Education and the State Development Planning Commission in December 2001 approved the establishment of software schools in 35 universities throughout the country. To alleviate the problem of shortages, the MII has also planned to build around 100 bases for the purpose of training software talents in the next two to three years (Wong and Kong, 2004).

Chinese-foreign joint programs and investments from Chinese or foreign software enterprises are also encouraged. For example, in March 2002, the software college attached to Chinese Academy of Sciences was founded. The college cooperates with the Carnegie Melone University of the U.S. In 1997, NITT, the largest IT training company of India, co-held a training center with Pudong Continuing Education Center of Shanghai. The graduates are welcomed by the enterprises. In March 2002, NITT set up another joint training center in Beijing, introducing curricula system and management model accredited by ISO 9000 (Zhou and Shi, 2003).

5. Effects on e-commerce diffusion

Human resource remains a problem for e-commerce diffusion in China. The CCID reports (2002; 2003) found "finding staff with e-commerce expertise" was

quoted by Chinese enterprises as the No. 2 barrier to e-commerce diffusion in China for two consecutive years from 2001 to 2002.

The CNNIC surveys started to ask non-users why they didn't use Internet from July 2002. Table 8.8 shows that "don't know computer" has been the most important reason for not using Internet over the years. This indicates that IT knowledge and training is still a major barrier to e-commerce diffusion in China, even after educational services have been opened up after the WTO accession.

Table 8.8 Reasons for not using Internet by non-users

	Jan-05	Jan-04	Jan-03	July-02
Don't know computer	40.1%	37.7%	40.8%	41.1%
No equipment	23.1%	21.3%	27.7%	24.3%
It's useless	16.1%	14.8%	7.3%	5.9%
Have no time	15.9%	14.3%	18.7%	19.7%
Cost a lot	10.5%	5.6%	5.9%	6.6%
Have no interest	7.2%	4.5%	7.4%	8.0%
Too old or young	7.0%	6.8%	10.0%	Not available
No particular reasons	3.4%	11.5%	6.7%	2.8%

Source: CNNIC, various years.

In conclusion, China made partial commitments for educational services on entering the WTO. This has increased sharply Chinese-foreign joint educational programs, including IT training programs. But because of the quality of the programs and outflow of IT talents, human resource remains a problem for e-commerce diffusion.

IV. Taxation on e-commerce

The eighth proposition of the higher-level model states that the WTO commitments can restrain the imposition of duties on e-commerce and thus help e-commerce diffusion in China's coastal urban area.

China has not yet developed full tax regulations for e-commerce. The present tax regulations do not explicitly state how to tax economic activity on the Internet. In July 2000, the Chinese government appointed a task force to look into the possibility of imposing taxes on electronic transactions in an effort to boost the government's finances. At the time, China's chief tax official had indicated that tax exemptions for e-commerce were draining potential revenue from the country (USDOC, 2003). However, despite that announcement, China has refrained from imposing duties on e-commerce.

An MOFCOM informant said:

China haven't got a clear policy direction on e-commerce laws and regulations yet. The current position is to nurture a legal environment conducive to e-commerce development.

China will likely continue this policy, at least in the short term, while its "informatization" efforts proceed and while it seeks to implement WTO compatible laws and trade practices. Thus this proposition is supported.

V. Business desire

The ninth proposition states that the WTO commitments can liberalize foreign trading rights. The desire and pressure to compete globally increase e-commerce adoption in China's coastal urban areas. This proposition came first from the interview with a B2B e-commerce company informant. He argued that this is the most

important effect on China's e-commerce development after the WTO accession:

The WTO accession has helped the diffusion of e-commerce among small- and medium-sized enterprises by integrating them more closely with the global economy. In the past, they only concentrated on the domestic market, but now they need to consider how to expand to the market abroad. The liberalization of foreign trade rights make them for the first time feel that they have the right, the possibility, and the opportunity to enter the global market, which is completely different from the processing trade they experienced before. The Internet provides unprecedented opportunities for innovative SMEs as it provides adequate tools to communicate and interact globally. This has driven many companies to use the Internet to establish business-to-business (B2B) transactions. Compared with traditional marketing methods such as attending business fairs and exhibitions, the cost of using Internet means nothing to them.

Table 8.9 Comparison of plans to adopt e-commerce by different size of Chinese enterprises in 2001 and 2002 CCID surveys

Enterprise size	Within 1 year		In 2-3 years		In 3-5 years		No plan	
	2001	2002	2001	2002	2001	2002	2001	2002
Large	15.8%	35.6%	33.8%	23.7%	27.1%	25.6%	23.3%	15.1%
Medium	13.9%	32.7%	31.7%	31.7%	20.6%	25.0%	33.9%	10.6%
Small	11.5%	24.7%	29.1%	27.9%	20.0%	21.2%	39.4%	26.2%

Source: CCID, 2002; 2003.

His argument is supported by the CCID (2002; 2003) survey results. According to the surveys, the percentage of Chinese enterprises that plan to adopt e-commerce increased sharply from 2001 to 2002. The rates of enterprises saying that they would like to adopt e-commerce within one year in 2002 for large, medium or small-sized companies were over twice of those in 2001. Meanwhile, the number of companies saying that they had no plan to use e-commerce was significantly reduced from 2001 to 2002 (see Table 8.9). CCID (2003) attributes this to the government's efforts in promoting the "Enterprise Go Online" project, but most of the interview informants

thought this was because that more business opportunities were offered to and increasing competitive pressure was felt by Chinese enterprises after the WTO entry. Their argument is supported by the CRITO Global E-commerce survey results (Tan and Ouyang, 2004), as market expansion is considered a much stronger e-commerce adoption driver by Chinese enterprises than government-provided incentives.

VI. Summary

This chapter discusses the remaining propositions related with the higher-level model: Information Technology Agreement (ITA), computer and related services, intellectual property rights (IPRs) protection, educational services, taxation of e-commerce, and business desire.

Using Pawson and Tilley's (1997) formula "mechanism (M) + context (C) = outcome (O)" in realist evaluation, Table 8.10 summarizes the discussion. No clear effect can be found on the impact of ITA on e-commerce diffusion in China's coastal urban area. The development of domestic IT industry explains more for the increased PC penetration rate. No effect has been found in computer and related services, IPRs protection, and educational services, either. However, WTO commitments do have positive impacts on e-commerce diffusion in terms of taxation and business desire.

Table 8.10 WTO and e-commerce – other topics

	Mechanisms	Contexts	Outcomes	
			Effects on the sector	Effects on e-commerce
Information Technology Agreement (ITA)	Under the ITA, China commits to eliminate tariffs on two-thirds of the products under the ITA by 1 January 2003 and for all the remaining products by 1 January 2005. Quotas on all ITA products also need to be eliminated.	<p>1. China has adopted favorable policies to both the IT industry and IT use since 1980s. Trade barriers, including import duties had been continuously reduced in the 1990s to encourage IT diffusion.</p> <p>2. For the past two decades, many foreign investors have moved IT production operations to China to take advantage of low production costs and the local market.</p> <p>3. Although the nominal import duty for system software was 15% before</p>	China's export of IT products exceeded its import. Imports of electronic components increased.	No clear effect.

		WTO accession, in reality it was zero.		
<i>Competing explanation for PC penetration increase (Development of domestic IT industry)</i>	<i>China has emerged as the second largest IT hardware producer in the world. Local producers have used a price-cutting strategy to compete with overseas brands.</i>	<i>1. PC is a highly price-competitive industry. 2. China is a price sensitive consumer market.</i>	<i>Domestic firms dominate the PC market. Foreign brands have to cut their prices to compete in the market.</i>	<i>PC penetration rate has increased. More people get access to Internet at home.</i>
Computer and related services	Foreign firms are allowed to form joint ventures and foreign majority ownership is permitted. Some services can be undertaken by wholly foreign-owned companies.	Chinese companies don't like to pay for services.	IT services market is still underdeveloped in China.	No effect.
Intellectual property rights protection	In preparation for its entry into the WTO, China has made significant progress on the legislative end of intellectual property rights.	Intellectual property rights enforcement in China is weak.	Limited effects.	No effect.

Educational services	Joint schools will be established, with foreign majority ownership permitted. Services of compulsory education and special education are excluded.	1. Quality of the programs is not satisfactory; the setting of specialty is irrational; some institutions seek only the maximum of economic benefits. 2. Outflow of IT talents.	Chinese-foreign joint degree or non-degree programs increased sharply.	No effect.
Taxation on e-commerce	The WTO ministers approved a temporary duty-free moratorium on electronically delivered transactions.	China is nurturing a legal environment conducive to e-commerce development.		China has refrained from imposing duties on e-commerce.
Business desire	Foreign trading rights are liberalized by the WTO entry. Chinese enterprises have the opportunity to expand to overseas market.	More competitive pressure felt by Chinese enterprises.		More enterprises plan to adopt e-commerce.

Chapter 9 E-commerce diffusion

The previous four chapters focus on a lower level analysis and model – how WTO commitments can affect individual sectors related to, and different aspects of, e-commerce. This chapter moves to a higher level of analysis – the overall effects of WTO commitments on e-commerce diffusion.

Pawson and Tilley (1997) propose a formula “mechanism (M) + context (C) = outcome (O)” for causal explanation in realist evaluation. This chapter first gives a summary of the mechanisms analyzed in the previous four chapters, then examines the contextual conditions and outcomes of e-commerce diffusion, and finally draws a conclusion about the overall WTO effects on e-commerce.

I. Mechanisms

Developing countries need to address a number of socio-economic and regulatory hurdles before their rates of electronic commerce use match those of the United States, Europe, or Japan. While the socio-economic challenges are difficult to surmount and will be slower to achieve, the path to reducing regulatory barriers is clearer and the benefits quicker to observe (Mann, 2001).

High Internet connection rates, low penetration of electronic means of payment (such as credit or debit cards), and cumbersome delivery systems are some of the primary obstacles to the growth of electronic commerce in these countries. Trade and investment liberalization play an important role in facilitating access to the infrastructure, goods and services necessary for e-commerce by encouraging the availability of affordable telecommunication, financial, delivery and other services (OECD, 2001a).

Table 9.1 is a summary of the investigation undertaken in the previous four chapters on how the WTO commitments can affect individual sectors related to and different aspects of e-commerce. They are stated as nine propositions in Chapter 4. The WTO commitments may have direct (entry of foreign companies) or indirect effects (competitive pressure on domestic companies and the pressure on the government to reform) on infrastructure service sectors related to e-commerce. Indirect WTO effects are found in these sectors such as telecommunications, banking, and logistics and express delivery services. No clear effects can be found in hardware and software, computer and related services, intellectual property rights protection, and educational services. In addition, the WTO commitments boost enterprises' desire to adopt e-commerce and restrain the government from imposing duties on e-commerce.

This forms the mechanism part of the overall evaluation process of WTO impacts on e-commerce diffusion. However, as literature indicates, the diffusion of e-commerce is an evolutionary, path-dependent process affected by a wide range of socio-economic environmental factors (Rogers, 1995; Kraemer et al., 1992; Musmann and Kennedy, 1989; Kautz and Priesheje, 1996). Besides the above-mentioned factors, there are other contextual conditions need to be considered.

Table 9.1 Mechanisms of the effects of WTO commitments on e-commerce diffusion in China's coastal urban area

Proposition No.	E-commerce aspects	Relevant WTO rules	Generative mechanisms	Outcomes in each aspect
Proposition 1	Telecommunication services	GATS, the Reference Paper	China commits to progressively liberalize telecommunication services upon accession to the WTO. In basic services, foreign service providers may hold 49% of equity share by 2007. In value-added and paging services, foreign service suppliers may hold 50% by 2003. To prepare for the forthcoming international competition, China has adopted a thorough reform to foster a fair competition market and improve the competence of domestic operators.	Indirect effects (pressure to reform the telecommunications industry). The percentage of users getting disappointed by access cost has decreased. More users satisfied with Internet speed.
Proposition 2	Banking services	GATS	The WTO commitments require that China open up its financial services on equal terms to foreign banks by 2006. The competitive advantages and disadvantages decide that credit card business and Internet banking are foreign banks' priority services in retail banking business. The entry of foreign banks exerts great competitive pressure on Chinese banks, forcing them to be more market-oriented and profit-seeking. Retail banking services, including bankcard business, have become the new profit-growth area.	Indirect effects (competitive pressure on domestic banks). Adoption of online payment has increased steadily.
Proposition 3	Logistics and express delivery services	GATS	China commits to open up the whole logistical chain of related services. Courier services, except for those currently specifically reserved to Chinese postal authorities by law, within one year after	Indirect effects (competitive pressure on China Post). Adoption of EMS as delivery

			China's accession, foreign majority ownership will be permitted; within four years after China's accession, foreign service suppliers will be permitted to establish wholly foreign-owned subsidiaries. The entry of foreign companies exerts great competitive pressure on China Post.	method has increased.
Proposition 4	Hardware and software	ITA	Under the ITA, China commits to eliminate tariffs on two-thirds of the products under the ITA by 1 January 2003 and for all the remaining products by 1 January 2005. Quotas on all ITA products also need to be eliminated.	No clear effect
Proposition 5	Computer and related services	GATS	Foreign companies are allowed to form joint ventures and foreign majority ownership is permitted. Some services can be undertaken by wholly foreign-owned companies.	No effect
Proposition 6	Intellectual property rights protection	TRIPS	In preparation for its entry into the WTO, China has made significant progress on the legislative end of intellectual property rights.	No effect
Proposition 7	Educational services	GATS	Chinese-foreign joint schools will be established, with foreign majority ownership permitted. Services of compulsory education and special education are excluded.	No effect
Proposition 8	Taxation on e-commerce	Ministerial declarations	The WTO ministers approved a temporary duty-free moratorium on electronically delivered transactions.	China has refrained from imposing duties on e-commerce.
Proposition 9	Business desire		Foreign trading rights are liberalized by the WTO entry. Chinese enterprises have the opportunity to expand to overseas market.	More enterprises plan to adopt e-commerce.

II. Contexts

Five major issues are identified by the analytical framework in Chapter 2 and the higher-level model in Chapter 4 as essential conditions for e-commerce diffusion at the societal level: information infrastructure, commercial services, trust, legal and regulatory frameworks, and social and cultural issues. The mechanisms part in the previous section mainly covers the first two issues. During the interviews, the majority of informants believed that while all the five issues were essential to e-commerce diffusion, trust, legal and regulatory frameworks, and social and cultural issues were at the moment more important in the coastal urban area in China.

Their views are supported by published survey data. From the demand side of e-commerce, the CNNIC surveys (various years) find that trust-related issues – “quality of products, after sale services and credit of the producer cannot be guaranteed”, “security cannot be guaranteed”, and “unreliable information” – are currently perceived as the major obstacles for online purchase in China. Meanwhile, the feeling of inconvenience in making online payment has been eased continuously and substantially; delivery has also been improved (see Table 9.2). It indicates that while the barriers in infrastructure services are easier to overcome, it is difficult to overcome the obstacle of trust.

Table 9.2 Primary obstacles of online purchase

(% indicating a significant obstacle; NA: not available; “*”: years using multiple choices)

Barriers	1998* January	1999* January	2000 January	2001 January	2002 January	2003 January	2004 January	2005 January
Quality of products, after sale services and credit of the producer cannot be guaranteed	46.1%	57%	36.54%	32.03%	30.2%	39.3%	42.1%	42.4%
Security cannot be guaranteed	62%	65%	27.64%	31.20%	31.0%	23.4%	28.1%	34.3%
Unreliable information	NA	NA	NA	5.91%	6.3%	6.4%	6.7%	7.3%
Late delivery	NA	NA	9.26%	9.86%	13.9%	8.6%	7.5%	5.3%
Unattractive price	NA	NA	7.78%	7.39%	6.3%	10.8%	7.5%	5.2%
Inconvenient payment methods	44.5%	50%	17.68%	12.59%	11.8%	10.8%	7.4%	5.1%
Others	NA	NA	1.10%	1.02%	0.5%	0.7%	0.7%	0.4%

Source: CNNIC, various years.

From the supply side, both the 2001 and the 2002 CCID reports find that Chinese enterprises consider “inadequate social environment” and “finding staff with e-commerce expertise” as their major obstacles in adopting e-commerce (see Table 9.3). “Inadequate social environment” covers a broad range of issues such as business laws, e-commerce regulations, certification, credit system, logistics, and taxation (CCID, 2002). The CRITO Global E-commerce Survey (Tan and Ouyang, 2004) identifies, more specifically, “inadequate legal protection for Internet purchases”, “business laws do not support e-commerce”, and “concern about privacy of data or security issues” as the top three barriers to e-commerce diffusion among Chinese enterprises (see Table 9.4).

Table 9.3 Supply side barriers to e-commerce diffusion
(% indicating a significant obstacle)

Barriers	2001	2002
Inadequate social environment	32.8%	30.3%
Finding staff with e-commerce expertise	30.4%	27.1%
Waiting for management decision	28.3%	23.4%
Short of funds	17.3%	21.3%
Inadequate IS infrastructure	21.5%	17.9%
Not necessary	18.6%	15.6%
Not clear about benefits from e-commerce	13.7%	11.2%

Source: CCID, 2002; 2003.

All these show that the soft environment – trust, legal and regulatory frameworks, and social and cultural issues – rather than the actual components of e-commerce, currently impose more difficulties to e-commerce development in China’s coastal urban area.

Table 9.4 Barriers/difficulties to e-commerce diffusion for Chinese enterprises

	Total		Establishment size		Sector		
	China	Global	SME	Large	Manufacturing	Wholesale /Retail	Banking /Insurance
% indicating a significant obstacle							
Inadequate legal protection for Internet purchases	54.5	34.1	55.7	49.1	52.4	56.7	54.5
Concern about privacy of data or security issues	45.3	44.2	45.4	44.7	51.5	36.9	72.6
Business laws do not support e-commerce	40.8	24.2	40.8	40.4	36.6	43.5	57.0
Customers do not use the technology	32.6	31.4	33.6	27.8	35.2	29.8	34.2
Level of ability to use the Internet as part of business	31.1	24.8	31.8	27.9	35.4	27.7	21.0
strategy need for face-to-face customer interaction	30.6	33.8	31.0	28.3	27.2	34.0	28.7
Prevalence of credit card use in the country	30.2	20.3	32.1	20.5	29.1	31.5	27.2
Costs of implementing an e-commerce site	28.6	33.6	27.3	35.4	34.3	23.1	28.2
Making needed organizational changes	22.4	23.9	22.2	23.1	21.2	22.7	33.6
Cost of Internet access	21.9	15.1	22.6	18.7	17.4	26.8	15.5
Finding staff with e-commerce expertise	19.7	26.5	21.9	9.2	21.6	18.2	14.4
Taxation of Internet sales	19.1	16.5	19.9	15.6	18.9	19.2	21.8

Source: Tan and Ouyang, 2004.

1. Trust

The interview informants see lack of confidence in electronic transactions as the main barrier to e-commerce diffusion in China's coastal urban area. Because there are few appropriate redress mechanisms available in the event of a problem, many Chinese consumers do not have confidence in the merchants they are dealing with and the products they are going to buy. This worry is further intensified in the online environment by issues such as security, certification, and privacy protection.

(1) Trust in products and merchants

In China, an abundance of counterfeit and low-quality products are already on the market. In addition, some of China's e-commerce vendors cannot provide the services that customers are expecting: reduced prices, usually lower than those found in conventional stores; 24-hour, 7 days per week service; reliable delivery systems; a better selection of products; and a no-risk return policy. Consequently, many Chinese enterprises and consumers are skeptical of the price and quality of online products, as well as of the promises regarding post-sales service and the reputation of online retailers.

China's post-sales service is poor or non-existent, the legal protection of consumers is inadequate and there is virtually no credible consumer movement. Consequently, Chinese consumers prefer to shop online for small commodities that are relatively inexpensive, low-risk and do not require post-sales service. Most consumers want to see and touch to ensure product quality prior to purchase. Lack of mutual confidence is why most Chinese consumers do not favor online payment but prefer the cash-on-delivery method so that they can check the quality of the goods before paying.

What hinders the development of full-fledged B2B e-commerce in China is the large amount of accounts receivable and the non-performing loans between

companies. The uneasy relations between industry and commerce make that the only way for commercial corporations to pay back manufacturers after they actually sell products (UNCTAD, 2001). This circumstance makes the advantages of online purchase and payment systems irrelevant. Most enterprises are used to becoming trust-based partners and doing business only after engaging in face-to-face discussions, visiting the factory and inspecting product samples.

To establish conditions of trust, it is necessary to create a legal and regulatory environment that defines standard norms of e-commerce practice. But unfortunately, the government's efforts in this regard so far are not satisfactory.

(2) Security

Security is one of the top concerns for Chinese Internet users. This is in part because China's overall technical and legal environment is too weak to effectively fight fraud.

Although government departments attach great importance to the security of information systems, in practice network operators suffer from insufficient budgets. Moreover, considerable security problems remain in certain industries. For example, some computer networks use open operating systems with low security, making them vulnerable to hackers. The information systems of some industries were developed entirely without security safeguards. Because security has lagged behind systems development, some national communications network equipment has not been tested. In financial services, some units' security systems are primitive and unprotected (UNCTAD, 2001).

(3) Certification

So far China has yet to settle upon an official national model for managing digital certification and identification. The central government has lagged behind in developing policy on certificate authorization (CA), while several provincial

governments have moved ahead. No national law exists governing the nationwide CA system and its credibility. However, local governments in Beijing, Shanghai, Tianjin and Guangzhou have published their local policies to implement CA within their own administrative territories (Tan and Ouyang, 2002).

(4) Privacy

Although privacy has been one of the major concerns for e-commerce diffusion in many nations, it has not so far been on the list of major concerns among Chinese consumers, based on various surveys. This could be related to Chinese culture where privacy is neither highly valued nor well respected (Tan and Ouyang, 2002). In the near future, policy and regulations regarding privacy are not likely to be developed and published. Privacy might be a potential issue for e-commerce diffusion in the long run as consumers become more concerned about safeguarding their personal information.

2. Legal and regulatory frameworks

China has yet to develop a legal framework conducive to the rapid growth of electronic commerce. One e-commerce company informant said:

It's like that we are playing a soccer game without any rules. We don't know which of our moves would be penalized, nor whether our next goal would be counted.

In spite of China's rapid development of Internet infrastructure, sharp growth of Internet users, large increase of bandwidth, and promulgation of laws and regulations concerning the Internet, up to date there is not a single piece of law or ordinance that truly aims at promoting e-commerce development. On the one hand it is because e-commerce develops too fast for management stability; on the other hand, the

emerging e-commerce imposes significant changes to and impinges on traditional industries, and it is hard to make “rules of game” that are satisfactory to both sides, so there is a lack of stable protective measures for e-commerce.

In many economies, the challenge of fitting e-commerce within a legal infrastructure is largely a matter of making old laws governing traditional commerce compatible with e-commerce. That often entails merely dropping the word “paper” or adding the words “or electronic equivalent” to an existing law or regulation. In China, those old laws often do not exist. Important areas need wholly new legislation to facilitate the e-commerce market – or a traditional market, for that matter. Business-to-consumer e-commerce requires attention to protecting consumer welfare and interests, something that has not gotten as much attention as producer interests in China. Consumer protection law is in its infancy in China, and has a long way to go before it is able to handle many potentially common online commercial crimes. Still more work is needed to ensure adequate enforcement (Rosen, 1999).

The new Contract Law that came into effect on 1 October 1999 represents a significant reform of contract law principles. The reform most relevant to the development of e-commerce is the fact that the Contract Law specifically allows for electronic contracting. Article 10 of the Contract Law permits contracts to be made in written or other form, and Article 11 specifically defines “written form” to include electronic data text, including electronic data interchange and e-mail, that can tangibly represent the content of the contract. Article 16 of the Contract Law also specifically provides that, where a contract is concluded through the exchange of electronically transmitted documents, a contract offer is effective when it reaches the offeree’s system. However, there are no provisions in the law governing electronic signatures and dispute resolution online. The Electronic Signature Law has just been promulgated and put into effect from April 2005.

One interview informant from the MOFCOM attributed this slowness in formulating e-commerce laws and regulations to the lack of a clear regulator on e-commerce within the government. E-commerce has emerged as a new and dynamic field in the world, including in China. Many policy and regulatory issues fall into the

overlapping territories of multiple traditional policy agencies. Another interview informant said:

The Chinese government hasn't got any formal plan for e-commerce. There are many ministries in Beijing. That means many quarrels. The MII, the MOFCOM, and others have different plans for e-commerce. The Beijing local government also has its own plan. It is difficult for all of them to sit on the same bench. It needs time.

3. Social and cultural issues

One B2C e-commerce company informant argued:

The biggest challenge is how to make consumers know about and try e-commerce. Their first online shopping experience is very important.

A B2B e-commerce company informant held the same opinion:

The most important thing is to make consumers and enterprises use e-commerce. What our company is doing is to find their demand and form this as their habit. So long as using e-commerce has become their habit, I don't worry about payment, delivery and other infrastructure issues.

However, that expectation seems still needs some time and efforts to come true. Chinese culture does not condemn piracy and copying, and legal infrastructure is not sophisticated or organized enough to deal with some illegal activities, especially fraud. Understanding and experiencing these societal characteristics have made Chinese consumers cynical and reinforced a transaction mechanism where customer can see and check the product and the seller can get paid in cash, without any ambiguities or collection problems that may accompany credit based payment systems (Efendioglu and Yip, 2004).

The success of doing business in China depends heavily on the quality and

sometimes the quantity of personal relationships or “guanxi” in Chinese. For the Chinese, a strong individual relationship and long term association between the parties provide a sense of community and enhances social bonding. The lack of personal relationships and contacts or the much-cherished “guanxi” in online commerce has been a hindrance to the development of B2B e-commerce. Most companies do not like the idea of conducting business with new partners without any personal contact, given the lack of corporate and credit information.

Lack of human resources is another socio-cultural barrier to e-commerce diffusion in China. This has been indicated in several surveys and discussed previously in Chapter 8. The promotion of e-commerce can be only achieved by educating people at different levels about the Internet and e-commerce technology and resources. According to the MII, China lacks a professional IT workforce, and only 12.5% and 6.25% of workers in the information industry are software and hardware engineers respectively. Enterprise computerization is also still in the initial phase (UNCTAD, 2001).

III. Outcomes

Critical realism calls both causal explanation and for the evidence to show that each entity or event is an instance of that explanation (Miles and Huberman, 1994).

To evaluate the impacts of WTO commitments on e-commerce diffusion, it is necessary to have a look at the process of e-commerce development in China. An interview informant from one of the largest B2B e-commerce companies in China summarized it into three stages:

The first stage, from 1998 to 1999, was the bubble period of e-commerce. With the introduction of venture capital and promotion of the e-commerce concept, right after its birth in China in 1998, e-commerce experienced its first development peak time in 1999. Enterprises started to establish their websites and the Internet became a

new battlefield for competition.

The second stage between 2000 and mid-2001 was the winter for e-commerce. The e-commerce bubble burst in 2000. The number of e-commerce websites decreased due to their inability to make profits and lack of further venture capital. According to Wei (2003), there were 1,665 B2C e-commerce websites at the beginning of 2000; the number was reduced to about 1,300 at the end of the same year.

The third stage, from mid-2001 to now, is the recovery period of e-commerce. After the burst of the bubble, e-commerce companies in China have adopted a pragmatic way of running their business and started to make profits since the second half of 2001.

Due to data availability, most of the following analysis can only be based on the figures from 2000 to 2002. As China became an official WTO member in December 2001, the data for 2002 is the only available evidence to show direct WTO effects, if there are any. This has relatively limited the results of the analysis. This may also constitute a contextual condition contributing to the evaluation outcomes.

1. B2C e-commerce

Table 9.5 B2C e-commerce websites in China

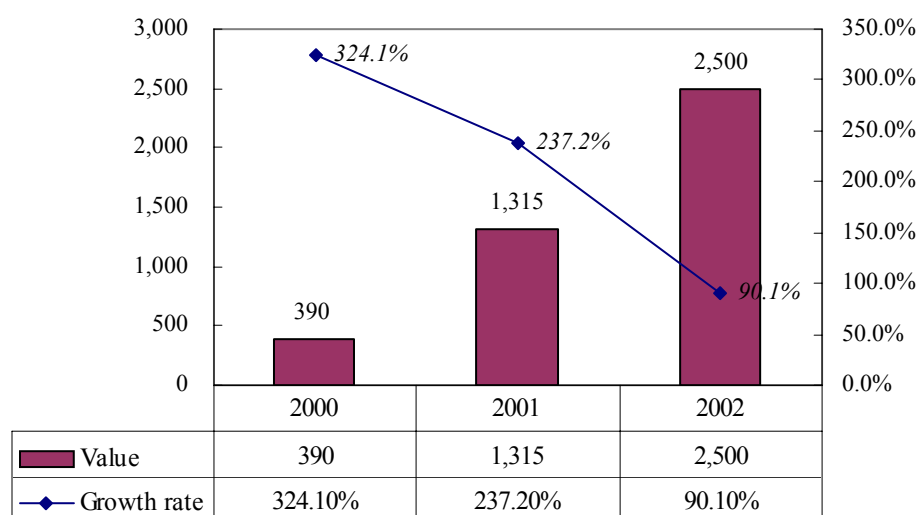
Year	Total B2C websites	Websites in active operation
2001	2,056	659
2002	2,277	737

Source: CCID, 2003.

In 2002 there were totally 2,277 B2C e-commerce websites in China, up 10.7% from the number in 2001 (CCID, 2003). Among them, 737 B2C websites were in active operation (see Table 9.5). Compared with the number of websites, the total B2C transaction value increased sharply from RMB 390 million yuan in 2000 to RMB 2.5

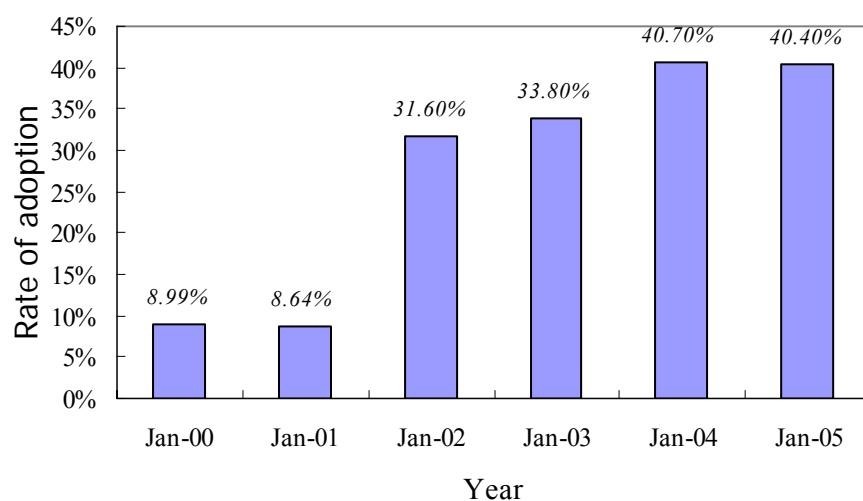
billion yuan in 2002. However, the growth rate declined from 324.1% in 2000 to 90.1% in 2002 (see Figure 9.1). No significant change can be observed between the value in 2001 and that in 2002, the first year after China's WTO accession.

Figure 9.1 B2C transaction value from 2000 to 2002 (in RMB million yuan)



Source: CCID, 2003.

Figure 9.2 Rate of online shopping adoption by Internet users



Source: CNNIC, various years.

The CNNIC surveys have a question asking Internet users - “have you ever purchased goods or services through online shopping websites in the most recent 12 months?” According to this indicator (see Figure 9.2), the rate of online shopping adoption increased sharply from 8.64% in 2000 (the January 2001 figure) to 31.6% in 2001 (the January 2002 figure). As China became a WTO member in December 2001, this increase cannot reasonably be attributed to China’s WTO membership. In 2003 the online shopping adoption rate experienced another significant increase to 40.7% (the January 2004 figure) from 33.8% in the previous year (the January 2003 figure). According to MOFCOM (2004), the Severe Acute Respiratory Syndrome (SARS) attack played an important role in this.

2. B2B e-commerce

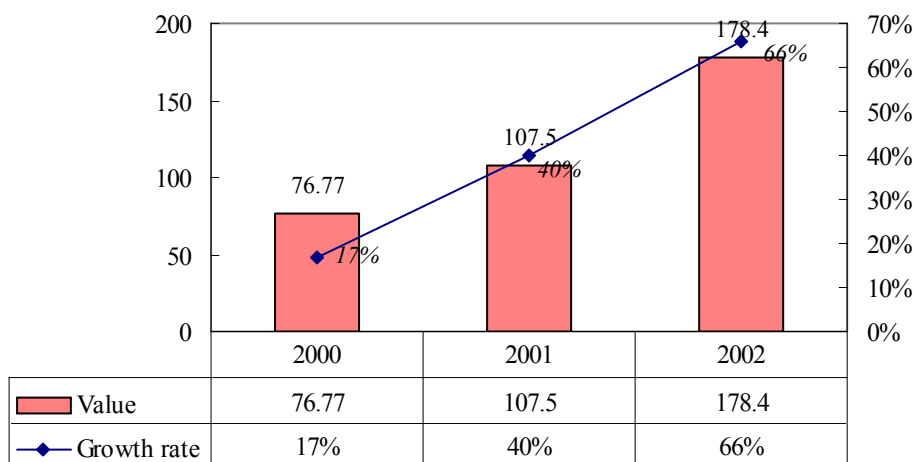
In 2002 there were, in total, 1,527 B2B e-commerce websites in China, up 13.5% from the number in 2001. Among them, 796 B2B websites were in active operation (see Table 9.6). The total B2B transaction value increased from RMB 76.77 billion yuan in 2000 to RMB 178.4 billion yuan in 2002 (see Figure 9.3). The growth rate of 66% in 2002 was higher than that in 2000 or 2001, but it is hard to tell whether it was because of the recovery of the e-commerce sector or the WTO entry.

Table 9.6 B2B e-commerce websites in China

Year	Total B2B websites	Websites in active operation
2001	1,345	667
2002	1,527	796

Source: CCID, 2003.

Figure 9.3 B2B transaction value from 2000 to 2002 (in RMB billion yuan)



Source: CCID, 2003.

Table 9.7 Comparison of plans to adopt e-commerce by different size of Chinese enterprises in 2001 and 2002 CCID surveys

Enterprise size	Within 1 year		In 2-3 years		In 3-5 years		No plan	
	2001	2002	2001	2002	2001	2002	2001	2002
Large	15.8%	35.6%	33.8%	23.7%	27.1%	25.6%	23.3%	15.1%
Medium	13.9%	32.7%	31.7%	31.7%	20.6%	25.0%	33.9%	10.6%
Small	11.5%	24.7%	29.1%	27.9%	20.0%	21.2%	39.4%	26.2%

Source: CCID, 2002; 2003.

CCID (2003) reports that 26.1% of Chinese enterprises participated in e-commerce in 2002, up 3.8% from that in 2001. However, as discussed in Chapter 8, there is one indicator – business desire that shows the WTO commitments have had a strong impact on e-commerce diffusion in China. The percentage of Chinese enterprises that plan to adopt e-commerce increased sharply from 2001 to 2002. The numbers of enterprises saying that they would like to adopt e-commerce within one year in 2002 for large, medium or small-sized companies were over twice of those in 2001. Meanwhile, the number of companies saying that they had no plan to use

e-commerce was significantly reduced from 2001 to 2002 (see Table 9.7).

IV. Summary and conclusion

In investigating the contextual conditions for e-commerce diffusion, this chapter gives an answer to the first research question: what are the essential conditions for e-commerce diffusion in China's coastal urban area? It is found that while all the five pre-identified issues from literature are essential to e-commerce diffusion, trust, legal and regulatory frameworks, and social and cultural issues are at the moment more important in the coastal urban area in China.

To answer the second research question, by combining the examination of generative mechanisms, contextual conditions and outcomes of e-commerce diffusion, this chapter gives a higher level of analysis on the overall effects of WTO commitments on e-commerce diffusion. It is summarized in Table 9.8 following Pawson and Tilley's (1997) formula "mechanism (M) + context (C) = outcome (O)" in realist evaluation.

Both B2C and B2B websites and transaction value experienced rapid growth during the period from 2000 to 2002. The percentage of Internet users adopting e-commerce increased significantly from 2001. This can be on the one hand attributed to the e-commerce sector recovery from 2001 and the SARS epidemic that occurred in 2003. But the fact that trust, legal and regulatory frameworks, and social and cultural issues have become the main barriers to e-commerce in China's coastal urban area shows that information infrastructure and commercial services have indeed improved. The WTO commitments are found to have at least indirect effects on improvement in telecommunication, banking, and logistics and delivery services. In addition, the WTO commitments have also directly boosted Chinese enterprises' interest in e-commerce adoption and positively affected the taxation policy on e-commerce.

Table 9.8 Overall effects of WTO commitments on e-commerce diffusion

Mechanisms	Contexts	Outcomes
<p>Trade and investment liberalization enforced by WTO commitments could help facilitate access to the infrastructure, goods and services necessary for e-commerce by encouraging the availability of affordable telecommunication, financial, delivery and other services.</p> <p>The WTO commitments may have direct (entry of foreign companies) or indirect effects (competitive pressure on domestic companies and the pressure on the government to reform) on infrastructural sectors related to e-commerce. Indirect WTO effects are found in these sectors such as telecommunications, banking, and logistics and express delivery services. No clear effects can be found in hardware and software, computer and related services, intellectual property rights protection, and educational services. In addition, the WTO commitments boost enterprises' desire to adopt e-commerce and restrain the imposition of duties on e-commerce (Details see Table 9.1).</p>	<p>1. Trust, legal and regulatory frameworks, and social and cultural issues now are more important factors for e-commerce diffusion in China's coastal urban area. They are the main barriers to e-commerce.</p> <p>2. E-commerce in China recovered from 2001 and experienced a rapid growth during the SARS period in 2003.</p>	<p>Both B2C and B2B websites and transaction value experienced rapid growth during the period from 2000 to 2002. The percentage of Internet users adopting e-commerce increased significantly from 2001. The WTO commitments also boosted Chinese enterprises' interest in e-commerce adoption.</p>

Chapter 10 Evaluation

Lee et al. (1995) made a call “to discuss explicitly the criteria for judging qualitative, case and interpretive research in information systems” (p.367).

As suggested in Chapter 3, this Chapter first assesses the quality of the thesis against the conventional criteria for judging the rigor of inquiries including: internal validity, external validity, reliability, and objectivity (Cook and Campbell, 1979; Guba and Lincoln, 1989; Miles and Huberman, 1994; Yin, 1994). Next the thesis is evaluated against the six quality criteria proposed by Healy and Perry (2000) for judging validity and reliability of qualitative research within the realism paradigm.

I. Conventional criteria for judging the rigor of inquiries

Typically, the conventional criteria for judging the rigor of inquiries include internal validity, external validity or generalizability, reliability, and objectivity (Cook and Campbell, 1979; Guba and Lincoln, 1989; Miles and Huberman, 1994; Yin, 1994). Within varying conceptions of quality, the notions of validity, reliability, objectivity, and generalization are often given key importance. The meanings attributed to these concepts, and how people view their applicability or otherwise to qualitative research, vary extensively (Spencer et al., 2003).

Mays and Pope (2000) suggest that quality in qualitative research can be assessed with the same broad concepts of validity and relevance used for quantitative research, but the means of assessment may be modified to take account of the distinctive goals of qualitative research. The development of Lincoln and Guba’s (1985) parallel criteria is one of the most widely discussed contributions in this respect.

As Table 10.1 shows, these criteria address parallel concerns to the concepts of validity, reliability and objectivity which dominate debates about criteria in

quantitative research. So, the traditional concept of *internal validity*, which Lincoln and Guba (1985) translate as truth value, is replaced by the concept of *credibility* – whether or not the participants studied find the account true. *External validity*, or the extent to which findings are more generally applicable, is replaced by fittingness or *transferability*, which is based on the idea that accounts may be transferable to other specified settings through the provision of thick description about both the sending and the receiving contexts (rather than on a notion of context-free generalizations). *Reliability*, or the consistency of findings, is replaced by the notion of *dependability*, which is achieved through an auditing process called an “audit trail”, in which the researcher documents methods and decisions, and assesses the effects of research strategies (rather than being concerned about replication). Finally, *objectivity*, or a concern with neutrality, is replaced by *confirmability* – the extent to which findings are qualitatively confirmable through the analysis being grounded in the data and through examination of the “audit trail” (Spencer et al., 2003).

Table 10.1 Lincoln and Guba’s parallel criteria

Aspect	Scientific term	Naturalistic term
Truth value	Internal validity	Credibility
Applicability	External validity or generalizability	Transferability
Consistency	Reliability	Dependability
Neutrality	Objectivity	Confirmability

Source: Spencer et al., 2003 (p.40) on the basis of Guba and Lincoln, 1981 and Lincoln and Guba, 1985.

In setting practical standards for judging the quality of conclusions in qualitative studies, Miles and Huberman (1994) also pair the traditional terms with those proposed as more viable alternatives for assessing the “trustworthiness” and “authenticity” of naturalistic research (Guba and Lincoln, 1981; Lincoln, 1990; Lincoln and Guba, 1985): internal validity/ credibility/ authenticity; external validity/

transferability/ fittingness; reliability/ dependability/ auditability; and objectivity/ confirmability.

Flick (2002) argues that this equation or connection of alternative and traditional criteria makes clear that attempts to reformulate criteria for qualitative research do not really lead to new solutions. Rather, “the problems with traditional criteria derived from different backgrounds have to be discussed for alternative criteria as well” (Flick, 2002, p.235).

1. Internal validity/Credibility /Authenticity

Internal validity is defined conventionally within the positivist paradigm as the extent to which variations in an outcome or dependent variable can be attributed to controlled variation in an independent variable (Lincoln and Guba, 1985, p.290); or as Cook and Campbell (1979, p.37) put it, the “approximate validity with which we infer that a relationship between two variables is causal or that the absence of a relationship implies the absence of cause.” Assessing internal validity is the central means for ascertaining the “truth value” of a given inquiry, that is, the extent to which it establishes how things really are and really work (Guba and Lincoln, 1989).

According to Lincoln and Guba (1985), the technique of triangulation is one mode of improving the probability that findings and interpretations will be found credible. Denzin (1978) suggests that four different modes of triangulation exist: the use of multiple and different sources, methods, investigators, and theories. The first of these has been used in this thesis to improve internal validity. As mentioned in Chapter 3, a major strength of case study data collection is the opportunity to use many different sources of evidence (Yin, 2003). Any finding or conclusion in a case study is likely to be much more convincing and accurate if it is based on several different sources of information, following a corroboratory mode. Three of the six evidence sources identified by Yin (1984; 1994; 2003) in case studies have been mainly used in this thesis: interviews, documents, and archival records. During the data collection and analysis process, phrases such as “no report was credited unless it

could be verified by another person” or “the information forthcoming in interviews was discounted unless it could be checked in the available documents” (Lincoln and Guba, 1985, p.305) often came up to triangulate findings.

The second means adopted by this thesis to increase internal validity is the use of quotations (i.e. participants’ own words) juxtaposed with the writer’s description and interpretation. Fossey et al. (2002) suggest that this way helps the reader to evaluate the authenticity of the researcher’s claims about the data.

Evidence that different, or competing views were listened to, as well as evidence of dialogue among those views in the report, also suggests openness on the researcher’s part to the possibility of different views and an effort to explore and represent them (Fossey et al., 2002). This tactic is defined as “addressing rival explanations” by Yin (2003, p.36) or “negative case analysis” by Lincoln and Guba (1985, p.309). As illustrated in Chapter 4, in this thesis, due attention has been paid to accommodating rival (alternative, or competing) explanations (Yin, 2003; Miles and Huberman, 1994) in developing both the higher-level and the lower-level models. Rival theories were examined during the literature review and establishment of the conceptual framework. Alternative views were obtained from a wide range of interview informants and were wrestled with during the development of the models. Many of the competing explanations have been proved to be commingled rivals rather than direct rivals.

2. External validity/Transferability/Fittingness

External validity can be defined (positivistically) as “the approximate validity with which we infer that the presumed causal relationship can be generalized to and across alternate measures of the cause and effect and across different types of persons, settings and times” (Cook and Campbell, 1979, p.37). External validity has as its purpose a response to the applicability (or generalizability) question: “How can one determine the extent to which the findings of a particular inquiry have applicability in other contexts or with other subjects?” (Cook and Campbell, 1979, p.37) In

qualitative research, where sampling decisions have not been made on statistical grounds, one suggestion is that researchers talk in terms of the transferability, rather than generalizability, of findings (Lincoln and Guba, 1985).

Generalization in qualitative research usually takes place through the development of a theory that not only makes sense of the particular persons or situations studied, but also shows how the same process, in different situations, can lead to different results (Becker, 1990). Generalizability is normally based on the assumption that this theory may be useful in making sense of similar persons or situations, rather than on an explicit sampling process and the drawing of conclusions about a specified population through statistical inference (Yin, 1984).

As with other qualitative research, theoretical or analytical generalization is appropriate to case study research, where the research results are used to develop theory or test previously developed theory (Yin, 1994; 2003; Cavaye, 1996; Darker et al., 1998; Eisenhardt, 1989). Walsham (1995) identifies four possible types of generalizations for case study research: development of concepts, generation of theory, drawing of specific implications, and contribution of rich insight. Punch (1998) explains the first two in more detail. To conceptualize means that, “on the basis of the disciplined study of a case, and using methods for analysis which focus on conceptualizing rather than on describing, the researcher develops one or more new concepts to explain some aspect of what has been studied”. To develop propositions means that, “based on the case studied, the researcher puts forward one or more propositions which link concepts or factors within the case” (Punch, 1998, p.154).

Every case that can be studied is in some respects unique. But every case is also, in some respects, similar to other cases. The question is whether we want to focus on what is unique about a particular case, or on what is common with other cases. Developing abstract concepts and propositions raises the analysis above simple description, and in this way a case study can contribute potentially generalizable findings (Punch, 1998).

The key issue for qualitative sampling is “how to focus, strategically and meaningfully, rather than how to represent” (Mason, 2002, p.136). As explained in

Chapter 1 and Chapter 3, “China’s coastal urban area” serves as an information-rich case and a critical case. While studying one critical case does not technically permit broad generalizations to all possible cases, logical generalization can often be made from the weight of evidence produced in studying a single, critical case (Patton, 1990).

As summarized in Chapter 4, in answering the research question, this thesis has developed two process models: one at the higher level of analysis, the other at the lower level. The higher-level model is composed of nine propositions. The lower-level model is comprised of 11 theoretical concepts and the links between these concepts – 18 sequences. The theories developed from this thesis can be arguably generalized initially to a developing country or its region with similar conditions as China’s coastal urban area. However, as Strauss and Corbin (1990) indicate, when conditions change, the theoretical formulation will have to change to meet new conditions. Therefore, the findings of this study should be viewed as exploratory in nature and the theory and implications only tentatively generalized until further studies are conducted.

3. Reliability/Dependability/Auditability

Reliability (in positivist terms) responds to questions about the consistency of a given inquiry and is typically a precondition for validity, because a study that is unreliable cannot possess validity (Lincoln and Guba, 1985, p.292). Reliability refers to a given study’s (or instrument’s) consistency, predictability, dependability, stability, and/or accuracy, and the establishment of reliability for a given study typically rests on replication, assuming that every repetition of the same, or equivalent, instruments to the same phenomena will yield similar measurements (Guba and Lincoln, 1989).

The general way of approaching the reliability problem is to make as many steps as operational as possible and to conduct research as if someone were always looking over one’s shoulder (Yin, 2003). In accounting and bookkeeping, one is always aware that any calculations must be capable of being audited. In this sense, an auditor is also

performing a reliability check and must be able to produce the same results if the same procedures are followed. The same technique can be used in qualitative research and it is known as the “inquiry audit” (Lincoln and Guba, 1985; Guba and Lincoln, 1989).

Yin (2003) mentions that one prerequisite for allowing other investigators to repeat an earlier case study is to document the procedures followed in the earlier case. In this thesis, two specific documentation tactics suggested by Yin (2003) have been adopted to deal with reliability: one is the use of a case study protocol (interview guide, see Appendix A, p.371); the other is the development of a case study database (case record), which is composed of interview transcripts, survey data, and documents.

4. Objectivity/Confirmability

Objectivity responds to the positivist demand for neutrality, and requires a demonstration that a given inquiry is free of bias, values, and/or prejudice. Confirmability is thought of as parallel to the conventional criterion of objectivity. Like objectivity, confirmability is concerned with assuring that data, interpretations, and outcomes of inquiries are rooted in contexts and persons apart from the evaluator and are not simply figments of the evaluator’s imagination (Guba and Lincoln, 1989).

The major technique for establishing confirmability is the “confirmability audit” (Lincoln and Guba, 1985). Unlike the conventional paradigm, which roots its assurances of objectivity in method – that is, follow the process correctly and the researcher will have findings that are divorced from the values, motives, biases, or political persuasions of the inquirer – the assurances of integrity of the findings in qualitative research are rooted in the data itself (Guba and Lincoln, 1989). This means that data can be tracked to their sources, and that the logic used to assemble the interpretations into structurally coherent and corroborating wholes is both explicit and implicit in the narrative of a case study. Thus both the “raw products” and the “processes used to compress them”, as Cronbach and Suppes (1969) put it, are

available to be inspected and confirmed by outside reviewers of the study.

As suggested by Miles and Huberman (1994), this thesis has explicitly described in its various chapters: the study's general methods and procedures; how data were collected, processed, and analyzed for conclusion drawing; and how competing explanations were considered. These have contributed to answers to the relevant queries about the objectivity/confirmability of the study.

II. Criteria for judging validity and reliability of qualitative research within the realism paradigm

Healy and Perry (2000) make an attempt to assess quality within realism's own world-view and they propose six criteria to judge validity and reliability of qualitative research within the realism paradigm: ontological appropriateness, contingent validity, multiple perceptions about a single reality, methodological trustworthiness, analytic generalization, and construct validity.

1. Ontological appropriateness

The ontology of realism assumes that the research is dealing with complex social phenomena involving reflective people (Healy and Perry, 2000). In Popper's terms, this reality is World 3 (See Table 10.2), which consists of the independent creations of minds or living creatures, that is, it is "the world of ideas, art, science, language, ethics, institutions ..." (Magee, 1985, p.61).

This thesis aims to investigate how WTO commitments can affect e-commerce diffusion in China's coastal urban area. It is about interactions between the formal institutions of WTO rules and the informal institutions of China's social and cultural contexts (North, 1990; Zhang, 2001), and relationships among different players within China's social and economic system. This reality is clearly of the type suggested by Healy and Perry (2000).

Table 10.2 Popper's World 1, 2, and 3

World 1	An objective world of material things
World 2	A subjective world of minds
World 3	A world of objective structures which are the products, not necessarily intentional, of minds or living creatures; but which, once produced, exist independently of them

Source: Created by the author, on the basis of Magee, 1985.

2. Contingent validity

In positivistic research, internal validity is achieved by the extent to which changes in a dependent variable can be attributed to controlled variation in an independent variable (Lincoln and Guba, 1985). By contrast, realist research deals with open fuzzy boundary systems (Bhaskar, 1979). Rather than nomothetic, direct cause and effect paths, realism research discovers knowledge of the real world by naming and describing broad, generative mechanisms that operate in the world (Bhaskar, 1979; Perry et al., 1999). Thus, realist research has a “contingent validity” criterion; that is, “the validity about generative mechanisms and the contexts that make them contingent” (Healy and Perry, 2000, p.122).

As suggested by Healy and Perry (2000), this thesis tries to meet this criterion by concentrating on why things happened and not just describing them, ensuring that information was obtained from appropriate, information-rich sources (Patton, 1990), and describing the context of the case. As the summary table in each data-analysis chapter (Chapter 5-9) shows, the conclusions of this thesis were drawn by considering not only the generative mechanisms, but also the contextual conditions.

3. Multiple perceptions about a single reality

Realism is neither value-laden nor value-free; rather, realist researchers are value-aware (Healy and Perry, 2000). That is, realists accept that there is a real world to discover even if it is only imperfectly and probabilistically apprehensible (Guba and Lincoln, 1994). In other words, realists consider there is only one reality although several perceptions of that reality must be triangulated to obtain a better picture of it (Perry, et al., 1999).

As discussed previously in this chapter, the mode of triangulation adopted in this thesis is the use of multiple and different sources.

4. Methodological trustworthiness

This criterion is very similar to the concept of reliability of the conventional criteria, since Healy and Perry (2000) define it as “the extent to which the research can be audited by developing a case study database and by the use of quotations in the written report” (p.123).

Both of the two techniques mentioned by Healy and Perry (2000) have been used in this thesis.

5. Analytic generalization

This is the same as Yin’s (2003) “analytic generalization”. Healy and Perry (2000) give it the name “theory-building”. “Given the complexity of realism’s world, realist research must be primarily theory-building, rather than the testing of the applicability of a theory to a population, which is the primary concern of positivism. Realist researchers do not say this theory-testing should not be done, they merely say that the theory has to be built, and confirmed or disconfirmed, before its generalizability to a population is tested.” (Healy and Perry, 2000, p.123)

In this thesis, an initial conceptual framework was built on the basis of the literature review. It was then expanded and confirmed by data collected from the field (Miles and Huberman, 1994) before a final theory came into being. Two process

models were built: one at the higher-level analysis, the other at the lower level.

6. Construct validity

This is similar to the construct validity of positivistic research and refers to information about how well the constructs in the theory built are “measured” in the research (Healy and Perry, 2000).

In this thesis, Table 4.3 (Chapter 4, pp.112-118) describes how the themes in the lower-level model have been found by presenting some sample quotes from interview respondents or documentary sources. The constructs of the lower-level analysis model are clearly defined in the code list (see Table 4.4, Chapter 4, p.119). The constructs of the higher-level analysis model were developed from a literature survey; how these constructs were categorized was also explicitly described. Furthermore, as mentioned above, a case study database and triangulation were also used to increase construct validity (Healy and Perry, 2000).

III. Summary

Two sets of principles are suggested in evaluating the credibility of the thesis: (1) conventional criteria for judging the rigor of inquiries; and (2) criteria for judging validity and reliability of qualitative research within the realism paradigm. This chapter demonstrates that the thesis satisfies both criteria.

Chapter 11 Conclusions

This chapter offers concluding discussion and summary comments on the thesis. It first presents the study's findings in terms of the thesis's research questions. Contributions and implications of the work for researchers, policy-makers, and practitioners are then drawn. Finally, limitations of the study and potential areas for further work are presented.

I. Research questions revisited

Motivated by the argument that the liberalization commitments made at the WTO will have a major impact on e-commerce development, this research aims to investigate the relationship between WTO commitments and e-commerce diffusion in developing countries by using China's coastal urban area as a case study. The general research questions are: what are the essential conditions for e-commerce diffusion in China's coastal urban area? How can the WTO commitments influence the liberalization of e-commerce-related sectors and thus help the diffusion of e-commerce in this area?

Question 1

The first research question asks: what are the essential conditions for e-commerce diffusion in China's coastal urban area?

Key informant interview and survey data were collected to answer this question. Five major issues are identified by the analytical framework in Chapter 2 and the higher-level model in Chapter 4 as essential conditions for e-commerce diffusion at the societal level: information infrastructure, commercial services, trust, legal and

regulatory frameworks, and social and cultural issues. During the interviews, the majority of informants believed that while all the five issues were essential to e-commerce diffusion, nevertheless trust, legal and regulatory frameworks, and social and cultural issues were at the moment more important in the coastal urban area in China. Their views are supported by results of all three published surveys: the CNNIC surveys (various years) on consumers, the CCID reports (2002; 2003) and CRITO Global E-commerce Survey (Tan and Ouyang, 2004) on Chinese enterprises.

Question 2

The second research question asks: how can the WTO commitments influence the liberalization of e-commerce-related sectors and thus help the diffusion of e-commerce in this area?

In answering this question, the thesis has developed two theoretical models: one at a higher-level analysis, the other at a lower level. The model at the lower level focuses on the single process of how the WTO commitments can affect an individual infrastructural sector related to e-commerce. It was developed as a result of analyzing the four most important e-commerce input sectors: telecommunications, banking, logistics and express delivery, and IT. The model at the higher level is a network combining the processes at the lower level, examining the overall effects of WTO commitments on e-commerce diffusion. Nine propositions were made from the higher-level model (see Table 11.1).

Table 11.1 Nine propositions related to the higher-level model

Proposition No.	Proposition content	Outcome
1	The WTO commitments can improve liberalization in telecommunication services and thus help e-commerce diffusion in China's coastal urban area.	Partly supported (Indirect effects)

2	The WTO commitments can improve liberalization in banking services and thus help e-commerce diffusion in China's coastal urban area.	Partly supported (Indirect effects)
3	The WTO commitments can improve liberalization in logistics and express delivery services and thus help e-commerce diffusion in China's coastal urban area.	Partly supported (Indirect effects)
4	Implementation of the ITA can improve liberalization of IT products importation and thus help e-commerce diffusion in China's coastal urban area.	Not supported (No clear effect)
5	The WTO commitments can improve liberalization of computer and related services and thus help e-commerce diffusion in China's coastal urban area.	Not supported (No effect)
6	The WTO commitments can improve intellectual property rights protection and thus help e-commerce diffusion in China's coastal urban area.	Not supported (No effect)
7	The WTO commitments can improve liberalization of educational services and thus help e-commerce diffusion in China's coastal urban area.	Not supported (No effect)
8	The WTO commitments can restrain the imposition of duties on e-commerce and thus help e-commerce diffusion in China's coastal urban area.	Supported
9	The WTO commitments can liberalize foreign	Supported

	trading rights. So the desire and pressure to compete globally increase e-commerce adoption in China's costal urban area.	
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Conclusions can be drawn from outcomes in verifying these nine propositions. The WTO commitments may have direct (entry of foreign companies) or indirect effects (competitive pressure on domestic companies and the pressure on the government to reform) on infrastructural sectors related to e-commerce. Among the nine propositions, two are supported, three are partly supported (indirect effects), and four are not supported. The WTO commitments have been found to have indirect effects on liberalization in telecommunications, banking, and logistics and express delivery services. Improvements in these sectors have made information infrastructure and commercial services less important barriers to e-commerce than other issues. In addition, the WTO commitments have directly boosted Chinese enterprises' interest in e-commerce adoption and positively affected the taxation policy on e-commerce. All these have positively influenced e-commerce diffusion in China. Effects of the WTO commitments on IT product imports, computer and related services, IPRs protection, and educational services have not been evident.

II. Contributions of the research

Although some valuable contributions have been made to our knowledge on the topic of the relevance of the WTO agreements to e-commerce diffusion, currently, the actual process of how the influence can be materialized is far from understood. Previous studies mainly focus on examination of existing WTO rules in the context of e-commerce. But the discussions in these studies are only at the theoretical level and their arguments have not been applied and examined in any specific case.

This thesis is the first research investigating these arguments in a real situation by

using China's coastal urban area as a case study. It contributes to our knowledge by having developed two process models in explaining the impacts of the WTO commitments on e-commerce diffusion. The model at the lower level focuses on the single process of how WTO commitments can affect an individual infrastructural sector related to e-commerce; it arguably includes all the relevant players and factors involved in this process and thus clearly show the interactions between the external pressure from multilateral agreements and internal forces of domestic institutions. The model at the higher-level model is a network combining the processes at the lower level, examining the overall effects of WTO commitments on e-commerce diffusion; it includes not only the environmental factors relevant to the WTO, but also other contextual factors affecting e-commerce diffusion.

III. Research implications

While there are several limitations in this study, the findings of the thesis have implications for both research and practice.

1. Implications for research

This research has two implications for researchers:

First, unlike prior studies on the WTO and e-commerce, this research not only examines which WTO rules are relevant to e-commerce development, but also the actual process of how the impacts of these rules can be materialized one step after another, or blocked at a certain stage.

This point is very important in investigating implementation of multilateral agreements. In North's (1990) new institutional economics, institutions consist of formal rules, such as constitutions, laws, regulations, property rights; and informal constraints, such as sanctions, conventions, and codes of conduct. Formal and

informal institutions collectively influence organizational governance. In the context of the WTO, the rules-of-law specified by the WTO, as an external institution to member states, influences members' domestic regulatory institutions and the liberalization of service sectors to some extent, but the actual impacts may diverge significantly, contingent on institutional endowments of the host countries and the regulatory stances adopted (Zhang, 2001). Only by focusing on the process, can research clearly show the interactions between the external pressure from multilateral agreements and internal forces of domestic institutions.

Second, for social phenomena the invariant relationship between antecedents and outcomes assumed by variance theories may be too stringent (Markus and Robey, 1988); thus this thesis develops two process models in explaining the impacts of the WTO commitments on e-commerce diffusion. The higher-level model includes not only the environmental factors relevant to the WTO, but also other contextual factors affecting e-commerce diffusion. The lower-level model arguably includes all the relevant players and factors; therefore it illustrates a complete picture of how and why implementation of WTO agreements can influence e-commerce diffusion in a certain aspect. It not only answers the "whether" question of the evaluation, but also opens the proverbial "black box" between the input and the outcome.

2. Implications for practice

The findings of this research are relevant to both policy-makers and business practitioners.

(1) Implications for policy-makers

Government action is critical to removing impediments to electronic commerce. A clearer understanding of the forces that affect e-commerce diffusion helps policy makers formulate appropriate policies to accelerate Internet diffusion and harvesting of the benefits of business conducted via this medium. This thesis has two

implications in this respect.

First, the findings of this research suggest that successful reforms, whether undertaken unilaterally or driven by the WTO commitments, can lead to significant improvements in the services markets in terms of prices, quality, product variety and the availability of new products; this in turn can encourage e-commerce development. There can be little doubt that open markets are essential for the development of electronic commerce. A liberal regime encourages technical progress and the development of efficient practices. While the quickest route to promoting greater service sector efficiency is undoubtedly to soldier on with the continued unilateral dismantling of discriminatory and nondiscriminatory barriers to services trade and investment, strengthened multilateral disciplines, for example in the WTO, on domestic regulations can play a significant role in promoting and consolidating domestic regulatory reform. As this thesis finds, the Chinese government is clearly using the WTO commitments as an exogenous push factor for internal reforms.

Second, this research finds that while the path to reducing regulatory barriers is clearer and the benefits quicker to observe, the socioeconomic challenges are difficult to surmount. After improving the physical infrastructure for e-commerce adoption, developing countries face the same challenges as their developed counterparts of how to improve the soft environment for e-commerce. The five issues – information infrastructure, commercial services, trust, regulatory and legal framework, and socio-cultural factors – are all essential to e-commerce development and not a single one of them can be ignored. Compared with developed nations, developing countries have more challenges in solving the non-physical issues.

(2) Implications for practitioners

A better understanding of the forces influencing the locus of e-commerce development can arguably help managers choose an appropriate business model (Kshetri, 2001). This thesis provides a comparatively thorough discussion on the present environment for e-commerce development in China's coastal urban area, especially the recent changes after China's accession to the WTO. It may give some

ideas to practitioners who are interested in establishing e-business in China. The general advice of this research is that the physical infrastructure for e-commerce indeed has significantly improved in China's coastal urban areas in recent years thanks to regulatory reforms in service sectors, but the legal and socio-cultural environment is still not friendly enough to this new form of business model. Business practitioners have to be very careful before they decide to conduct transactions via the Internet.

IV. Limitations and recommendations for future research

1. Limitations of the research

This study may be open to a number of limitations that should be considered when examining the findings of this research.

First, as Perry (1998) mentions, conducting interviews in any Asian organization is difficult. This is especially true when the target interview informants are government officials, as is the case in a number of instances in this thesis. Due to time and resource limits, among the various sectors related to e-commerce, in certain sectors only one or two interviews could be conducted. Thus the research has to rely on other sources of evidence in that particular aspect. Although secondary data can not only help the researcher to formulate and understand the research problem better, but also broadens the basis for which specific conclusions can be drawn (Churchill, 1991), lack of interview data in such topics as educational services is acknowledged as a significant weakness of this thesis.

The second limitation is related to the case study research strategy. A common concern about case studies is that they provide little basis for scientific generalization. "How can you generalize from a single case?" is a frequently heard question (Yin, 2003, p.10).

As discussed in Chapter 3, an exploratory research design is argued to be necessary at this stage since, although some valuable contributions have been made to

our knowledge on the topic of the relevance of the WTO agreements to e-commerce diffusion, currently, the actual process of how the influence can be materialized is far from understood. In this respect, the research issue drives the design adopted. A single (as opposed to multiple) case approach is argued to be more appropriate due to the strengths of this approach in providing a deeper understanding (Geertz, 1973) and a more complete contextual sense of the studied phenomena (Miles, 1979). Indeed, Dyer and Wilkins (1991) put forward a single “deep case study” (as opposed to “surface case studies”) as the optimum form of case study research and observe that many seminal contributions to theory have emanated from single case studies (for example, Whyte, 1941; Gouldner, 1954; Kanter, 1973). Thus, through employing this approach it is hoped that deep and rich insights into the phenomenon may be uncovered and explored.

Overall, the use of a single-case approach to study the WTO commitments and e-commerce diffusion in China’s coastal urban areas is justified and can be defended as such an approach can generate interesting insights into how and why this process occurs. However, the selection of the approach and context for study involves balancing the needs for reliable and valid, rich and deep insights into phenomena with generalizable findings. Yin (2003) contends that while in case study research, statistical generalization is limited, tentative analytical generalization is appropriate and valid. The logic of analytical generalization represents the same replication logic that underpins many other methodologies (for example, experimentation). Nevertheless, as with nearly all research, it is important to recognize the limitations that research designs place on findings and implications. In this regard, the findings of this study should be viewed as exploratory in nature and the theory and implications only tentatively generalized until additional descriptive and causal work is conducted.

2. Recommendations for future research

The research presents several avenues of further research:

First, because of the exploratory nature of the research, the study results and

theories of this thesis can be only tentatively generalized before further studies are conducted. Future research is recommended to study the same phenomenon in other developing countries by applying the theoretical models developed in this research. When conditions change, the theoretical formulation will also need to change to meet the new conditions (Strauss and Corbin, 1990). Even for China, a study can be undertaken again after China completely fulfills its WTO accession commitments after 2007.

Second, conditions between rural and urban areas in the same developing country may also be quite different. A similar research in non-urban/inland China may have different but interesting findings.

Nevertheless, in-depth case studies are still the suggested form of investigation for future research, as the phenomenon discussed in this thesis is simply too complex to be assessed statistically. In addition, the measurement of people's access to the Internet and the use they make of it remains far from perfect. The problem is particularly acute when it comes to quantitative information about e-commerce in developing countries, where internationally comparable, freely accessible figures are especially scarce (UNCTAD, 2001; 2002).

V. Summary

This thesis aims to investigate the relationship between WTO commitments and e-commerce diffusion in developing countries by using China's coastal urban area as a case study. The general research questions are: what are the essential conditions for e-commerce diffusion in China's coastal urban area? How can the WTO commitments influence the liberalization of e-commerce-related sectors and thus help the diffusion of e-commerce in this area?

While all the five issues – information infrastructure, commercial services, trust, legal and regulatory frameworks, and social and cultural issues – are perceived

essential to e-commerce diffusion, the last three are more important at the moment in the coastal urban area in China.

Two process models and nine propositions are developed to answer the second research questions. The WTO commitments have been found to have indirect effects on liberalization in telecommunications, banking, and logistics and express delivery services. Improvements in these sectors have made information infrastructure and commercial services less important barriers to e-commerce than other issues. In addition, the WTO commitments have directly boosted Chinese enterprises' interest in e-commerce adoption and positively affected the taxation policy on e-commerce. All these have positively influenced e-commerce diffusion in China. Effects of the WTO commitments on IT product imports, computer and related services, IPRs protection, and educational services have not been evident.

This thesis is the first study to use a specific case to examine the WTO rules in the context of e-commerce diffusion. While there are several limitations, it contributes to knowledge in its implications for both research and practice. First, by examining the interactions between the external pressure from multilateral agreements and internal forces of domestic institutions, the research investigates the actual process how the impacts of the WTO rules can be materialized. Second, the thesis confirms the argument that while the socio-economic challenges to e-commerce are difficult to surmount, the path to reducing regulatory barriers is clearer and the benefits quicker to observe. Government action is critical to removing these impediments to electronic commerce.

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Appendix A

Interview guide

I. Pre-interview procedure

1. Recharge the MD player and test it.
2. Bring the MD player, the microphone, a notebook and 2-3 pens to the interview site.
3. Make sure that the microphone is securely connected with the MD player.
4. Engage the informant in some small talk.
5. Review the information letter and consent form with the informant and answer any questions.
6. Collect the consent form from the informant and check that it has been signed.
7. Press the record button on the MD player.

II. Introductory comments

As we have already discussed, the purpose of this interview is to learn about the relationship between the World Trade Organization (WTO) commitments and e-commerce development in China. I am currently conducting interviews with people from various sectors relevant to this topic.

III. Interview questions

Now I would like to ask several questions relating to your organization.

1. Ministry of Commerce

(Telecommunication services)

Q1. To obtain the WTO membership, what commitments did the Chinese government make in telecommunications sector?

Q2. To fulfill China's WTO commitments in telecommunications sector, what regulations and measures has the Chinese government adopted? And what new

regulations and measures are likely to be adopted in the future?

Q3. Could you briefly describe the current situation of foreign participation in China's telecommunications sector? What's the likely future? Why?

Q4. In your opinion, what challenges and opportunities does the WTO membership bring to Chinese telecommunications sector? How will these be met or taken advantage of?

(Information Technology Agreement, ITA)

Q5. What measures does/will the Chinese Government take to implement the ITA?

(Computer-related services)

Q6. To obtain the WTO membership, what commitments did the Chinese government make in computer-related services?

Q7. To fulfill China's WTO commitments in computer-related services, what regulations and measures has the Chinese government adopted? And what new regulations and measures are likely to be adopted in the future?

Q8. Could you briefly describe the current situation of foreign participation in China's computer-related services? What's the likely future? Why?

Q9. In your opinion, what challenges and opportunities does the WTO membership bring to Chinese computer-related services? How will these be met or taken advantage of?

(Banking services)

Q10. To obtain the WTO membership, what commitments did the Chinese government make in banking sector?

Q11. To fulfill China's WTO entry commitments in banking sector, what regulations and measures has the Chinese government adopted? And what new regulations and measures are likely to be adopted in the future?

Q12. Could you briefly describe the current situation of foreign participation in China's banking sector? What's the likely future? Why?

Q13. In your opinion, what challenges and opportunities does the WTO membership bring to Chinese banking sector? How will these be met or taken advantage of?

(Express delivery)

Q14. To obtain the WTO membership, what commitments did the Chinese

government make in express delivery sector?

Q15. To fulfill China's WTO entry commitments in express delivery sector, what regulations and measures has the Chinese government adopted? And what new regulations and measures are likely to be adopted in the future?

Q16. Could you briefly describe the current situation of foreign participation in China's express delivery sector? What's the likely future? Why?

Q17. In your opinion, what challenges and opportunities does the WTO membership bring to Chinese express delivery sector? How will these be met or taken advantage of?

(Intellectual property protection)

Q18. To obtain the WTO membership, what commitments did the Chinese government make in intellectual property protection?

Q19. To fulfill China's WTO entry commitments in intellectual property protection, what regulations and measures has the Chinese government adopted? And what new regulations and measures are likely to be adopted in the future?

Q20. In your opinion, what challenges and opportunities does the WTO membership bring to China's intellectual property protection? How will these be met or taken advantage of?

(e-commerce)

Q21. Could you give a brief description on current e-commerce development in China?

Q22. To fully develop e-commerce, what issues and challenges should be addressed in China? Among these issues or challenges, which one should be given more priority? Why?

Q23. Among information infrastructure, commercial services, trust, legal and regulatory frameworks, and social and culture issues, which one do you think is influencing China's e-commerce development most? And which one will influence most in the future? Why?

Q24. Do you think that the WTO has/will have any influence on China's e-commerce development? In what way?

2. Ministry of Information Industry

Q1. To obtain the WTO membership, what commitments did the Chinese government make in telecommunications sector?

Q2. What new regulations and measures has the Chinese government adopted in telecommunications sector? Are they related to China's WTO commitments? What other regulations and measures are likely to be adopted in the future to fulfill China's WTO commitments?

Q3. Is there any change of tariff rates for imported IT products after China's entry into the WTO? Does it have any influence on general prices of IT products on the market? What's the likely future? Why?

Q4. How have the telephone fees and Internet access costs changed after China's entry into the WTO? What are the reasons for the changes? What's the likely future? Why?

Q5. Could you briefly describe the current situation of foreign participation in China's telecommunications sector? What's the likely future? Why?

Q6. Compared with foreign companies, what advantages and disadvantages do Chinese telecommunications companies have? What strategy or measures can/will Chinese telecommunications companies adopt to compete with foreign companies?

Q7. In your opinion, what challenges and opportunities does the WTO membership bring to Chinese telecommunications sector? How will these be met or taken advantage of?

Q8. Do you think the changes in China's telecommunications sector after China's entry into the WTO have affected or will affect e-commerce diffusion in China? If so, please describe how and why.

Q9. In your opinion, what are the future trends in China's telecommunications sector? How will these trends affect e-commerce diffusion in China?

Q10. To obtain the WTO membership, what commitments did the Chinese government make in computer-related services?

Q11. What new regulations and measures has the Chinese government adopted in computer-related services? Are they related to China's WTO commitments? What other regulations and measures are likely to be adopted in the future to fulfill China's WTO commitments?

Q12. Could you briefly describe the current situation of foreign participation in China's computer-related services? What's the likely future? Why?

Q13. Compared with foreign companies, what advantages and disadvantages do Chinese computer-related services companies have? What strategy or measures can/will Chinese computer-related services companies adopt to compete with foreign companies?

Q14. In your opinion, what challenges and opportunities does the WTO membership bring to Chinese computer-related services? How will these be met or taken advantage of?

Q15. Do you think the changes in China's computer-related services after China's entry into the WTO have affected or will affect e-commerce diffusion in China? If so, please describe how and why.

Q16. In your opinion, what are the future trends in China's computer-related services? How will these trends affect e-commerce diffusion in China?

3. People's Bank of China (Central bank)

Q1. To obtain the WTO membership, what commitments did the Chinese government make in banking sector?

Q2. What new regulations and measures has the Chinese government adopted in banking sector? Are they related to China's WTO entry commitments? What other regulations and measures are likely to be adopted in the future to fulfill China's WTO commitments?

Q3. Could you give a brief introduction to the current situation of credit cards use in China? What's the likely future? Why?

Q4. Could you give a brief introduction to the current situation of Internet banking use in China? What's the likely future? Why?

Q5. Could you give a brief introduction to the current situation of other online payment method use in China? What's the likely future? Why?

Q6. Could you briefly describe the current situation of foreign participation in China's banking sector? What's the likely future? Why?

Q7. Compared with foreign banks, what advantages and disadvantages do Chinese banks have? What strategy or measures can/will Chinese banks adopt to compete with foreign banks?

Q8. In your opinion, what challenges and opportunities does the WTO membership bring to Chinese banking sector? How will these be met or taken advantage of?

Q9. Do you think the changes in China's banking sector after China's entry into the WTO have affected or will affect e-commerce diffusion in China? If so, please describe how and why.

Q10. In your opinion, what are the future trends in China's banking sector? How will these trends affect e-commerce diffusion in China?

4. China Post

Q1. To obtain the WTO membership, what commitments did the Chinese government make in express delivery sector?

Q2. What new regulations and measures has the Chinese government adopted in express delivery sector? Are they related to China's WTO entry commitments? What other regulations and measures are likely to be adopted in the future to fulfill China's WTO commitments?

Q3. Could you give a brief introduction to the current situation of express delivery fulfillment in China? What's the likely future? Why?

Q4. Could you briefly describe the current situation of foreign participation in China's express delivery sector? What's the likely future? Why?

Q5. Compared with foreign companies, what advantages and disadvantages do Chinese express delivery companies have? What strategy or measures can/will Chinese companies adopt to compete with foreign companies?

Q6. In your opinion, what challenges and opportunities does the WTO membership bring to Chinese express delivery sector? How will these be met or taken advantage of?

Q7. Do you think the changes in China's express delivery sector after China's entry into the WTO have affected or will affect e-commerce diffusion in China? If so, please describe how and why.

Q8. In your opinion, what are the future trends in China's express delivery sector? How will these trends affect e-commerce diffusion in China?

5. Intellectual Property Protection

Q1. To obtain the WTO membership, what commitments did the Chinese government

make in intellectual property protection?

Q2. What new regulations and measures has the Chinese government adopted in intellectual property protection? Are they related to China's WTO entry commitments? What other regulations and measures are likely to be adopted in the future to fulfill China's WTO commitments?

Q3. In your opinion, what challenges and opportunities does the WTO membership bring to China's intellectual property protection? How will these be met or taken advantage of?

Q4. Do you think the changes in China's intellectual property protection after China's entry into the WTO have affected or will affect e-commerce development in China? If so, please describe how and why.

6. Chinese telecommunications companies

Q1. Has your company made any price adjustments on telephone charges, or Internet access fees in recent years? If so, could you explain in detail? What's the likely future? Why?

Q2. Has your company offered any new services (e.g., broad band Internet connection) in recent years? If so, could you explain in detail? What's the likely future? Why?

Q3. How does your company evaluate the quality of services offered by your company? How about the results in recent years? What's the likely future? Why?

Q4. Does your company use foreign-made or china-made equipment? What's the likely future? Why?

Q5. Is your company facing any competition from foreign telecommunications company? If so, could you explain in detail? What's the likely future? Why?

Q6. Do you think that China's entry into the WTO (will) have any effects on your company's operations or plans, particularly those relating to e-commerce? If so, please describe how and why?

7. Foreign telecommunications companies

Q1. Could you briefly describe your company's history in the Chinese market?

Q2. What achievements has your company made in the Chinese market?

Q3. What difficulties has your company experienced in the Chinese market?

Q4. Compared with Chinese companies, what advantages and disadvantages do you think your company has?

Q5. How do you envision your company's future in the Chinese market?

Q6. Do you think that China's entry into the WTO (will) have any effects on your company's operations or plans, particularly those relating to e-commerce? If so, please describe how and why?

8. Chinese banks

Q1. Does your bank issue any bank cards? Can they make online payment? If so, could you explain in detail? What's the likely future? Why?

Q2. Does your bank offer Internet bank service? If so, could you explain in detail? What's the likely future? Why?

Q3. Does your bank offer any other online payment method? If so, could you explain in detail? What's the likely future? Why?

Q4. Is your bank facing any competition from foreign banks? If so, could you explain in detail? What's the likely future? Why?

Q5. Do you think that China's entry into the WTO (will) have any effects on your bank's operations or plans, particularly those relating to e-commerce? If so, please describe how and why?

9. Foreign banks

Q1. Could you briefly describe your bank's history in the Chinese market?

Q2. Does your bank issue any bank cards in the Chinese market? Can they make online payment? If so, could you explain in detail? What's the likely future? Why?

Q3. Does your bank offer Internet bank service in the Chinese market? If so, could you explain in detail? What's the likely future? Why?

Q4. Does your bank offer any other online payment method in the Chinese market? If so, could you explain in detail? What's the likely future? Why?

Q5. Compared with Chinese banks, what advantages and disadvantages does your bank have?

Q6. How do you envision your bank's future in the Chinese market?

Q7. Do you think that China's entry into the WTO (will) have any effects on your bank's operations or plans, particularly those relating to e-commerce? If so, please describe how and why?

10. Foreign express delivery companies

Q1. Could you briefly describe your company's history in the Chinese market?

Q2. What achievements has your company made in the Chinese market? Does your company provide any services to local B2B or B2C e-commerce companies? What's the likely future? Why?

Q3. What difficulties has your company experienced in the Chinese market?

Q4. Compared with Chinese companies, what advantages and disadvantages does your company have?

Q5. How do you envision your company's future in the Chinese market?

Q6. Do you think that China's entry into the WTO (will) have any effects on your company's operations or plans, particularly those relating to e-commerce? If so, please describe how and why?

11. E-commerce companies

Q1. Could you briefly introduce your company?

Q2. Have there been any price adjustments on telephone charges, Internet access fees, computer or other IT products in recent years? If so, what's its influence on your company? What's the likely future? Why?

Q3. Have there been any new telecommunication services (e.g., broad band Internet connection) in recent years? If so, what's its influence on your company? What's the likely future? Why?

Q4. Does your company use foreign-made or China-made systems? What's the likely future? Why?

Q5. What types of payment method does your company offer? Which one is the most often used? What's the likely future? Why?

Q6. What types of delivery methods does your company offer? Which one is the most

often used? What's the likely future? Why?

Q7. Does your company use any services offered by foreign express delivery companies? What's the likely future? Why?

Q8. Do you think that intellectual property protection has any relationship with e-commerce development in China? If so, could you explain in detail?

Q9. To fully develop e-commerce, what issues and challenges should be addressed in China? Among these issues or challenges, which one should be given more priority? Why?

Q10. Among information infrastructure, commercial services, trust, legal and regulatory frameworks, and social and culture issues, which one do you think is influencing China's e-commerce development most? And which one will influence most in the future? Why?

Q11. Do you think that the WTO has or will have any influence on China's e-commerce development? If so, in what way?

12. Other institutions

Choose appropriate questions from above.

IV. Closing comments

We've discussed all of the topics that I wanted to cover. Thanks for your cooperation.

Is there anything that you would like to ask me about the study?

If you have further information to provide or clarification to make, please contact me through telephone or e-mail.

V. Post-interview procedure

Remove the MD from the recorder, label it and store it securely.

Ask if the informant could provide any relevant documents.

Appendix B

Information Letter

August 2004

Dear _____,

I am a PhD student from the School of Business and Information Management at the Australian National University. I am currently completing my thesis on e-commerce diffusion in developing countries. In particular, I am interested in the impacts of the World Trade Organization (WTO) membership on e-commerce diffusion in China.

I would like to interview you to further understand the impacts of WTO membership on China's telecommunications, banking, computer services, and logistics industries, as well as e-commerce development in China. Participation is voluntary and you are free to withdraw at any time. The interview would take approximately one hour. Tapes may be used to record interviews in order to increase the accuracy of the data that is collected. However, recording will only be used if you are comfortable with this approach and give written permission beforehand. You have the right to terminate the interview or delete information that has been recorded without question or justification.

Information obtained from the interview may be published in my PhD thesis, and potentially one or more journal or conference articles. However the real names and job titles of interviewees will be suppressed. Before interview-based material is used in any thesis or other publication, relevant texts will be provided for your approval prior to publication/submission. Aliases may be used if, and where, appropriate. Interview tapes will be numbered and a separate list of corresponding numbers and names will be kept. The interview tapes and notes will be securely stored in a locked filing cabinet in a locked office. I will be the only person with the key to this cabinet. Any confidential information recorded on the computer will be protected by a password, which only I know.

If you have any ethical concerns about the research, you may contact the Human Research Ethics Committee of the Australian National University, which has approved this research care of:

Human Ethics Officer
Human Research Ethics Committee
Research Office
Chancelry 10B
The Australian National University ACT 0200
Tel: +61 2 612 52900
Fax: +61 2 612 54807
Email: Human.Ethics.Officer@anu.edu.au

If you have further questions about the research, or would be happy to participate in an interview, please call me at 131 6126 8580 (in China) or +61 2 612 53589 (in Australia), or email me at wei.guo@anu.edu.au (English only) or quarkwee@yahoo.com.

Yours sincerely,

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Appendix C

Consent Form

I,, agree to be interviewed by Wei Guo on e-commerce diffusion in China. I have read and understand the information provided:

1. The interviews will contribute to research about e-commerce diffusion in developing countries, in particular, the impacts of WTO membership on e-commerce diffusion in China.
2. Participation is voluntary and interviewees are free to withdraw at any time.
3. Tapes may be used to record interviews in order to increase the accuracy of the data that is collected. However, recording will only be used if I am comfortable with this approach and give written permission beforehand. I have the right to terminate the interview or delete information that has been recorded without question or justification.
4. The research will contribute to a PhD thesis and potentially one or more journal or conference articles.
5. The real names and job titles of interviewees will be suppressed in all published work. Before interview-based material is used in any thesis or other publication, relevant texts will be provided for my approval prior to publication/submission. Aliases may be used if, and where, appropriate.
6. Interview tapes will be numbered and a separate list of corresponding numbers and names will be kept. The interview tapes and notes will be securely stored in a

locked filing cabinet in a locked office. So far as the law allows, Wei Guo will be the only person with the key to this cabinet. Any confidential information recorded on the computer will be protected by a password, which only Wei Guo knows.

7. Further questions about the research may be directed to:

Wei Guo

School of Business and Information Management

Hanna Neumann Building 021

The Australian National University

ACT 0200 Australia

Telephone: 131 6126 8580 (in China), +61 2 612 53589 (in Australia)

E-mail: wei.guo@anu.edu.au (English only), quarkwee@yahoo.com

8. Ethical concerns about the research may be directed to the Human Research Ethics Committee of the Australian National University, care of:

Human Ethics Officer

Human Research Ethics Committee

Research Office

Chancelry 10B

The Australian National University ACT 0200

Tel: +61 2 612 52900

Fax: +61 2 612 54807

Email: Human.Ethics.Officer@anu.edu.au

.....

Signed

Date

.....