## **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

:

	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
11.1	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
7.2	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 the Cournot model with free entry 86
	4.2.4 Welfare properties of monopolistic competition 88
4.3	Industry concentration and firm turnover 91
4.5	4.3.1 Exogenous vs. endogenous sunk costs 91
	4.3.2 Dynamic firm entry and exit 97
	References for Part II 104
	Rejerences for Furt 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
3.2	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
	102
6	Advertising and related marketing strategies 138
6.1	Views on advertising 138
6.2	Price and non-price strategies in monopoly 142

6.3 6.4	<ul> <li>6.2.1 Price—advertising decisions: Dorfman—Steiner model 142</li> <li>6.2.2 A closer look at how advertising affects demand 144</li> <li>Some welfare economics of advertising 145</li> <li>Advertising and competition 148</li> <li>6.4.1 Informative advertising 148</li> <li>6.4.2 Persuasive advertising 153</li> </ul>
7	Consumer inertia 162
7.1	Uninformed consumers and search costs 162
	7.1.1 Price dispersion 163
	<ul><li>7.1.2 Consumer search with homogeneous products 167</li><li>7.1.3 Empirical investigation of price dispersion 170</li></ul>
	7.1.4 Sequential search and differentiated products 171
7.2	Switching costs 174
	7.2.1 Competitive effects of switching costs 175
	7.2.2 Coupons and endogenous switching costs 184
	7.2.3 Estimating switching costs 187 References for Part III 192
	152
Part IV	Pricing strategies and market segmentation 195
	Introduction to Part IV 195
8	Group pricing and personalized pricing 197
8.1	Price discrimination 197
	8.1.1 Price discrimination: a typology 197
	7. 07
0.2	8.1.2 'Know thy customers' 199
8.2 8.3	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200
8.2 8.3	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204
	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204
	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204
8.3	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209
	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209  Menu pricing 220
8.3 9	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209
8.3 9 9.1	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209  Menu pricing 220 Menu pricing vs. group pricing 220 A formal analysis of monopoly menu pricing 222 9.2.1 Quality-dependent prices 222
8.3 9 9.1	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209  Menu pricing 220 Menu pricing vs. group pricing 220 A formal analysis of monopoly menu pricing 222 9.2.1 Quality-dependent prices 222 9.2.2 Information goods and damaged goods 227
9.1 9.2	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209  Menu pricing 220 Menu pricing vs. group pricing 220 A formal analysis of monopoly menu pricing 222 9.2.1 Quality-dependent prices 222 9.2.2 Information goods and damaged goods 227 9.2.3 Extension to time- and quantity-dependent prices 229
8.3 9 9.1	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209  Menu pricing 220 Menu pricing vs. group pricing 220 A formal analysis of monopoly menu pricing 222 9.2.1 Quality-dependent prices 222 9.2.2 Information goods and damaged goods 227
9.1 9.2	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209  Menu pricing 220 Menu pricing vs. group pricing 220 A formal analysis of monopoly menu pricing 222 9.2.1 Quality-dependent prices 222 9.2.2 Information goods and damaged goods 227 9.2.3 Extension to time- and quantity-dependent prices 229 Menu pricing under imperfect competition 230
9.1 9.2 9.3	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209  Menu pricing 220 Menu pricing vs. group pricing 220 A formal analysis of monopoly menu pricing 222 9.2.1 Quality-dependent prices 222 9.2.2 Information goods and damaged goods 227 9.2.3 Extension to time- and quantity-dependent prices 229 Menu pricing under imperfect competition 230 9.3.1 Competitive quality-based menu pricing 231 9.3.2 Competitive quantity-based menu pricing 236
9.1 9.2	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209  Menu pricing 220 Menu pricing vs. group pricing 220 A formal analysis of monopoly menu pricing 222 9.2.1 Quality-dependent prices 222 9.2.2 Information goods and damaged goods 227 9.2.3 Extension to time- and quantity-dependent prices 229 Menu pricing under imperfect competition 230 9.3.1 Competitive quality-based menu pricing 231 9.3.2 Competitive quantity-based menu pricing 236  Intertemporal price discrimination 243
9.1 9.2 9.3	8.1.2 'Know thy customers' 199 Group and personalized pricing in monopolies 200 Group and personalized pricing in oligopolies 204 8.3.1 Group pricing and localized competition 204 8.3.2 Personalized pricing and location decisions 208 8.3.3 Geographic price discrimination 209  Menu pricing 220 Menu pricing vs. group pricing 220 A formal analysis of monopoly menu pricing 222 9.2.1 Quality-dependent prices 222 9.2.2 Information goods and damaged goods 227 9.2.3 Extension to time- and quantity-dependent prices 229 Menu pricing under imperfect competition 230 9.3.1 Competitive quality-based menu pricing 231 9.3.2 Competitive quantity-based menu pricing 236

,

10.2	
	10.2.1 Fixed capacity 252 10.2.2 Flexible capacity 254
	10.2.3 Intertemporal pricing and demand uncertainty 255
10.3	Behaviour-based price discrimination 259 10.3.1 Behaviour-based price discrimination by a monopolist 259
	10.3.2 Customer poaching 261
11	Bundling 270
11.1	A formal analysis of monopoly bundling 271 11.1.1 Pure bundling as a device to offer a discount 272
	11.1.2 Mixed bundling 275
	11.1.3 Extensions 276
11.2 11.3	
11.5	11.3.1 Bundling as a way to soften price competition 284
	11.3.2 When bundling intensifies price competition 286
	References for Part IV 293
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
13.2	13.1.2 Warranties and investment in quality control 326 Branding 328
13.2	Branding 328 13.2.1 Intertemporal branding and reputation 330
13.2	Branding 328 13.2.1 Intertemporal branding and reputation 330 13.2.2 Reputation and competition 331
13.2	Branding 328 13.2.1 Intertemporal branding and reputation 330
13.2 Part VI	Branding 328 13.2.1 Intertemporal branding and reputation 330 13.2.2 Reputation and competition 331 13.2.3 Umbrella branding 335

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	Standard to the standard stand
16	Strategic incumbents and entry 417
16.1	Taxonomy of entry-related strategies 418
	16.1.1 Entry deterrence 418
16.2	16.1.2 Entry accommodation 420
10.2	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
16.3	16.2.3 Raising rivals' costs 431
10.5	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

## x Contents

:

16.4	Limit pricing under incomplete information 442
16.5	Entry deterrence and multiple incumbents 446
	Wester Bernstein Associate 450
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
17.0	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
10.2	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	8	
	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		
	19.3.1 Sequential innovations and holdup 549	
	19.3.2 Complementary innovations and anticommons 553	
19.4		
	19.4.1 End-user piracy 557	
	19.4.2 Software protection 561	
	References for Part VII 570	
D4 3/111	Naturally, standards and materia, 572	
Part VIII	Networks, standards and systems 573 Introduction to Part VIII 573	
	Introduction to Part VIII 3/3	
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	
21.2	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	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	

,

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
В	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