

Table of Contents

Foreword	V
Preface	VII
Table of Contents	IX
List of Illustrations (Figures)	XXI
List of Illustrations (Tables)	XXIII
List of Abbreviations	XXV
1 Overview	1
2 An Integrative Analytical Framework	13
2.1 Introduction	13
2.2 Discussion of the model	13
2.2.1 Dimension 1a: Multinationals (MNEs) interested in serving overseas markets	13
2.2.1.1 The economics that drive MNEs to expand abroad	14
2.2.1.2 What makes an overseas market attractive to multinational telecom equipment firms (MTEFs)?	15
2.2.1.3 Serving an overseas market by exporting	16
2.2.1.4 Serving an overseas market by licensing technology to local firms	17
2.2.1.5 Serving an overseas market by undertaking foreign direct investment (FDI)	19
2.2.1.6 Recapitulations	21
2.2.2 Dimension 1b: The host government's receptiveness to international trade and investment	21
2.2.2.1 The Chinese government does not favour imports	22
2.2.2.2 The Chinese government does not favour technology licensing	22
2.2.2.3 The Chinese government most prefers inward direct investment	23
2.2.2.4 The host's interventionist instincts	23
2.2.2.5 Recapitulations	24
2.2.3 Dimension 2a: How urgent is undertaking FDI?	24
2.2.3.1 A snapshot of the global mobile handset industry in the mid 1990s	25
2.2.3.2 MTEFs invested in China early	25

2.2.3.3	Aiming for general early mover advantages	27
2.2.3.4	Aiming for host country-specific early mover advantages	29
2.2.4	Dimension 2b: How safe is undertaking FDI?	30
2.2.4.1	Intellectual property right (IPR) enforcement in China in the pre-WTO days	31
2.2.4.2	The effects of weak IPR enforcement on foreign investors	32
2.2.4.3	Balancing investment risks and strategic risks	33
2.2.4.4	To what extent does formal IPR protection regime affect FDI decisions?	34
2.2.4.5	Recapitulations	35
2.2.5	Dimension 3a: The incentives for internalizing intellectual property transactions	36
2.2.5.1	Industry and economic attributes that make high control entry mode desirable	37
2.2.5.2	Business partnerships are often difficult to manage	37
2.2.5.3	Paradox or necessary evil?	39
2.2.6	Dimension 3b: Understanding state-firm bargaining	41
2.2.6.1	The bargaining power of foreign investors	42
2.2.6.2	The bargaining power of host government	43
2.2.6.3	The cost-benefit ratio of forming joint ventures (JVs) with Chinese firms	46
2.2.6.4	The relative cost-benefit ratio of internalization vis-à-vis partnership changes under specific circumstances	48
2.2.6.5	Pragmatic host prefers wholly-owned subsidiaries (WOS) to no investment	50
2.2.6.6	Recapitulations	51
2.3	Did China "force" technology transfer from foreign investors?	51
2.3.1	The allegations	51
2.3.2	China's rebuttal	52
2.3.3	The ambivalence	52
2.3.4	How China's trade and investment regime biased investor decisions?	53
2.3.4.1	The objectives of state intervention	53
2.3.4.2	Using export performance requirement to skew investment incentives	53

2.3.4.3	Gate keeping function converted the state's potential power to monopsony power	54
2.3.4.4	Recapitulations	56
2.3.5	Were foreign investors "forced" to transfer technology?	56
2.3.5.1	Technology transfer is not always costly for transferors	57
2.3.5.2	Technology transfer helps secure management control in Sino-foreign JVs in China	57
2.3.6	Recapitulations	59
2.4	Conclusions	59
3	China's ICT Aspirations and Frustrations	61
3.1	Introduction	61
3.2	Discussions	61
3.2.1	China's quest for WTO membership	61
3.2.1.1	Stalling economic reforms made WTO membership not only desirable but increasingly essential	62
3.2.1.2	Development of the high-tech industry as a salvation	65
3.2.2	China targeted the mobile handset industry	68
3.2.2.1	Factors that motivated and enabled China to enter the mobile handset industry	69
3.2.2.2	China's chance of succeeding in the 2G handset market	70
3.2.2.3	China's chance of succeeding in the 3G handset market	73
3.2.3	China's systematic measures to improve its chance of success	77
3.2.3.1	Prong 1: Keeping Qualcomm, which was shut out of China's 2G market, in contention	78
3.2.3.2	Prong 2: keeping the W-CDMA camp pressured but not discouraged	80
3.2.3.3	Prong 3: helping "home-grown" TD-SCDMA win on its own merits	85
3.2.3.4	Encouraging MTEFs to participate in technology trial	87
3.3	Conclusions	89
4	Hypotheses Formulation	91
4.1	Introduction	91

4.2	China's WTO concessions	91
4.3	Formulating Hypothesis 1	92
4.3.1	Internal pressure motivated compliance	93
4.3.2	External pressure urged compliance	94
4.3.3	Using external pressure to force through stalling domestic reforms	95
4.3.4	Signs of progress	95
4.3.5	Hypothesis formulation	97
4.4	Formulating Hypothesis 2	97
4.4.1	The role and extent of foreign participation in China's economy	98
4.4.2	The disincentives for enforcement	99
4.4.3	Playing field yet to be leveled	100
4.4.3.1	Potential resistance from industrial ministries	100
4.4.3.2	Potential resistance from local governments	101
4.4.3.3	Beijing's multiple (and often conflicting) goals complicated implementation	102
4.4.3.4	Techno-nationalist policies	103
4.4.4	New trade and investment options made possible by TRIMs	105
4.4.5	Hypothesis formulation	106
4.5	Formulating Hypothesis 3	107
4.5.1	Past intervention policies could not foretell future success	107
4.5.2	Rising competition in the post-WTO Chinese handset market	109
4.5.3	Competitive landscape in the global mobile handset industry in 2001	111
4.5.4	Changing cost structure led to changing priorities	115
4.5.5	The scramble for CDMA handset production JV partners	118
4.5.6	Competition in post-WTO China will intensify	120
4.5.7	Hypothesis formulation	122
4.6	Conclusions	122
5	Methodology: Objective, Design and Data Collection	123
5.1	Introduction	123
5.2	Establishing an industry focus	123
5.3	Choosing a method for the empirical investigation	127
5.4	Collecting and analyzing primary data	130

5.4.1	Phase 1: Solicitation	130
5.4.1.1	Which companies were selected?	130
5.4.1.2	Whom in the company did the author approach?	130
5.4.1.3	When were these companies approached?	131
5.4.1.4	How were the interviewees approached?	131
5.4.1.5	What did the interview request specify?	132
5.4.2	Phase 2: Conducting the interviews	135
5.4.2.1	Response rate	135
5.4.2.2	Who were interviewed?	135
5.4.2.3	When did the interviews take place?	136
5.4.2.4	Where did the interviews take place?	136
5.4.2.5	Preparing for the interviews	136
5.4.2.6	Conducting the interviews	137
5.4.3	Phase 3: Analyzing and reporting interview data	138
5.4.3.1	Defining the terminology	138
5.4.3.2	The use of supplementary information	139
5.5	Presenting the data	139
5.5.1	The constraints of a small-number-rivalry situation	140
5.5.2	Organizing the findings around the hypotheses	140
5.5.3	Coding procedure	140
6	Profile of Participating Companies	143
6.1	Introduction	143
6.2	Profile of interviewed MTEFs	143
6.2.1	Selection Criteria	144
6.2.1.1	Size	144
6.2.1.2	Reputation of technological excellence	145
6.2.1.3	Group dynamics and jockeying for position	146
6.2.2	Industry Scope	147
6.2.2.1	Did these firms compete in handsets?	148
6.2.2.2	Did these firms compete in mobile systems?	148
6.2.2.3	Did these firms compete in electronic components for telecom equipment?	148
6.2.2.4	Did these firms compete in non-hardware products (e.g., software and reference design)?	149
6.2.2.5	Did these firms compete in telecom infrastructure other than mobile systems (e.g., switches, DSL and etc)?	150

6.2.2.6	Did these firms compete in non-telecom equipment?	150
6.2.2.7	Recapitulation	151
6.2.3	Strategic orientation	152
6.2.3.1	MTEFs were increasingly outsourcing manufacturing functions	152
6.2.3.2	Reasons for increased outsourcing	154
6.2.3.3	Searching for non cost-related competitive advantages	156
6.2.4	Strategic option	158
6.2.4.1	Strategic Option #1: Symbian membership	160
6.2.4.2	Strategic Option #2: supporting TD-SCDMA	162
6.2.4.3	Strategic Option #3: establishing ICT industry related venture capital funds in China	163
6.2.5	What firm attributes were deliberately omitted?	165
6.2.5.1	Equity ownership structure of their Chinese operations	165
6.2.5.2	Country origin of the interviewed companies	166
6.3	Adjacent industry players interviewed	166
6.3.1	Understanding the phenomenon of ODM	166
6.3.1.1	The rise of ODM	167
6.3.1.2	How the emergence of ODM could benefit MTEFs?	167
6.3.1.3	How the emergence of ODM could threaten MTEFs?	168
6.3.2	Understanding the role of semiconductor players in the handset industry	169
6.3.2.1	How semiconductor companies could threaten MTEFs?	169
6.3.2.2	FDI in China's semiconductor industry	171
6.3.2.3	Why was a particular semiconductor firm chosen for the study?	173
6.4	Conclusions	174
7	Multinationals' Technology Transfer Activities in pre-WTO China	175
7.1	Introduction	175
7.2	The economics of technology transfer	176
7.2.1	The opposing views of technology transferors and technology recipients	176
7.2.2	The costs of technology transfer	177

7.3	Technology transfer as a continuum	179
7.3.1	Technology transfer before the mid 1990s	179
7.3.2	Technology transfer since the mid 1990s	179
7.3.3	An evolution from providing capacity to fostering capability	182
7.3.4	The awkward stage of “show” R&D	185
7.3.5	From one-way to two-way technology transfer	188
7.4	Gearing up for WTO accession	190
7.4.1	Rebuffing misleading accusations	190
7.4.2	As WTO entry approached, China started to target specific kinds of FDI projects	193
7.4.3	The likelihood of achieving these goals	195
7.5	Conclusions	196
8	Assessing Hypothesis 1	199
8.1	Introduction	199
8.2	Findings	199
8.2.1	China has a strong self interest in implementing TRIPs and improving IPR protection	199
8.2.1.1	The economics of IPR protection	200
8.2.1.2	The motivations for China to expedite the process	201
8.2.2	Poor IPR protection deterred certain kinds of technology transfer in the past	203
8.2.3	Transactions of intellectual property should be safer in a TRIPs- and TRIMs- compliant environment than one that is not	204
8.2.4	A TRIPs-compliant environment provides favourable conditions for transferring more sophisticated technologies	205
8.2.5	Favourable conditions are, however, not impetuses	206
8.2.5.1	Statutory changes that intend to make conditions more favourable	207
8.2.5.2	What is holding back these conditions from becoming favourable?	208
8.2.6	Weaknesses in formal IPR protection need not deter all FDI or technology transfer activities	209
8.2.6.1	Category 1: Carefully planned transactions	211
8.2.6.2	Category 2: Raising the costs and difficulties of imitation	211

8.2.6.3	Category 3: Reducing the payoffs of imitation	213
8.2.6.4	Category 4: Raising awareness through education	216
8.2.7	New ownership and governance options made possible by TRIMs	217
8.3	Conclusions	219
9	Assessing Hypothesis 2	221
9.1	Introduction	221
9.2	Findings	221
9.2.1	Effects of tariff reduction	221
9.2.1.1	The effects of tariff reduction on incumbent MTEFs producing mobile handsets in China	222
9.2.1.2	The effects of tariff reduction on Chinese mobile handset makers	222
9.2.1.3	The effects of tariff reduction on foreign mobile handset makers exporting handsets to China	222
9.2.1.4	The effects of tariff reduction on foreign mobile handset component makers	222
9.2.1.5	Who will benefit most from tariff reduction?	223
9.2.2	Effects of removing local content requirements	223
9.2.2.1	The effects of lifting local content requirements on incumbents	223
9.2.2.2	The effects of lifting local content requirements on foreign handset component makers	225
9.2.2.3	What developing host countries intend to achieve with local content rules?	225
9.2.2.4	Why minimum local content rules are less effective than what host governments envision?	226
9.2.3	Effects of distribution rights on incumbents and other players	228
9.2.3.1	The effects of distribution rights on incumbents MTEFs	228
9.2.3.2	The effects of distribution rights on foreign handset makers	230
9.2.3.3	The effects of distribution rights on foreign handset component makers	231
9.2.3.4	What is the significance of this development?	232
9.2.4	Effects of removing technology transfer requirements on incumbents	232

9.2.4.1	The host government replaces “requirement” with “encouragement”	232
9.2.4.2	Why technology transfer helps transferors win business in China?	234
9.2.4.3	MII is expected to become more of an industry regulator and less of a patron for local rivals in the future	236
9.2.5	MNEs do not invest in China because of cheap labour	239
9.3	Conclusions	240
9.3.1	Assessing the assumptions	240
9.3.2	Overall assessments	241
9.3.3	Investments (of MTEFs) since the conclusion of the US-China bilateral WTO accession agreement	241
10	Assessing Hypothesis 3	247
10.1	Introduction	247
10.2	Findings	247
10.2.1	Incumbents cannot afford not to transfer technology in post-WTO China	248
10.2.1.1	There are too many suppliers of technologies	248
10.2.1.2	Chinese handset companies have been rapidly gaining ground in their home market	250
10.2.1.3	Narrowing technology gaps force more rapid technology transfer	251
10.2.1.4	MTEFs try to keep themselves vital in the current JV relationships	253
10.2.1.5	Technology transfer facilitates staff retention	254
10.2.1.6	Recapitulation	255
10.2.2	Incumbents can afford to transfer technologies to Chinese partners	255
10.2.2.1	Competition in the high-tech industry is only indirectly between technologies	255
10.2.2.2	IP owners can impede the flow of technology and frustrate an antagonist’s commercialization efforts	258
10.2.2.3	Chinese handset makers and MTEFs exhibit very different behavioural traits	260
10.2.2.4	Structural weaknesses masked by superficial strengths	262
10.2.2.5	Competitors do not have to be “equals” to pose threats	269

10.2.3	Harnessing the rise of Chinese mobile handset makers	270
10.2.3.1	Competitive reality	270
10.2.3.2	Different cost structures call for different competitive strategies	271
10.2.3.3	Licensing technology to rivals can be beneficial when the industry structure is unattractive	271
10.2.3.4	Licensing technology to rivals is likely more beneficial than harmful when the focal technology obsolesces rapidly	273
10.2.3.5	Licensees build support for technological ecosystem	274
10.2.3.6	MTEFs position themselves as enablers	278
10.3	Conclusions	278
10.4	"Win-win" is more affordable than "win-lose" in the long run	279
11	"Win-Win" is No Platitude	281
11.1	Introduction	281
11.2	Conditions that favour cooperation	281
11.2.1	China clearly wants to wean itself from imported technologies	282
11.2.2	Is the rise of Chinese firms a result of techno-nationalism?	282
11.2.2.1	Chinese mobile handset makers are unseating the global giants one by one in their domestic market	282
11.2.2.2	"It is not the first time MNE pioneers lose to local players in the Chinese market..."	283
11.2.2.3	Techno-nationalism vis-à-vis industry evolution	284
11.2.2.4	Room for win-win solutions	286
11.3	Crafting win-win strategies	286
11.3.1	Helping China commercialize TD-SCDMA	287
11.3.1.1	Explaining the paradox	287
11.3.1.2	MTEFs believe China wants to push TD-SCDMA	288
11.3.1.3	The hurdles China faces	291
11.3.1.4	Collaboration focuses on a specific area	292
11.3.1.5	The defensive reasons for backing TD-SCDMA	296
11.3.1.6	Recapitulation	299
11.3.2	Nokia will teach Capitel how to build a local brand	300
11.3.2.1	The industry structure is changing	300

11.3.2.2	The mass entry of Chinese firms and its consequences	301
11.3.2.3	Why and how the participation of Chinese firms affects incumbent MTEFs?	302
11.3.2.4	How can helping Capitel benefit Nokia?	304
11.3.2.5	Benefits for the Chinese handset industry	305
11.3.2.6	Recapitulations	306
11.3.3	Microsoft to form JVs with Chinese software firms	306
11.3.3.1	The potential risks of collaboration	307
11.3.3.2	Reduce piracy and recover lost revenues	308
11.3.3.3	Simultaneously open new markets and extend its lucrative operating system software franchise	308
11.3.3.4	Forestall development of rival operating systems	309
11.3.3.5	Recapitulations	310
11.3.4	Insights from these cases	310
12	Conclusions and Discussion of Emerging Trends	315
12.1	Summary	315
12.2	Applying the integrative model	320
12.2.1	New possibilities in the post-WTO era	322
12.2.2	Ground for optimism	325
12.2.3	Lingering uncertainties	326
12.2.4	Expect China to continue to “play foreign investors off against each other”	326
12.2.5	Clarifications	327
12.2.6	China’s investment policies draw investments and jobs to the country, but at whose expense?	328
12.2.6.1	The combined effects of China’s tax incentives and the lack of tax relief for foreign earned profits in some FDI generating countries	328
12.2.6.2	The combined effects of technology export control regime, China’s differential VAT policy and the generous customs rules of some FDI generating countries	329
12.2.7	The trade-offs individual companies face	331
12.3	Limitations of this study	332
12.3.1	Selection of companies	332
12.3.2	A single industry analysis	333
12.3.3	The “snapshot” nature of this study	333

12.3.4 Overall assessment	334
12.4 Looking ahead	334
12.4.1 China will continue to draw large inflows of FDI	334
12.4.2 How China and other members will cope with China's entry into the WTO	335
12.4.3 China's economy at a crossroad	336
12.4.4 Is China an economic threat? Does it matter?	338
Postscript	339
Bibliography	345