Contents

List of figures xiii
List of tables xv
List of cases xvi
Preface to the second edition xxi
Preface from the first edition xxiii

Part I Getting started 1
Introduction to Part I 1

1 What is Markets and Strategies? 3
1.1 Markets 3
1.2 Strategies 6
1.3 Models and material of Markets and Strategies 8
1.4 Level, scope and organization of the book 9

2 Firms, consumers and the market 13
2.1 Firms and consumers 13
2.1.1 The firm 14
2.1.2 Looking inside the black box of a firm 16
2.1.3 Consumers and rational man 21
2.1.4 Welfare analysis of market outcomes 24
2.2 Market interaction 26
2.2.1 The perfectly competitive paradigm 26
2.2.2 Strategies in a constant environment (‘monopoly’) 27
2.2.3 Dominant firm model 29
2.2.4 Imperfect competition 33
2.3 Market definition and market performance 33
2.3.1 How to define a market? 33
2.3.2 How to assess market power? 34
References for Part I 39

Part II Market power 41
Introduction to Part II 41

3 Static imperfect competition 45
3.1 Price competition 45
3.1.1 The standard Bertrand model 45
3.1.2 Price competition with uncertain costs 47
3.1.3 Price competition with differentiated products 50
3.1.4 Asymmetric competition with differentiated products 53
3.2 Quantity competition 54
### Contents

3.2.1 The linear Cournot model 54  
3.2.2 Implications of Cournot competition 58  
3.3 Price vs. quantity competition 60  
3.3.1 Limited capacity and price competition 60  
3.3.2 Differentiated products: Cournot vs. Bertrand 65  
3.3.3 What is the appropriate modelling choice? 67  
3.4 Strategic substitutes and strategic complements 68  
3.5 Estimating market power 70  

4 Dynamic aspects of imperfect competition 75  
4.1 Sequential choice: Stackelberg 75  
4.1.1 One leader and one follower 76  
4.1.2 One leader and an endogenous number of followers 79  
4.1.3 Commitment 80  
4.2 Free entry: endogenous number of firms 81  
4.2.1 Properties of free-entry equilibria 82  
4.2.2 Welfare properties of the Cournot model with free entry 83  
4.2.3 Welfare properties of price competition with free entry 86  
4.2.4 Welfare properties of monopolistic competition 88  
4.3 Industry concentration and firm turnover 91  
4.3.1 Exogenous vs. endogenous sunk costs 91  
4.3.2 Dynamic firm entry and exit 97  
References for Part II 104  

Part III Sources of market power 107  
Introduction to Part III 107  

5 Product differentiation 111  
5.1 Views on product differentiation 112  
5.2 Horizontal product differentiation 113  
5.2.1 A simple location model 114  
5.2.2 The linear Hotelling model 115  
5.2.3 The quadratic Hotelling model 118  
5.3 Vertical product differentiation 120  
5.3.1 Quality choice 120  
5.3.2 Natural oligopolies 124  
5.4 Empirical analysis of product differentiation 126  
5.4.1 Probabilistic choice and the logit model 126  
5.4.2 Empirical analysis of horizontal product differentiation 129  
5.4.3 Empirical analysis of vertical product differentiation 131  
5.4.4 Nested logit and other extensions 132  

6 Advertising and related marketing strategies 138  
6.1 Views on advertising 138  
6.2 Price and non-price strategies in monopoly 142
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2.1</td>
<td>Price–advertising decisions: Dorfman–Steiner model</td>
<td>142</td>
</tr>
<tr>
<td>6.2.2</td>
<td>A closer look at how advertising affects demand</td>
<td>144</td>
</tr>
<tr>
<td>6.3</td>
<td>Some welfare economics of advertising</td>
<td>145</td>
</tr>
<tr>
<td>6.4</td>
<td>Advertising and competition</td>
<td>148</td>
</tr>
<tr>
<td>6.4.1</td>
<td>Informative advertising</td>
<td>148</td>
</tr>
<tr>
<td>6.4.2</td>
<td>Persuasive advertising</td>
<td>153</td>
</tr>
<tr>
<td>7</td>
<td>Consumer inertia</td>
<td>162</td>
</tr>
<tr>
<td>7.1</td>
<td>Uninformed consumers and search costs</td>
<td>162</td>
</tr>
<tr>
<td>7.1.1</td>
<td>Price dispersion</td>
<td>163</td>
</tr>
<tr>
<td>7.1.2</td>
<td>Consumer search with homogeneous products</td>
<td>167</td>
</tr>
<tr>
<td>7.1.3</td>
<td>Empirical investigation of price dispersion</td>
<td>170</td>
</tr>
<tr>
<td>7.1.4</td>
<td>Sequential search and differentiated products</td>
<td>171</td>
</tr>
<tr>
<td>7.2</td>
<td>Switching costs</td>
<td>174</td>
</tr>
<tr>
<td>7.2.1</td>
<td>Competitive effects of switching costs</td>
<td>175</td>
</tr>
<tr>
<td>7.2.2</td>
<td>Coupons and endogenous switching costs</td>
<td>184</td>
</tr>
<tr>
<td>7.2.3</td>
<td>Estimating switching costs</td>
<td>187</td>
</tr>
<tr>
<td></td>
<td>References for Part III</td>
<td>192</td>
</tr>
<tr>
<td>Part IV</td>
<td>Pricing strategies and market segmentation</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>Introduction to Part IV</td>
<td>195</td>
</tr>
<tr>
<td>8</td>
<td>Group pricing and personalized pricing</td>
<td>197</td>
</tr>
<tr>
<td>8.1</td>
<td>Price discrimination</td>
<td>197</td>
</tr>
<tr>
<td>8.1.1</td>
<td>Price discrimination: a typology</td>
<td>197</td>
</tr>
<tr>
<td>8.1.2</td>
<td>‘Know thy customers’</td>
<td>199</td>
</tr>
<tr>
<td>8.2</td>
<td>Group and personalized pricing in monopolies</td>
<td>200</td>
</tr>
<tr>
<td>8.3</td>
<td>Group and personalized pricing in oligopolies</td>
<td>204</td>
</tr>
<tr>
<td>8.3.1</td>
<td>Group pricing and localized competition</td>
<td>204</td>
</tr>
<tr>
<td>8.3.2</td>
<td>Personalized pricing and location decisions</td>
<td>208</td>
</tr>
<tr>
<td>8.3.3</td>
<td>Geographic price discrimination</td>
<td>209</td>
</tr>
<tr>
<td>9</td>
<td>Menu pricing</td>
<td>220</td>
</tr>
<tr>
<td>9.1</td>
<td>Menu pricing vs. group pricing</td>
<td>220</td>
</tr>
<tr>
<td>9.2</td>
<td>A formal analysis of monopoly menu pricing</td>
<td>222</td>
</tr>
<tr>
<td>9.2.1</td>
<td>Quality-dependent prices</td>
<td>222</td>
</tr>
<tr>
<td>9.2.2</td>
<td>Information goods and damaged goods</td>
<td>227</td>
</tr>
<tr>
<td>9.2.3</td>
<td>Extension to time- and quantity-dependent prices</td>
<td>229</td>
</tr>
<tr>
<td>9.3</td>
<td>Menu pricing under imperfect competition</td>
<td>230</td>
</tr>
<tr>
<td>9.3.1</td>
<td>Competitive quality-based menu pricing</td>
<td>231</td>
</tr>
<tr>
<td>9.3.2</td>
<td>Competitive quantity-based menu pricing</td>
<td>236</td>
</tr>
<tr>
<td>10</td>
<td>Intertemporal price discrimination</td>
<td>243</td>
</tr>
<tr>
<td>10.1</td>
<td>Durable-good monopoly without commitment</td>
<td>243</td>
</tr>
<tr>
<td>10.1.1</td>
<td>Small number of consumers</td>
<td>244</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
<td>Pages</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>10.1.2</td>
<td>Large number of consumers</td>
<td>247</td>
</tr>
<tr>
<td>10.2</td>
<td>Durable-good monopoly with commitment</td>
<td>251</td>
</tr>
<tr>
<td>10.2.1</td>
<td>Fixed capacity</td>
<td>252</td>
</tr>
<tr>
<td>10.2.2</td>
<td>Flexible capacity</td>
<td>254</td>
</tr>
<tr>
<td>10.2.3</td>
<td>Intertemporal pricing and demand uncertainty</td>
<td>255</td>
</tr>
<tr>
<td>10.3</td>
<td>Behaviour-based price discrimination</td>
<td>259</td>
</tr>
<tr>
<td>10.3.1</td>
<td>Behaviour-based price discrimination by a monopolist</td>
<td>259</td>
</tr>
<tr>
<td>10.3.2</td>
<td>Customer poaching</td>
<td>261</td>
</tr>
<tr>
<td>11</td>
<td>Bundling</td>
<td>270</td>
</tr>
<tr>
<td>11.1</td>
<td>A formal analysis of monopoly bundling</td>
<td>271</td>
</tr>
<tr>
<td>11.1.1</td>
<td>Pure bundling as a device to offer a discount</td>
<td>272</td>
</tr>
<tr>
<td>11.1.2</td>
<td>Mixed bundling</td>
<td>275</td>
</tr>
<tr>
<td>11.1.3</td>
<td>Extensions</td>
<td>276</td>
</tr>
<tr>
<td>11.2</td>
<td>Tying and metering</td>
<td>281</td>
</tr>
<tr>
<td>11.3</td>
<td>Competitive bundling</td>
<td>283</td>
</tr>
<tr>
<td>11.3.1</td>
<td>Bundling as a way to soften price competition</td>
<td>284</td>
</tr>
<tr>
<td>11.3.2</td>
<td>When bundling intensifies price competition</td>
<td>286</td>
</tr>
<tr>
<td>References for Part IV</td>
<td>293</td>
<td></td>
</tr>
</tbody>
</table>

Part V | Product quality and information | 295 |
| Introduction to Part V | 295 |

12 | Asymmetric information, price and advertising signals | 297 |
| 12.1 | Asymmetric information problems | 297 |
| 12.1.1 | Hidden information problem | 297 |
| 12.1.2 | Hidden action problem | 301 |
| 12.2 | Advertising and price signals | 304 |
| 12.2.1 | Advertising signals | 304 |
| 12.2.2 | Price signals | 308 |
| 12.2.3 | Joint price and advertising signals | 314 |
| 12.3 | Price signalling under imperfect competition | 317 |

13 | Marketing tools for experience goods | 323 |
| 13.1 | Warranties | 323 |
| 13.1.1 | Warranties as a reliability signal | 324 |
| 13.1.2 | Warranties and investment in quality control | 326 |
| 13.2 | Branding | 328 |
| 13.2.1 | Intertemporal branding and reputation | 330 |
| 13.2.2 | Reputation and competition | 331 |
| 13.2.3 | Umbrella branding | 335 |
| References for Part V | 343 |

Part VI | Theory of competition policy | 345 |
| Introduction to Part VI | 345 |
14 Cartels and tacit collusion 349
14.1 Formation and stability of cartels 349
  14.1.1 Simultaneous cartel formation 351
  14.1.2 Sequential cartel formation 354
  14.1.3 Network of market-sharing agreements 355
14.2 Sustainability of tacit collusion 357
  14.2.1 Tacit collusion: the basics 358
  14.2.2 Optimal punishment of deviating firms 363
  14.2.3 Collusion and multimarket contact 367
  14.2.4 Tacit collusion and cyclical demand 372
  14.2.5 Tacit collusion with unobservable actions 375
14.3 Detecting and fighting collusion 378
  14.3.1 The difficulty in detecting collusion 379
  14.3.2 Leniency and whistleblowing programmes 382

15 Horizontal mergers 389
15.1 Profitability of simple Cournot mergers 390
  15.1.1 Mergers between two firms 390
  15.1.2 Mergers between several firms 392
  15.1.3 Efficiency-increasing mergers 393
15.2 Welfare analysis of Cournot mergers 397
  15.2.1 Linear Cournot model with synergies 398
  15.2.2 General welfare analysis 399
15.3 Beyond simple Cournot mergers 402
  15.3.1 Successive mergers 402
  15.3.2 Mergers and entry 405
  15.3.3 Mergers under price competition 406
  15.3.4 Coordinated effects 408
15.4 Empirical merger analyses 411
  15.4.1 Event studies and direct price comparisons 411
  15.4.2 Merger simulations 411

16 Strategic incumbents and entry 417
16.1 Taxonomy of entry-related strategies 418
  16.1.1 Entry deterrence 418
  16.1.2 Entry accommodation 420
16.2 Strategies affecting cost variables 423
  16.2.1 Investment in capacity as an entry deterrent 423
  16.2.2 Investment as an entry deterrent reconsidered 430
  16.2.3 Raising rivals' costs 431
16.3 Strategies affecting demand variables 433
  16.3.1 Brand proliferation 434
  16.3.2 Bundling and leverage of market power 436
  16.3.3 Switching costs as an entry deterrent 439
16.4  Limit pricing under incomplete information 442
16.5  Entry deterrence and multiple incumbents 446

17  Vertically related markets 452
17.1  The double-marginalization problem 452
  17.1.1 Linear pricing and double marginalization 452
  17.1.2 Contractual solutions to the double-marginalization problem 454
  17.1.3 Double marginalization and retail services 455
17.2  Resale-price maintenance and exclusive territories 456
  17.2.1 Resale-price maintenance 456
  17.2.2 Exclusive territories 459
17.3  Exclusive dealing 462
  17.3.1 Anticompetitive effects of exclusive dealing contracts? The Chicago critique 464
  17.3.2 Vertical integration and long-term contracts as partial deterrence devices 465
  17.3.3 Full exclusion and multiple buyers 469
  17.3.4 Vertical foreclosure and secret contracts 471
  17.3.5 Exclusive contracts and investment incentives 473
17.4  Vertical oligopoly and vertical mergers 476
  17.4.1 Vertical oligopoly 476
  17.4.2 Exclusionary effects of vertical mergers 479
  17.4.3 Coordinated effects of vertical mergers 485

References for Part VI 490

Part VII  R&D and intellectual property 495
Introduction to Part VII 495

18  Innovation and R&D 497
18.1  Market structure and incentives to innovate 498
  18.1.1 Monopoly vs. perfect competition: the replacement effect 500
  18.1.2 Incentives to innovate in oligopolies 502
  18.1.3 Patent licensing 504
  18.1.4 Licensing by an outside innovator 504
  18.1.5 Licensing by an inside innovator 507
18.2  When innovation affects market structure 510
  18.2.1 Monopoly threatened by entry: the efficiency effect 510
  18.2.2 Asymmetric patent races: replacement and efficiency effects 512
  18.2.3 Socially excessive R&D in a patent race 515
18.3  R&D cooperation and spillovers 517
  18.3.1 Effects of strategic behaviour 519
  18.3.2 Effects of R&D cooperation 521
  18.3.3 Further analysis of R&D cooperation 524

19  Intellectual property 531
19.1  Innovation and IP: basics 532
  19.1.1 Information and appropriability 532
19.1.2 Intellectual property rights 533
19.1.3 Alternative incentive mechanisms: rewards and secrecy 535
19.1.4 Protection of IP in practice 537

19.2 Protecting innovations 540
19.2.1 Optimal design of IP rights 540
19.2.2 Rewards vs. patents 545
19.2.3 Secrecy vs. patents 547

19.3 Cumulative innovations 548
19.3.1 Sequential innovations and holdup 549
19.3.2 Complementary innovations and anticommons 553

19.4 Intellectual property in the digital economy 556
19.4.1 End-user piracy 557
19.4.2 Software protection 561

References for Part VII 570

Part VIII Networks, standards and systems 573
Introduction to Part VIII 573

20 Markets with network goods 577
20.1 Network effects 577
20.1.1 Direct and indirect network effects 577
20.1.2 Network effects and switching costs 579
20.1.3 Empirical evidence on network effects 581

20.2 Markets for a single network good 584
20.2.1 Modelling the demand for a network good 584
20.2.2 Provision of a network good 593

20.3 Markets for several network goods 596
20.3.1 Demand for incompatible network goods 596
20.3.2 Oligopoly pricing and standardization 604

21 Strategies for network goods 612
21.1 Choosing how to compete 612
21.1.1 A simple analysis of standardization 613
21.1.2 A full analysis of standardization 615

21.2 Strategies in standards wars 622
21.2.1 Building an installed base for pre-emption 622
21.2.2 Backward compatibility and performance 627
21.2.3 Expectations management 630

21.3 Public policy in network markets 632
21.3.1 Ex ante interventions 633
21.3.2 Ex post interventions 634

References for Part VIII 641

Part IX Market intermediation 643
Introduction to Part IX 643
Contents

22 Markets with intermediated goods 647
  22.1 Intermediaries as dealers 647
    22.1.1 Intermediated vs. non-intermediated trade 648
    22.1.2 Dealer vs. pure platform operator 650
  22.2 Intermediaries as matchmakers 656
    22.2.1 Divide-and-conquer strategies 657
    22.2.2 Sorting by an intermediary in a matching market 659
  22.3 Intermediaries as two-sided platforms 662
    22.3.1 The price structure for intermediation services 662
    22.3.2 Competing intermediaries 666
    22.3.3 Implications for antitrust and regulation 675

23 Information and reputation in intermediated product markets 686
  23.1 Intermediation and information 686
    23.1.1 Information overload 686
    23.1.2 ‘Infomediaries’ and competition in search markets 689
    23.1.3 Information and recommendation networks 694
  23.2 Intermediation and reputation 701
    23.2.1 Certifying intermediaries 701
    23.2.2 Reputation systems 707
  References for Part IX 718

A Game theory 720
  A.1 Games in normal form and Nash equilibrium 720
  A.2 Games in extensive form and subgame perfection 723
  A.3 Static asymmetric-information games and Bayesian Nash equilibrium 725
  A.4 Dynamic asymmetric-information games and perfect Bayesian Nash equilibrium 726

B Competition policy 729
  B.1 A brief historical perspective 729
  B.2 Competition laws 731
    B.2.1 Antitrust legislation in the USA 732
    B.2.2 Competition legislation in the EU 733
  B.3 Competition policy in the EU and in the USA 734
  References for Appendices 737

Solutions to end-of-chapter exercises 738
Index 795