

Dynamic Economic Analysis

Deterministic Models in Discrete Time

GERHARD SORGER >

EH CAMBRIDGE
fJvjP UNIVERSITY PRESS

Contents

List of figures	page x
Preface	xi
I Difference equations	1
1 Basic concepts	3
1.1 One-dimensional maps	3
1.2 Explicit difference equations	10
1.3 Implicit difference equations	18
1.4 Exercises	24
1.5 Comments and references	27
2 Linear difference equations	29
2.1 Terminology and general results	29
2.2 Homogeneous equations	33
2.3 Two-dimensional systems of homogeneous equations	44
2.4 Non-homogeneous equations	51
2.5 Exercises	55
2.6 Comments and references	57
3 Autonomous difference equations	59
3.1 Invariant sets, fixed points, and periodic points	59
3.2 Local linearization	65
3.3 Stability	69
3.4 Saddle points	74
3.5 Sunspot equilibria	83
3.6 Exercises	89
3.7 Comments and references	91

4	One-dimensional maps	93
4.1	Monotonic maps	93
4.2	Local bifurcations	96
4.3	Deterministic chaos	114
4.4	Exercises	121
4.5	Comments and references	122
II	Dynamic optimization	123
5	Optimization techniques	125
5.1	Model formulation and terminology	125
5.2	Euler equation and transversality condition	131
5.3	The Lagrangian approach	141
5.4	The recursive approach	147
5.5	Stationary discounted problems	155
5.6	Exercises	166
5.7	Comments and references	169
6	Dynamic inconsistency and commitment	170
 « * « * « «	
6.1	Dynamic inconsistency	170
6.2	Optimization without commitment	179
6.3	Optimization with partial commitment	186
6.4	Exercises	190
6.5	Comments and references	193
7	Dynamic games	194
 « * «	
7.1	A general framework	194
7.2	Nash equilibria with closed-loop strategies	198
7.3	Markov-perfect Nash equilibria	210
7.4	Hierarchical dynamic games	215
7.5	Exercises	227
7.6	Comments and references	229

8	Dynamic competitive equilibrium	231
8.1	The sequence formulation	232
8.2	The recursive formulation	239
8.3	Optimal policy under commitment	247
8.4	Discretionary optimal policy	263
8.5	Exercises	272
8.6	Comments and references	276
	References	277
	Index	282