## Preface

INTRODUCTION

1

	1.1	The sco	ope of the field		
	1.2	Theory	versus empiricism		
	1.3		s to entry and the structure-conduct-performance		
		paradig			
	1.4		le of high theory		
	1.5	An outl	ine of the book		
2	FOUNDATIONS OF OLIGOPOLY THEORY I				
	2.1	Introduction			
	2.2	Cournot in his own words			
	2.3	The classical oligopoly theory formulation			
		2.3.1	Graphical exposition		
		2.3.2	Mathematical exposition		
		2.3.3	Recapitulation		
	2.4	Best-res	Best-response functions		
		2.4.1	Constant elasticity of demand		
		2.4.2	Stackelberg example		
		2.4.3	Amoroso example		
	2.5	Existence			
	2.6	2.6 Stability			
		2.6.1	Adjustment to equilibrium		
		2.6.2	Cournotian adjustment		
	2.7	Compar	rative statics: the number of firms		

2.8	Limitin	g behavior	34		
	2.8.1	Long-run competitive equilibrium	36		
	2.8.2	Long-run Cournot equilibrium	36		
	2.8.3	Recapitulation	39		
2.9	Conclus	•	39		
Proble	ms		39		
FOUNI	DATIONS	OF OLIGOPOLY THEORY II	41		
3.1	Introdu	ction	41		
3.2	Courno	t duopoly as a static game	41		
3.3	Static v	ersus dynamic? (Nash versus Cournot?)	44		
3.4		tural variations	45		
	3.4.1	Conjectural derivatives	45		
	3.4.2	Conjectural elasticities	47		
	3.4.3	Consistent conjectural variations	47		
3.5		efficient of cooperation	51		
3.6	Represe	entative consumer models of product differentiation	52		
	3.6.1	Bowley	52		
	3.6.2	Shubik-Levitan	55		
3.7	Courne	ot with product differentiation	57		
3.8		nd with product differentiation	59		
3.9	Prices v	versus quantities	63		
3.10	Supply function oligopoly				
	3.10.1	General	67		
	3.10.2	Linear demand, quadratic cost	68		
3.11	Two-st	age capacity-constrained competition	70		
	3.11.1	Rigid capacity constraints	70		
	3.11.2	Permeable capacity constraints	75		
3.12	Conclu	asion	80		
Proble	ems		81		
			84		
		S OF OLIGOPOLY THEORY III	84		
4.1	Hotell	~_	84		
	4.1.1	Setup	86		
	4.1.2	Locations with well-behaved best-response functions	89		
	4.1.3	Locations with badly behaved best-response functions	92		
	4.1.4	Best-response functions	93		
	4.1.5	Existence of pure-strategy equilibrium prices	93		
4.2	4.1.6	Mixed-strategy equilibrium prices	94 94		
4.2	_	d Hotelling	9 <del>4</del> 94		
	4.2.1	Reservation price			
	4.2.2	No mill-price undercutting	96		
	4.2.3	Quadratic transportation cost	97		
	4.2.4	Consumer heterogeneity	100		

	4.3	4.2.5 4.2.6 4.2.7				
	4.3	4.3.1	Monopoly			
		4.3.2	Oligopoly: consumers distributed by marginal			
		7.5.2	utility of quality			
		4.3.3	Oligopoly: consumers distributed by income			
	4.4		ation between models of horizontal and			
	•••		differentiation			
	4.5	Conclus				
	Proble					
	110010					
5	EARLY EMPIRICAL STUDIES OF STRUCTURE-CONDUCT-PERFORMANCE RELATIONSHIPS					
	5.1	Introdu	ction			
	5.2	Bain an	d the critics			
		5.2.1	Bain			
		5.2.2	Criticism			
		5.2.3				
	5.3	Early ed	conometric work			
		5.3.1	Industry-level studies			
		5.3.2	Firm-level studies			
	5.4	Summa	nry			
6	DEBAT	TES OVER	INTERPRETATION AND SPECIFICATION			
	6.1	Introduction				
	6.2	Market	power versus efficiency			
		6.2.1	Theory			
		6.2.2	Early empirical evidence			
		6.2.3	Later empirical evidence			
		6.2.4	Summary			
	6.3	Measur	rement issues in the diagnosis of market power			
		6.3.1				
		6.3.2				
		6.3.3	The use of accounting data			
		6.3.4	Summary			
	6.4	Identifi	ication			
		6.4.1	A three-equation system			
		6.4.2	Identification of the three-equation system			
		6.4.3	Summary			
	6.5		ffects versus industry effects			
		6.5.1	Schmalensee			
		6.5.2	Scott and Pascoe			

5

	6.5.3	Kessides 1	181
	6.5.4	Kessides 2	182
	6.5.5	Amel and Froeb	182
	6.5.6	Roberts and Supina	182
	6.5.7	McGahan	183
	6.5.8	Mueller and Raunig	184
	6.5.9	Overall	184
6.6	Conclu	sion	184
Proble	ems		185
EMPIR	LICAL ST	UDIES OF MARKET PERFORMANCE	186
7.1	Introdu	action	186
7.2	Conjec	tures	186
	7.2.1	Iwata	186
	7.2.2	Appelbaum	187
	7.2.3	Roberts	189
	7.2.4	Spiller and Favaro	190
	7.2.5	Suslow	192
	7.2.6	Breakfast cereal 1: Liang	193
7.3	Time s	eries	194
	7.3.1	Domowitz, Hubbard, and Petersen 1	194
	7.3.2	Domowitz, Hubbard, and Petersen 2	198
	7.3.3	Final remark	199
7.4	Avoidi	ng cost data I: NEIO	199
	7.4.1	The automobile industry	201
	7.4.2	Breakfast cereal 2: Nevo	204
7.5	Avoidi	ng cost data II: the Solow residual	205
	7.5.1	Solow	205
	7.5.2	Hall 1	207
	7.5.3	Hall 2	210
	7.5.4	Norrbin	213
	7.5.5	Domowitz, Hubbard, and Petersen 3	213
	7.5.6	Roeger	213
	7.5.7	Klette	214
	7.5.8	Reprise	214
7.6		y checks	214
7.7		studies	215
	7.7.1	Mullin et al.	215
7.8		versus rate of return	217
	7.8.1	Retail prices	217
	7.8.2	Reservations	220
7.9	_	ersistence of profits	221
	7.9.1	The United States	222
	7.9.2	France, West Germany, and the United Kingdom	223
7.10	Not th	e last word	225

8	STRATEGIC BEHAVIOR: INVESTMENT IN ENTRY DETERRENCE					
	8.1	Introduction				
	8.2	Excess capacity				
		8.2.1 Excess capacity committed to use in the event of entry				
		8.2.2 Credible threats				
		8.2.3 Evidence				
	8.3	Switching costs				
		8.3.1 A monopolist with switching costs				
		8.3.2 Entry deterrence with switching costs				
	8.4	Raising rivals' costs				
	8.5	Predatory pricing				
		8.5.1 The chain store paradox				
		8.5.2 Resolutions of the chain store paradox				
	8.6	Limit pricing				
		8.6.1 Imperfect information				
		8.6.2 Predation, limit pricing, and merger				
	8.7	Advertising and limit pricing				
		8.7.1 Uncertainty about an incumbent's cost				
		8.7.2 Extensions				
	8.8	Animal farm				
	8.9	Conclusion				
	Problems					
9	ADVED	TISING				
•	9.1	The Dorfman–Steiner condition and generalizations				
	7.1	9.1.1 Advertising by a monopolist in a static model				
		9.1.2 Advertising by a monopolist in a dynamic model				
		9.1.3 Advertising in oligopoly				
	9.2	Advertising as a signal of quality				
	7.2	9.2.1 Search goods versus experience goods				
		9.2.2 Quality signaling via price and advertising				
		9.2.3 An example				
		9.2.4 Extension				
	9.3	Welfare consequences of advertising				
		9.3.1 Advertising that shifts demand curves				
	9.4	The duration of advertising effects				
	9.5	The advertising response to entry				
	9.6	Conclusion				
	Proble					
	110010	114.5				

# 10 COLLUSION AND NONCOOPERATIVE COLLUSION

- 10.1 Introduction
- 10.2 Noncooperative collusion in a static model
- 10.3 Noncooperative collusion in repeated games

×		CONTENTS				
		10.3.1	The stage game	297		
		10.3.2	The infinite supergame	298		
		10.3.3	Trigger strategies: the grim reaper	299		
		10.3.4	The stick-and-carrot strategy	301		
		10.3.5	Demons and repentance	304		
		10.3.6	Structure, conduct, and the stability of			
			noncooperative collusion	305		
	10.4	Price w		314		
		10.4.1	Imperfect information and noncooperative collusion	314		
		10.4.2	Price wars during booms	320		
		10.4.3	Price wars and switching costs	324		
		10.4.4	Demand shocks	324		
	10.5	Conscio	ous parallelism	327		
	10.6		ting practices	329		
		10.6.1	Most favored customer clauses	329		
		10.6.2	Price-matching	330		
	10.7		cal studies of collusion	331		
		10.7.1		331		
		10.7.2	Case studies	332		
	10.8	Conclu	sion	333		
	Proble	ems		334		
11	MADE	ET ĈTDI 14	CTUDE ENTRY AND EVE	335		
11	MARKET STRUCTURE, ENTRY, AND EXIT 11.1 Introduction			335		
	11.2					
	11.2	11.2.1	Algebraic properties	335 336		
		11.2.2	Market share, market concentration, and	330		
		11.2.2	market performance	337		
		11.2.3	Empirical evidence	337		
		11.2.4	Entry barriers	339		
		11.2.5	Critics	342		
	11.3		conditions and market structure	344 344		
	11.5	11.3.1	Fixed cost and economies of scale	344		
		11.3.1	Market structure with industry-specific assets	3 <del>44</del> 351		
		11.3.3	The model			
		11.3.4	Arbitrary changes in capital stocks	351		
		11.3.5	Investment by a single firm	351		
		11.3.3	myesinent by a single hell	353		

Asset sales between incumbents

Product differentiation as a barrier to entry

Strategies and payoffs

Sequential equilibrium

Market concentration

Empirical studies of market structure

The model

355

356

356

356

357

360

360

360

11.3.6

11.4.1

11.4.2

11.4.3

11.6.1

Financial markets

11.4

11.5

11.6

		11.6.2	Market share	
		11.6.3	Endogenous sunk costs and the bounds approach	
	11.7	Entry		
		11.7.1	Oligopolistic interaction among entrants	
		11.7.2	Entry and exit – description	
	11.8	Exit		
	11.9	Empirio	al studies of entry and exit	
		11.9.1	Canada	
		11.9.2	The United States	
		11.9.3	The United Kingdom	
		11.9.3	Germany	
		11.9.5	Japan	
	11.10	Conclus	sion	
	Proble	ms		
12	FIDM	erni (ceri	RE, MERGERS, AND JOINT VENTURES	
12	12.1	Introdu	·	
	12.1	Why are there firms?		
	12.2		Bounded rationality and opportunism	
	12.3		ate governance	
	12.3	12.3.1		
			Empirical evidence	
	12.4		s groups	
	12.5	X-ineffi		
	12.5	12.5.1	Organizational slack	
		12.5.2		
	12.6		ntal mergers	
	12.0	12.6.1		
		12.6.2		
		12.6.3	Empirical evidence on the effects of horizontal mergers	
	12.7		mergers and vertical foreclosure	
	14.7	12.7.1		
		12.7.2		
		12.7.3	Information and uncertainty Price discrimination	
		12.7.5		
		12.7.6	Empirical studies of vertical integration	
	12.8		fication and conglomerate mergers	
	12.9	The ma	rket for corporate control	
	~=•/	12.9.1	Event studies	
		12.9.1	Studies of post-merger performance	
		12.9.2	Determinants of merger activity	
		14.7.3	Total Hittigates of was be-	

	12.10	Joint ve	entures and equity interests	415
		12.10.1	Incentives to form joint ventures	415
		12.10.2	Joint ventures and market performance	415
	12.11	Conclus	sion	418
	Proble	m		419
13		CAL REST		420
	13.1	Introdu	420	
	13.2		ves to impose vertical restraints	421
		13.2.1	Market power in oligopoly	421
		13.2.2	Free riding	424
		13.2.3	Quality certification	426
		13.2.4		432
		13.2.5	Exclusive dealing	436
		13.2.6	Tying and bundling	439
	13.3	Empirio	cal evidence	441
		13.3.1	Econometric analysis	441
		13.3.2	Case studies	442
	13.4	Conclus	sion	443
14	- DOUBLE THE DEVELOPMENT			445
	14.1	Introdu	445	
	14.2	Stylized	d facts	447
		14.2.1	Rate of return to innovation	447
		14.2.2	Spillovers	448
		14.2.3	Summary	449
	14.3	Determ	ninistic innovation	450
		14.3.1	Fully noncooperative behavior	450
		14.3.2	R&D joint ventures	455
	14.4	Stochas	stic innovation	457
		14.4.1	Input spillovers	458
		14.4.2	Appropriability	459
		14.4.3	Noncooperative R&D	460
		14.4.4	Comparative statics	461
		14.4.5	R&D joint ventures	462
	14.5	Absorp	Absorptive capacity	
		14.5.1	Deterministic innovation	464 464
		14.5.2	Stochastic innovation	465
	14.6	Patents		466
		14.6.1	Patent length	466
		14.6.2	Patent breadth	470
				170

14.7 Empirical studies of R&D

14.7.1 Market structure and R&D

14.7.2 Cooperative research and development

14.8 Final remarks

**Problems** 

REFERENCES

INDEX OF NAMES

INDEX OF SUBJECTS