# Contents

*List of figures*  xiii  
*List of tables*  xv  
*List of cases*  xvi  
*Preface*  xix  

## Part I  Getting started  
Introduction to Part I  

### 1  What is Markets and Strategies?  
1.1 Markets  
1.2 Strategies  
1.3 Models and material of *Markets and Strategies*  
1.4 Level, scope and organization of the book  

### 2  Firms, consumers and the market  
2.1 Firms and consumers  
2.1.1 The firm  
2.1.2 Looking inside the black box of a firm  
2.1.3 Consumers and rational man  
2.1.4 Welfare analysis of market outcomes  
2.2 Market interaction  
2.2.1 The perfectly competitive paradigm  
2.2.2 Strategies in a constant environment (‘monopoly’)  
2.2.3 Dominant firm model  
2.2.4 Imperfect competition  
2.3 Market definition and market performance  
2.3.1 How to define a market?  
2.3.2 How to assess market power?  

**Notes for Part I**  38  
**References for Part I**  39  

## Part II  Market power  
Introduction to Part II  

### 3  Static imperfect competition  
3.1 Price competition  
3.1.1 The standard Bertrand model  
3.1.2 Price competition with uncertain costs  
3.1.3 Price competition with differentiated products  
3.1.4 Asymmetric competition with differentiated products  

© in this web service Cambridge University Press  
www.cambridge.org
## Table of Contents

### Part II

3.2 Quantity competition 54  
3.2.1 The linear Cournot model 54  
3.2.2 Implications of Cournot competition 58  
3.3 Price versus quantity competition 59  
3.3.1 Limited capacity and price competition 60  
3.3.2 Differentiated products: Cournot versus Bertrand 64  
3.3.3 What is the appropriate modelling choice? 66  
3.4 Strategic substitutes and strategic complements 67  
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 The Cournot model with free entry 83  
4.2.3 Price competition with free entry 85  
4.2.4 Monopolistic competition 87  
4.3 Industry concentration and firm turnover 91  
4.3.1 Exogenous versus endogenous sunk costs 91  
4.3.2 Dynamic firm entry and exit 97  

Notes for Part II 103  
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 113  
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 123  
5.4 Empirical analysis of product differentiation 125  
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 130  
5.4.4 Nested logit and other extensions 131
Contents

6 Advertising and related marketing strategies 135
   6.1 Views on advertising 135
   6.2 Price and non-price strategies in monopoly 139
      6.2.1 Price–Advertising decisions: the Dorfman–Steiner model 139
      6.2.2 A closer look at how advertising affects demand 141
   6.3 Some welfare economics of advertising 142
   6.4 Advertising and competition 144
      6.4.1 Informative advertising 144
      6.4.2 Persuasive advertising 149

7 Consumer inertia 157
   7.1 Uninformed consumers and search costs 157
      7.1.1 Price dispersion 158
      7.1.2 Consumer search 163
      7.1.3 Empirical investigation of price dispersion 165
   7.2 Switching costs 167
      7.2.1 Competitive effects of switching costs 167
      7.2.2 Coupons and endogenous switching costs 176
      7.2.3 Estimating switching costs 179
   7.3 Customer poaching 181

Notes for Part III 188
References for Part III 190

Part IV Pricing strategies and market segmentation 193
   Introduction to Part IV 193

8 Group pricing and personalized pricing 195
   8.1 Price discrimination 195
      8.1.1 Price discrimination: a typology 195
      8.1.2 ‘Know thy customers’ 197
   8.2 Group and personalized pricing in monopoly 198
   8.3 Group and personalized pricing in oligopolies 201
      8.3.1 Group pricing and localized competition 201
      8.3.2 Personalized pricing and location decisions 207
      8.3.3 Geographic price discrimination 208

9 Menu pricing 217
   9.1 Menu pricing versus group pricing 217
   9.2 A formal analysis of monopoly menu pricing 219
      9.2.1 Quality-dependent prices 219
      9.2.2 Information goods and damaged goods 224
      9.2.3 Extension to time- and quantity-dependent prices 226
   9.3 Menu pricing under imperfect competition 227
      9.3.1 Competitive quality-based menu pricing 228
      9.3.2 Competitive quantity-based menu pricing 234
## Contents

### 10 Intertemporal price discrimination 239
10.1 Durable good monopoly without commitment 239
   10.1.1 Small number of consumers 240
   10.1.2 Large number of consumers 243
10.2 Durable good monopoly with commitment 247
   10.2.1 Fixed capacities 248
   10.2.2 Flexible capacity 250
   10.2.3 Intertemporal pricing and demand uncertainty 251
10.3 Behaviour-based price discrimination 255

### 11 Bundling 259
11.1 A formal analysis of monopoly bundling 260
   11.1.1 Pure bundling as a device to offer a discount 261
   11.1.2 Mixed bundling 264
   11.1.3 Extensions 265
11.2 Tying and metering 269
11.3 Competitive bundling 272
   11.3.1 Bundling as a way to soften price competition 272
   11.3.2 When bundling intensifies price competition 274

### Notes for Part IV 279
### References for Part IV 280

### Part V Product quality and information 283
Introduction to Part V 283

### 12 Asymmetric information, price and advertising signals 285
12.1 Asymmetric information problems 285
   12.1.1 Hidden information problem 285
   12.1.2 Hidden action problem 289
12.2 Advertising and price signals 292
   12.2.1 Advertising signals 292
   12.2.2 Price signals 296
   12.2.3 Joint price and advertising signals 303
12.3 Price signalling under imperfect competition 305

### 13 Marketing tools for experience goods 309
13.1 Warranties 309
   13.1.1 Warranties as a reliability signal 310
   13.1.2 Warranties and investment in quality control 312
13.2 Branding 314
   13.2.1 Intertemporal branding and reputation 316
   13.2.2 Reputation and competition 317
   13.2.3 Umbrella branding 320

### Notes for Part V 327
### References for Part V 328
## Contents

### Part VI Theory of competition policy

#### 14 Cartels and tacit collusion
- Formation and stability of cartels
  - 14.1.1 Simultaneous cartel formation
  - 14.1.2 Sequential cartel formation
  - 14.1.3 Network of market-sharing agreements
- Sustainability of tacit collusion
  - 14.2.1 Tacit collusion: the basics
  - 14.2.2 Optimal punishment of deviating firms
  - 14.2.3 Collusion and multimarket contact
  - 14.2.4 Tacit collusion and cyclical demand
  - 14.2.5 Tacit collusion with unobservable actions
- Detecting and fighting collusion
  - 14.3.1 The difficulty in detecting collusion
  - 14.3.2 Leniency and whistleblowing programs

#### 15 Horizontal mergers
- Profitability of simple Cournot mergers
  - 15.1.1 Mergers between two firms
  - 15.1.2 Mergers between several firms
  - 15.1.3 Efficiency-increasing mergers
- Welfare analysis of Cournot mergers
  - 15.2.1 Linear Cournot model with synergies
  - 15.2.2 General welfare analysis
- Beyond simple Cournot mergers
  - 15.3.1 Successive mergers
  - 15.3.2 Mergers and entry
  - 15.3.3 Mergers under price competition
  - 15.3.4 Coordinated effects
- Empirical merger analyses
  - 15.4.1 Event studies and direct price comparisons
  - 15.4.2 Merger simulations

#### 16 Strategic incumbents and entry
- Taxonomy of entry-related strategies
  - 16.1.1 Entry deterrence
  - 16.1.2 Entry accommodation
- Strategies affecting cost variables
  - 16.2.1 Investment in capacity as an entry deterrent
  - 16.2.2 Investment as an entry deterrent reconsidered
  - 16.2.3 Raising rivals’ costs
- Strategies affecting demand variables
  - 16.3.1 Brand proliferation

© in this web service Cambridge University Press
16.3.2 Bundling and leverage of market power 417
16.3.3 Switching costs as an entry deterrent 420

16.4 Limit pricing under incomplete information 423
16.5 Entry deterrence and multiple incumbents 427

17 Vertically related markets 433
17.1 The double-marginalization problem 433
17.1.1 Linear pricing and double marginalization 433
17.1.2 Contractual solutions to the double-marginalization problem 435
17.1.3 Double marginalization and retail services 436
17.2 Resale-price maintenance and exclusive territories 437
17.2.1 Resale-price maintenance 437
17.2.2 Exclusive territories 440
17.3 Exclusive dealing 443
17.3.1 Anticompetitive effects of exclusive dealing contracts? The Chicago critique 445
17.3.2 Vertical integration and long-term contracts as partial deterrence devices 446
17.3.3 Full exclusion and multiple buyers 450
17.3.4 Exclusive contracts and investment incentives 452
17.4 Vertical oligopoly and vertical mergers 454
17.4.1 Vertical oligopoly 455
17.4.2 Exclusionary effects of vertical mergers 457
17.4.3 Coordinated effects of vertical mergers 463

Notes for Part VI 466
References for Part VI 470

Part VII R&D and intellectual property 475
Introduction to Part VII 475

18 Innovation and R&D 479
18.1 Market structure and incentives to innovate 480
18.1.1 Monopoly versus perfect competition: the replacement effect 481
18.1.2 Incentives to innovate in oligopolies 484
18.2 When innovation affects market structure 486
18.2.1 Monopoly threatened by entry: the efficiency effect 486
18.2.2 Asymmetric patent races: replacement and efficiency effects 487
18.2.3 Socially excessive R&D in a patent race 490
18.3 R&D cooperation and spillovers 492
18.3.1 Effects of strategic behaviour 493
18.3.2 Effects of R&D cooperation 497
18.3.3 Further analysis of R&D cooperation 499

19 Intellectual property 505
19.1 Remedies to the appropriability problem 506
19.1.1 Information and appropriability 506
19.1.2 Intellectual property protection 507
## Contents

19.1.3 Subsidization and secrecy 512  
19.1.4 Protection of IP in practice 514  

19.2 Optimal patent design 517  
19.2.1 Optimal patent length 517  
19.2.2 Optimal patent breadth 520  

19.3 Patent licensing and pooling 523  
19.3.1 Licensing to rival firms 523  
19.3.2 Licensing and cumulative innovations 526  

19.4 Intellectual property in the digital economy 530  
19.4.1 Digital music and end-user piracy 530  
19.4.2 Economics of open source 533  

Notes for Part VII 540  
References for Part VII 542

### Part VIII Networks, standards and systems 545

Introduction to Part VIII 545

#### 20 Markets with network goods 549

20.1 Network effects 549  
20.1.1 Direct and indirect network effects 549  
20.1.2 Network effects and switching costs 550  
20.1.3 Empirical evidence on network effects 552  

20.2 Markets for a single network good 554  
20.2.1 Modelling the demand for a network good 554  
20.2.2 Provision of a network good 563  

20.3 Markets for several network goods 566  
20.3.1 Demand for incompatible network goods 567  
20.3.2 Oligopoly pricing and standardization 575

#### 21 Strategies for network goods 581

21.1 Choosing how to compete 581  
21.1.1 A simple analysis of standardization 582  
21.1.2 A full analysis of standardization 584  

21.2 Strategies in standards wars 591  
21.2.1 Building an installed base for preemption 591  
21.2.2 Backward compatibility and performance 596  
21.2.3 Expectations management 599  

21.3 Public policy in network markets 601  
21.3.1 Ex ante interventions 601  
21.3.2 Ex post interventions 603

Notes for Part VIII 606  
References for Part VIII 607
# Part IX Market intermediation

## 22 Markets with intermediated goods

22.1 Intermediaries as dealers
- 22.1.1 Intermediated versus nonintermediated trade
- 22.1.2 Dealer versus pure platform operator

22.2 Intermediaries as matchmakers
- 22.2.1 Divide-and-conquer strategies
- 22.2.2 Sorting by an intermediary in a matching market

22.3 Intermediaries as two-sided platforms
- 22.3.1 The price structure for intermediation services
- 22.3.2 Competing intermediaries
- 22.3.3 Implications for antitrust and regulation

## 23 Information and reputation in intermediated product markets

23.1 Intermediation and information
- 23.1.1 Information overload
- 23.1.2 ‘Infomediaries’ and competition in search markets
- 23.1.3 Information and recommendation networks

23.2 Intermediation and reputation
- 23.2.1 Certifying intermediaries
- 23.2.2 Reputation systems

## Appendices

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

B Competition Policy
- B.1 A brief historical perspective
- B.2 Competition laws
- B.2.1 Antitrust legislation in the United States
- B.2.2 Competition legislation in the European Union
- B.3 Competition policy in the EU and in the US

Index