

Cambridge University Press
978-0-521-86299-8 - Industrial Organization: Markets and Strategies
Paul Belleflamme and Martin Peitz
Frontmatter
[More information](#)

Industrial Organization

Industrial Organization: Markets and Strategies provides an up-to-date account of modern industrial organization that blends theory with real-world applications. Written in a clear and accessible style, it acquaints the reader with the most important models for understanding strategies chosen by firms with market power and shows how such firms adapt to different market environments. It covers a wide range of topics including recent developments on product bundling, branding strategies, restrictions in vertical supply relationships, intellectual property protection and two-sided markets, to name just a few. Models are presented in detail and the main results are summarized as lessons. Formal theory is complemented throughout by real-world cases that show students how it applies to actual organizational settings. The book is accompanied by a website containing a number of additional resources for lecturers and students, including exercises, solutions to exercises and slides.

Companion website at www.cambridge.org/belleflamme.

Paul Belleflamme is Professor of Economics at the Université catholique de Louvain, Belgium. He has published several articles in leading economics journals and teaches courses in the fields of industrial organization and managerial economics.

Martin Peitz is Professor of Economics at the University of Mannheim, Germany. He has published widely in leading economics journals and, with Paul de Bijl, is the author of *Regulation and Entry into Telecommunications Markets* (Cambridge University Press, 2003).

Cambridge University Press
978-0-521-86299-8 - Industrial Organization: Markets and Strategies
Paul Belleflamme and Martin Peitz
Frontmatter
[More information](#)

Cambridge University Press
978-0-521-86299-8 - Industrial Organization: Markets and Strategies
Paul Belleflamme and Martin Peitz
Frontmatter
[More information](#)

Industrial Organization

Markets and Strategies

Paul Belleflamme

Université catholique de Louvain

Martin Peitz

University of Mannheim



CAMBRIDGE
UNIVERSITY PRESS

Cambridge University Press
978-0-521-86299-8 - Industrial Organization: Markets and Strategies
Paul Belleflamme and Martin Peitz
Frontmatter
[More information](#)

CAMBRIDGE UNIVERSITY PRESS

Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo,
Delhi, Dubai, Tokyo, Mexico City

Cambridge University Press
The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org

Information on this title: www.cambridge.org/9780521681599

© Paul Belleflamme and Martin Peitz 2010

This publication is in copyright. Subject to statutory exception
and to the provisions of relevant collective licensing agreements,
no reproduction of any part may take place without the written
permission of Cambridge University Press.

First published 2010

Reprinted 2010

Printed in the United Kingdom at the University Press, Cambridge

A catalogue record for this publication is available from the British Library

Library of Congress Cataloguing in Publication data

Belleflamme, Paul.

Industrial organization : markets and strategies / Paul Belleflamme, Martin Peitz. – 1st ed.
p. cm.

Includes index.

ISBN 978-0-521-68159-9 (pbk.)

1. Marketing. 2. Strategic planning. I. Peitz, Martin. II. Title.

HF5415.B4287 2010

658.4'012 – dc22 2009047718

ISBN 978-0-521-86299-8 Hardback

ISBN 978-0-521-68159-9 Paperback

Additional resources for this publication at www.cambridge.org/industrial_organization

Cambridge University Press has no responsibility for the persistence or
accuracy of URLs for external or third-party Internet websites referred to
in this publication, and does not guarantee that any content on such
websites is, or will remain, accurate or appropriate.

Contents

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

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') 26
 2.2.3 Dominant firm model 29
 2.2.4 Imperfect competition 32

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

Notes for Part I 38
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 49
 3.1.4 Asymmetric competition with differentiated products 52

vi Contents

- 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

vii 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

viii 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

ix Contents

Part VI	Theory of competition policy	331
	Introduction to Part VI	331
14	Cartels and tacit collusion	335
14.1	Formation and stability of cartels	336
	14.1.1 Simultaneous cartel formation	337
	14.1.2 Sequential cartel formation	339
	14.1.3 Network of market-sharing agreements	341
14.2	Sustainability of tacit collusion	343
	14.2.1 Tacit collusion: the basics	343
	14.2.2 Optimal punishment of deviating firms	349
	14.2.3 Collusion and multimarket contact	353
	14.2.4 Tacit collusion and cyclical demand	358
	14.2.5 Tacit collusion with unobservable actions	361
14.3	Detecting and fighting collusion	363
	14.3.1 The difficulty in detecting collusion	365
	14.3.2 Leniency and whistleblowing programs	367
15	Horizontal mergers	373
15.1	Profitability of simple Cournot mergers	374
	15.1.1 Mergers between two firms	374
	15.1.2 Mergers between several firms	376
	15.1.3 Efficiency-increasing mergers	377
15.2	Welfare analysis of Cournot mergers	381
	15.2.1 Linear Cournot model with synergies	382
	15.2.2 General welfare analysis	384
15.3	Beyond simple Cournot mergers	386
	15.3.1 Successive mergers	387
	15.3.2 Mergers and entry	389
	15.3.3 Mergers under price competition	390
	15.3.4 Coordinated effects	392
15.4	Empirical merger analyses	395
	15.4.1 Event studies and direct price comparisons	395
	15.4.2 Merger simulations	395
16	Strategic incumbents and entry	399
16.1	Taxonomy of entry-related strategies	400
	16.1.1 Entry deterrence	400
	16.1.2 Entry accommodation	402
16.2	Strategies affecting cost variables	405
	16.2.1 Investment in capacity as an entry deterrent	405
	16.2.2 Investment as an entry deterrent reconsidered	411
	16.2.3 Raising rivals' costs	412
16.3	Strategies affecting demand variables	415
	16.3.1 Brand proliferation	415

x Contents

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
	<i>Notes for Part VI</i>	466
	<i>References for Part VI</i>	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

xi 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
	<i>Notes for Part VII</i>	540
	<i>References for Part VII</i>	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
	<i>Notes for Part VIII</i>	606
	<i>References for Part VIII</i>	607

xii Contents

Part IX Market intermediation 609

Introduction to Part IX 609

22 Markets with intermediated goods 613

- 22.1 Intermediaries as dealers 613
 - 22.1.1 Intermediated versus nonintermediated trade 614
 - 22.1.2 Dealer versus pure platform operator 616
- 22.2 Intermediaries as matchmakers 622
 - 22.2.1 Divide-and-conquer strategies 623
 - 22.2.2 Sorting by an intermediary in a matching market 625
- 22.3 Intermediaries as two-sided platforms 628
 - 22.3.1 The price structure for intermediation services 628
 - 22.3.2 Competing intermediaries 632
 - 22.3.3 Implications for antitrust and regulation 639

23 Information and reputation in intermediated product markets 647

- 23.1 Intermediation and information 647
 - 23.1.1 Information overload 647
 - 23.1.2 ‘Infomediaries’ and competition in search markets 650
 - 23.1.3 Information and recommendation networks 655
- 23.2 Intermediation and reputation 662
 - 23.2.1 Certifying intermediaries 662
 - 23.2.2 Reputation systems 668

Notes for Part IX 674

References for Part IX 676

Appendices 679

A Game theory 679

- A.1 Games in normal form and Nash equilibrium 679
- A.2 Games in extensive form and subgame perfection 682
- A.3 Static asymmetric information games and Bayesian Nash equilibrium 684
- A.4 Dynamic asymmetric information games and perfect Bayesian Nash equilibrium 685

B Competition Policy 689

- B.1 A brief historical perspective 689
- B.2 Competition laws 691
 - B.2.1 Antitrust legislation in the United States 692
 - B.2.2 Competition legislation in the European Union 693
- B.3 Competition policy in the EU and in the US 694

Notes for Appendices 697

References for Appendices 698

Index 699

Figures

2.1	Consumer surplus	<i>page 25</i>
3.1	Reaction functions and equilibrium in the Bertrand duopoly (with homogeneous product, and identical and constant marginal costs)	46
3.2	Residual demand for a Cournot oligopolist	55
3.3	Cournot duopoly	57
3.4	Efficient rationing with limited capacities	61
3.5	Setting $p_2 > p^*$ is not a profitable deviation	63
3.6	Reaction functions for price vs. quantity competition (when firms produce substitutable goods)	69
4.1	Equilibrium number of firms in an endogenous sunk cost industry	95
4.2	The lower bound of concentration in endogenous vs. exogenous sunk cost industries	96
5.1	Consumer choice in the linear Hotelling model	116
5.2	Profit function in the linear Hotelling model	117
5.3	Profit function under vertical differentiation	121
5.4	The consumer choice problem on Internet shopbots	133
6.1	Demand with informative advertising	146
7.1	Period-2 demand in the model with customer poaching	183
8.1	Uniform pricing vs. group pricing with two segments	200
8.2	Effect of increased segmentation on the division of welfare under monopoly group pricing	201
8.3	Partition of the unit interval	202
8.4	Profits of a typical firm at stage 1	206
8.5	Firm's profits under perfect price discrimination for given locations	208
8.6	Pricing policy choices at equilibrium	214
10.1	Optimal intertemporal pricing in the presence of two consumers	243
10.2	'Concavified' profit function	249
11.1	Separate selling vs. pure bundling	261
11.2	Effect of price reduction under separate selling and pure bundling	262
11.3	Consumer surplus under pure bundling vs. separate selling	263
11.4	Demand under mixed bundling	264
11.5	Separate selling vs. pure bundling with correlated values	267
11.6	Bundling an increasing number of goods	268
11.7	Bundling in a duopoly	273
11.8	Preferences for systems	275
12.1	Expected quality under asymmetric information	287
12.2	Price distortion to signal high quality	301
14.1	Stick-and-carrot strategy in the linear Cournot duopoly	352
15.1	Levels of synergies necessary for a Cournot merger to be profitable (Φ_p), to enhance welfare (Φ_w) or consumer surplus (Φ_c)	383
16.1	Best responses in an entry model with capacity commitment	407
16.2	The incumbent's profit function in an entry model with capacity commitment	407
16.3	Possible equilibria in an entry model with capacity commitment	408
16.4	Demand in the duopoly model with bundling by firm 1	418
17.1	A two-region model with exclusive territories	441
17.2	Exclusive dealing contracts as a barrier of entry: the incumbent seller's profit	449

xiv **List of figures**

18.1	Drastic and nondrastic process innovations	482
18.2	Incentives to innovate as a function of market structure	483
18.3	Strategic effect of R&D investments	495
19.1	Trade-off between dynamic and static efficiency	509
20.1	A simple star network	555
20.2	Fulfilled expectations demand when consumers value network benefits differently	560
20.3	Fulfilled expectations demand when consumers value stand-alone benefits differently	562
20.4	Network provision under monopoly and perfect competition	565
20.5	Technology adoption with network effects	569
20.6	Potential coordination failures in the adoption of incompatible network goods	570
20.7	Symmetric bandwagon equilibrium	574
21.1	Nash equilibria (NE) in the standardization game	587
21.2	Entry deterrence through installed base building ($c = 0.4$)	593
22.1	Intermediaries' business models: dealer and platform operator	617
22.2	Equilibrium trade under dealer and platform intermediation	621
23.1	Information overload on an open access platform	649
23.2	Information overload and the role of an information gatekeeper	650
23.3	Product choice of a single consumer	659
A.1	Extensive form of the simplified Stackelberg model	683

Tables

2.1	Herfindahl indices in the US manufacturing sector	<i>page</i> 36
6.1	Informative advertising in the Yoplait 150 case	138
6.2	Advertising for the top 10 US marketers	140
16.1	Payoffs in the brand proliferation game	417
16.2	Payoffs in the noncooperative entry deterrence game	427
18.1	Expected profits in a patent race	491
19.1	Comparative overview of patent and copyright protection in the EU and in the US	510
20.1	Consumers' utility	567
20.2	A typical coordination game	570
20.3	Outcomes when opponent plays a bandwagon strategy	573
21.1	A simple standardization game	582
21.2	Payoffs in standardization game – Scenario 1	586
21.3	Payoffs in standardization game – Scenario 2	590
21.4	Installed base and penetration pricing	593
23.1	Expected utility according to signal and match	658

Cases

1.1	Alcoa's natural monopoly	<i>page</i> 6
2.1	The market for generics	30
2.2	Using supply-side substitutability to define the relevant market	34
2.3	How concentration differs across industries and over time	35
3.1	Bananas and oranges	50
3.2	Airbus vs. Boeing and the market for wide-bodied aircrafts	51
3.3	When capacity choices condition pricing decisions in the DVD-by-mail industry	60
3.4	Digital revolution in the publishing industry	67
4.1	Entry in small cities in the US	82
4.2	Socially excessive entry of radio stations in the US	87
4.3	Endogenous sunk costs for supermarkets in the US	96
4.4	Entry and exit of hair salons in Sweden	101
5.1	Coffee differentiation	113
5.2	Product positioning in the VLJ industry: the 'battle of bathrooms'	123
5.3	Probabilistic modelling of individual behaviour and Apple's iPhone	126
5.4	Nested logit in the US car market	132
5.5	Nested logit for Internet bookshops: brand matters	132
6.1	US 2006 media spending on advertising	136
6.2	Yoplait 150	137
6.3	Advertising Heinz ketchup	141
6.4	Joint advertising campaign to promote private healthcare	154
7.1	Does search intensity affect price dispersion?	166
7.2	Examples of switching costs	167
7.3	Coupons in the ready-to-eat breakfast cereals market	177
7.4	Direct econometric methods to estimate switching costs in the market for mobile telephony	181
7.5	Pay-to-switch in the business automation software market	182
8.1	Price discrimination in airline fares	197
8.2	Data mining	198
8.3	International price discrimination in the textbook market	208
8.4	International price discrimination in the car market	210
8.5	Pricing by supermarkets in the United Kingdom	215
9.1	Examples of menu pricing in the information economy	217
9.2	Geographical pricing by low cost carriers	218
9.3	Damaged goods and fighting brands	225
9.4	Empirical studies of price discrimination	228
9.5	Add-on pricing	233
10.1	Durable good monopoly and the Microsoft case	246
10.2	Planned obsolescence of textbooks	247
10.3	Zara and the clothing industry	254
11.1	Examples of bundling in the information economy	260
11.2	Why does popcorn cost so much at the movies?	271
11.3	Triple play	277
12.1	Why did prices plunge on the Mumbai second-hand car market after July 2005?	286
12.2	Adverse selection in the second-hand car market	288
12.3	Selling used products over eBay	289

xvii List of cases

12.4	Quality management systems	290
12.5	Empirical examination of advertising as a signal of quality	295
12.6	When low quality poses as high quality	297
12.7	Price signalling for Bordeaux wines	302
13.1	Warranties in the market for new cars	311
13.2	The birth of brands in the Indus valley	314
13.3	Twin cars and brand names	315
13.4	Virtues of the Virgin brand	321
13.5	Umbrella branding in the market of oral hygiene products	325
14.1	The vitamin cartels	336
14.2	The vitamin cartels (2)	347
14.3	Multimarket contact in the US airline industry	353
14.4	Market-sharing agreements in Europe and the US	356
14.5	The vitamin cartels (3)	364
14.6	The Joint Executive Committee	366
14.7	The vitamin cartels (4)	367
14.8	The beer cartel in the Netherlands	368
15.1	Mergers and acquisitions in Europe	374
15.2	The ‘efficiency defence’ in the Superior Propane case	381
15.3	Potential consolidation in the US airline industry	387
15.4	Coordinated effects in the Nestlé Perrier merger	392
15.5	Merger simulation in mobile telephony in Portugal	396
15.6	The proposed merger between the European truck manufacturers Volvo and Scania	397
16.1	Kodak vs. Fuji – Act I	404
16.2	Entry deterrence in hospital procedure markets	410
16.3	Regulatory entry deterrence in the professions	414
16.4	Entry deterrence in the ready-to-eat cereal industry	416
16.5	The European Microsoft case	419
16.6	Kodak vs. Fuji – Act II	425
16.7	Entry deterrence in the airline industry: the threat by Southwest Airlines	426
16.8	Kodak vs. Fuji – Act III	429
17.1	Double marginalization in US cable TV	435
17.2	RPM for German books in Germany	440
17.3	Exclusive territories in European car dealerships	441
17.4	Beer distribution in Chicago	443
17.5	Selling spices in Belgium	445
17.6	Spontaneous ice cream purchases in Germany	454
17.7	Vertical merger in the US shoe industry	457
17.8	Vertical integration in cements and ready-mixed industries in the US	462
18.1	Microsoft’s incentives to innovate	484
18.2	The race for cleaner cars	490
18.3	Antitrust provisions related to R&D cooperation	499
18.4	Research joint ventures and collusion	502
19.1	Should software be protected by patents or by copyright?	511
19.2	The ‘H-Prize’	513
19.3	Patents in the pharmaceutical sector	514
19.4	Patent indicators	516
19.5	Arguments against the extension of copyright terms in the US	519

xviii List of cases

19.6	MercExchange vs. eBay: a fatal blow to patent trolls?	527
19.7	Why share IP?	535
20.1	Network effects: cause or consequence of switching costs?	551
20.2	Empirical evidence on network effects in software markets	552
20.3	Empirical evidence on network effects in systems markets using the nested logit approach	553
20.4	Heterogeneous adopters for network goods	558
20.5	The failure of quadraphonic sound	572
20.6	Compatibility, incompatibility and partial compatibility in telephony	576
20.7	Trying to build a wall to protect the bricks	579
21.1	Standard battle for high-definition DVDs	583
21.2	VirginMega wants Apple to open its FairPlay DRM	583
21.3	(In)compatibility and excess inertia in the diffusion of PCs and of mobile telephony	589
21.4	Commitment in the VCR standards war	596
21.5	Making Drupal backward compatible or not?	597
21.6	Expectations management in the high-definition DVDs arena	599
21.7	Novell sues over 'cereal box' ad campaign	600
21.8	EU's inquiries in network markets	604
22.1	Dealers and platform operators in the digital economy	617
22.2	The 'no surcharge rule' in the credit card industry	629
22.3	Pricing access to night clubs	631
22.4	Singlehoming environments	633
22.5	Multihoming environments	637
22.6	Market definition for satellite radio services	640
22.7	Exclusive contracting in the videogame industry	642
22.8	The Travelport/Worldspan EC case	644
22.9	The waterbed effect in mobile telephony	645
23.1	Black Friday ads websites	655
23.2	Book reviews on Amazon and Barnes & Noble in the US	656
23.3	Copurchase links on Amazon.com and the long tail	661
23.4	Quality certification by UK tour operators	665
23.5	Reputation on Amazon Marketplace	668
23.6	Reputation on eBay	672
B.1	Virgin/British Airways cases	694

Preface

A large part of economic transactions takes place through markets. On these markets, firms take decisions in response to prevailing market conditions that affect the well-being of market participants. Such decisions are relevant to the field of Industrial Organization (IO) and their analysis lies at the heart of this book. *Industrial Organization: Markets and Strategies* indeed aims at presenting the role of imperfectly competitive markets for private and social decisions.

Among the numerous decisions taken by firms is the *make-or-buy decision*, whereby firms compare the costs and benefits of manufacturing a product or service against purchasing it. Typically, the firm will prefer the ‘make’ option over the ‘buy’ option if the purchase price is higher than the in-house manufacturing cost or if outside suppliers are unreliable. Naturally, the firm must also have the necessary skills and equipment to meet its own product standards.

There is a clear analogy between this generic dilemma and the decision process that led us to write this book. As industrial organization teachers since the start of our academic careers, we have both long relied on existing textbooks to support our courses. Yet, through the years, our needs became different from the offers of outside suppliers. That is, the ‘make’ option started to become more tempting than the ‘buy’ option.

At the end of 2004 we firmly took our decision to ‘make’ a new textbook.^a At that time (and this still holds today), we could not find on the market any textbook in industrial organization that suited the type of courses at the advanced undergraduate or master level we were teaching. We knew that many of our colleagues shared our views. Our objective was thus to produce a new text that would greatly simplify the work of teachers who, thus far, had to combine material from different books and look for applications to meet their students’ needs. Naturally, benefits to teachers are meant to spill over to their students. Although we believe in formal modelling, we also believe that it is important not to overload students with techniques and to motivate the analysis with real-world cases. So, we endeavoured to write a book that blends up-to-date theoretical developments and real-life applications.

The concretization of our efforts currently lies in your hands. To convince you that the best option for you is the ‘buy’ decision, we propose three main reasons for which *Industrial Organization: Markets and Strategies* is your choice.

- We have produced a book that is easy to read, while maintaining a high level of rigour and conciseness. We intend to be exact and clearly state assumptions and results. As a consequence, you will be able to see easily where a new model starts, what are its assumptions and results, and what are the arguments that lead to those results.
- Our book covers a wide range of topics as it includes recent developments in the IO literature, as well as topical issues (related, e.g., to the digital economy).
- Many of the arguments made in IO theory are arguments at the margin; to formalize them we cannot rely on ‘calculus-free theory’. Hence, we present and analyse

^a As it took us four years to complete the redaction of this book, we can provide proof that we largely underestimated the costs of this ‘make’ decision. Firms, as analysed in this book, are not subject to such a bias.

xx Preface

simple and hopefully elegant models. We summarize the main results as lessons. We also illustrate the relevance of these models by relating them to real-world cases.

The **targeted audience** of the book is advanced Bachelor or Master students taking a course in industrial organization. The book is also a useful reference for an IO course at the Ph.D. level as well as for an advanced course for Business School teaching. In any case, to learn effectively from this book, students need to have a course of intermediate microeconomics or business economics in their academic background. Note that selected chapters of the book can also serve as support for courses in business and managerial economics, in management strategy, in strategic pricing, in economics of innovation, in the theory of competition policy or in oligopoly theory. It is also possible to focus on topics and cases to outline a course of industrial organization in the digital economy.

The specific features of the book help to address a number of **learning challenges** usually faced by industrial organization students.

- *Students often struggle to connect theory with practice.* The integration of real-world cases in the text, showing how theories relate to real applications, greatly reduces this problem. In addition, this helps students to understand better the relevance of topics.
- *Students often struggle to understand the working of models.* To address this issue, we carefully develop the models we present and we make their assumptions explicit. We want students to see models at work and we make sure that they do not spend their time uncovering hidden calculus.
- *Students may be overwhelmed by a large variety of models and lose track.* To avoid or, at least, reduce this risk, we have introduced a large number of lessons that guide the reader through the book and summarize the main insights of the analysis.
- *Students may become bored by constructed examples.* As a consequence, we draw many real-world cases from industries that students consider to be important, notably in consumer goods industries and in the digital economy. This makes students more involved and curious about how to address additional issues that appear in the cases.
- *Students often have trouble relating different topics with one another.* The book is carefully organized to make sure that students do not ‘close’ a topic (and forget its analysis) when moving to the next one. Each part of the book contains several chapters covering related topics and starts with a general introduction that gives a bird’s-eye view of the part material and explains the links between the various chapters. Multiple cross-references between chapters are made throughout the text. As a result, students should acquire a deeper and more transversal understanding of the various issues of industrial organization.
- *The needs of different types of students may be in conflict.* In particular, students who want to dig deeper may have problems finding the right material, while those who simply want to read the textbook may be distracted by many references in the text or in footnotes. To solve this dilemma, we minimize the number of footnotes and provide access to the relevant literature through endnotes. Moreover, the

xxi Preface

bibliography is sorted by the parts in which the respective work is cited. Hence, the book adequately combines access to the scientific literature for those who need it, and uninterrupted reading for those who do not.

A number of **supplementary resources** accompany the book and help instructors teach and students learn. Exercises are posted on the textbook website. Solutions to these exercises are made available to instructors. Additional exercises can be uploaded by other researchers. On the website also slides are posted. These come in two different sets (two files per chapter). The first set provides a quick overview on the different topics. Instructors can use this set to motivate a particular topic, establish key insights, provide some intuition, and some reality check. The second set presents the most important models in-depth. Each instructor can make his or her preferred blend from the slides provided by the authors.

Students at Barcelona, Frankfurt, Liège, Louvain, Luxembourg, Manchester, Mannheim and Munich (from the advanced undergraduate to the Ph.D. level) have seen parts of this book at various stages of completion. We thank them for their feedback. Several people – colleagues and students – dedicated their precious time reading parts of this book and helped us to make this book a reality with comments and suggestions on previous drafts and exercises for the textbook website. At the risk of forgetting some of them, we want to mention Francesca Barigozzi (Bologna), Giuseppe De Feo (Glasgow), Estelle Derclaye (Nottingham), Vincenzo Denicolo (Bologna), Roman Inderst (Frankfurt), Heiko Karle (Brussels), Johannes Koenen (Mannheim), Florian Köpke (Mannheim), Christian Lambertz (Mannheim), Marco Marinucci (Louvain), Yann Ménière (Paris), Jeanine Miklós-Thal (Rochester), Volker Nocke (Mannheim), Pierre M. Picard (Luxembourg), Thomas Roende (Copenhagen), Isabel Ruhmer (Mannheim), Markus Reisinger (Munich), Maarten Pieter Schinkel (Amsterdam), Yossi Spiegel (Tel Aviv), Cecilia Vergari (Bologna), Georg von Graevenitz (Munich) and Xavier Wauthy (Brussels). We should add to this list the various anonymous referees who conscientiously reviewed and commented initial drafts of several chapters. We want to thank them all for their contributions, support and encouragement. Over the whole period, Chris Harrison from Cambridge University Press was supportive and, perhaps due to our incomplete information disclosure about the progress of the book, optimistic that this book project will come to a happy end. We kept going because we could not disappoint him after all these years. We thank the team at Cambridge University Press for their dedication to produce this book.