

# **Broadband Economics**

Lessons from Japan

**Takanori Ida**

# Contents

<i>Abbreviations</i>	xi
<i>List of figures and tables</i>	xiii
<i>Introduction</i>	xvii
<b>1 Competition policy in the broadband era</b>	<b>1</b>
<i>Dilemma of competition policy</i>	3
<i>The year 2010: Respective visions of NTT and the MIC</i>	5
<i>Moving toward the future of broadband in Japan</i>	11
<i>Conclusions</i>	23
<b>Appendix to Chapter 1</b>	<b>25</b>
<b>PART I</b>	
<b>Broadband economics basics and analytical tools</b>	<b>27</b>
<b>2 Broadband in Japan: Current situation and issues</b>	<b>29</b>
<i>Current state of broadband in Japan</i>	30
<i>Competition policy paradigm shift</i>	38
<i>Why Japan's broadband deployment succeeded</i>	47
<i>Conclusions</i>	54
<b>3 Network economics: Theory and policy</b>	<b>56</b>
<i>From regulation to competition</i>	57
<i>Bottleneck monopoly</i>	61
<i>Network externalities</i>	68
<i>Industrial convergence and the complexity of network economy</i>	76
<i>Conclusions</i>	77

<b>4</b>	<b>Discrete choice analysis: Methodology and case studies</b>	<b>79</b>
	<i>Random utility theory</i>	80
	<i>Conditional logit model</i>	82
	<i>Nested logit (NL) model</i>	87
	<i>Mixed logit (ML) model</i>	91
	<i>RP and SP data</i>	96
	<i>Conjoint analysis</i>	98
	<i>Conclusion</i>	101
 <b>PART II</b>		
	<b>The current status of Japan's broadband</b>	<b>103</b>
<b>5</b>	<b>Fixed-line broadband: From ADSL to FTTH</b>	<b>105</b>
	<i>Analysis of fixed-line broadband supply</i>	105
	<i>Demand analysis of fixed-line broadband</i>	117
	<i>Discrete choice model analysis of broadband (revealed preference method)</i>	122
	<i>Discrete choice model analysis of broadband (stated preference method)</i>	131
	<i>Policy issues for fixed-line broadband</i>	137
	<i>Conclusions</i>	143
<b>6</b>	<b>IP telephony: Inception to widespread deployment</b>	<b>144</b>
	<i>IP telephony supply analysis</i>	144
	<i>IP telephony demand analysis</i>	148
	<i>Conjoint analysis of demand for IP telephony</i>	152
	<i>IP telephony policy issues</i>	163
	<i>Conclusion</i>	167
<b>7</b>	<b>Mobile telephony: From voice to data services</b>	<b>168</b>
	<i>Mobile telephony supply analysis</i>	168
	<i>Mobile telephony demand analysis</i>	173
	<i>Econometric analysis of demand for mobile telephone</i>	182
	<i>Mobile phone policy issues</i>	193
	<i>Conclusion</i>	196

## PART III

<b>The future of Japan's broadband</b>	197
<b>8 Fiber to the home: Migration and lock-in</b>	199
<i>Current status of broadband migration</i>	199
<i>Econometric analysis of FTTH migration</i>	200
<i>Econometric analysis of lock-in effects</i>	209
<i>Conclusion</i>	216
<b>9 The future of fixed-mobile convergence</b>	218
<i>Fixed-mobile convergence (FMC) service</i>	218
<i>Survey method and data</i>	219
<i>Estimation models</i>	220
<i>Lock-in effects from broadband to mobile phone services</i>	224
<i>Lock-in effects from mobile phone to broadband services</i>	229
<i>Impact of lock-in effects between broadband and mobile phone services</i>	233
<i>Conclusion</i>	236
<b>10 The digital divide: Closing the gap</b>	237
<i>What is digital divide?</i>	237
<i>Japan's digital divide</i>	240
<i>FTTH usage in Yawata and Tokyo</i>	243
<i>Econometric analysis of usage-based digital divide</i>	249
<i>Conclusions</i>	259
<i>Notes</i>	261
<i>References</i>	273
<i>Index</i>	285