

General Equilibrium Analysis

Existence and Optimality Properties of Equilibria

by

Monique Florenzano

*Research Director at CNRS, CERMSEM,
Universite de Paris 1, France*

KLUWER ACADEMIC PUBLISHERS

BOSTON / DORDRECHT / LONDON

Contents

Preface	ix
1. FIXED POINTS AND MAXIMAL ELEMENTS	1
1.1 From the Knaster-Kuratowski-Mazurkiewicz lemma to the Kakutani-Fan theorem	3
1.1.1 Preliminary definitions	3
1.1.2 Fixed points in R^E	5
1.1.3 Fixed points in locally convex topological vector spaces	9
1.2 From the Ky Fan lemma to the Kakutani-Fan theorem	11
1.3 The coincidence theorem and its consequences	16
1.3.1 More on continuity of correspondences	16
1.3.2 Non-separation and Coincidence theorems	18
1.4 An application of the previous results: the KKMS lemma	24
1.5 Theorems obtained by selection	26
1.5.1 Paracompact spaces and continuous partitions of unity	27
1.5.2 Michael's selection theorems	28
1.5.3 Fixed point, zero and surjectivity theorems	32
2. TRANSITIVE EQUILIBRIUM	39
2.1 A direct proof of a Debreu-Gale-Nikaido lemma	45
2.2 Existence of transitive quasiequilibrium	49
2.2.1 Compactifying the economy	51
2.2.2 Existence of quasiequilibrium in S	56
2.3 From quasiequilibrium to equilibrium	61

3. NONTRANSITIVE EQUILIBRIUM	69
3.1 Equilibrium and quasiequilibrium of an abstract economy	71
3.2 Existence of nontransitive quasiequilibrium $\wedge$	75
3.2.1 Quasiequilibrium existence in a compact economy	76
3.2.2 Quasiequilibrium existence in the original economy	79
3.3 From quasiequilibrium to equilibrium,	81
4. OPTIMALITY PROPERTIES OF EQUILIBRIUM	83
4.1 Optimality concepts	85
4.1.1 Pareto dominance and Pareto optimality	85
4.1.2 Core of an economy	86
4.1.3 Replica economies and limit core concepts	87
4.2 Nonemptiness theorems	90
4.3 Decentralization theorems	97
4.3.1 Supporting weakly Pareto optimal allocations	98
4.3.2 Decentralizing fuzzy core allocations ¹	101
4.3.3 From quasiequilibrium to equilibrium,	104
5. INFINITE DIMENSIONAL ECONOMIES	105
5.1 Preliminaries	107
5.1.1 Commodities and prices	107
5.1.2 Equilibrium and optimality concepts	110
5.2 Edgeworth equilibrium existence and nonemptiness of the fuzzy core	113
5.3 Decentralizing Edgeworth allocations	120
5.3.1 Decentralization under interiority assumptions ,	120
5.3.2 An alternative assumption on the commodity—price duality	123
5.3.3 Decentralization under uniform properness in a Hausdorff locally convex topological vector lattice	126
5.3.4 Decentralization under properness	132
5.3.5 The particular case of a strictly positive total initial endowment	145
5.3.6 From quasiequilibrium to equilibrium .	146
5.4 A brief historical survey and a suggestion for a research agenda •	147

<i>Contents</i>	• vii
APPENDIX	151
A.1 Upper and lower semicontinuity	151
A.2 Related concepts	154"
A.3 Operations with correspondences	156
A.4 Maximum Theorem	159
Bibliography	161
Index of symbols	173
Index	179