

TABLE OF CONTENTS

PREFACE	i
CHAPTER 1: THE FUNCTION SPACES OF INPUTS AND OUTPUTS	1
CHAPTER 2: DYNAMIC PRODUCTION CORRESPONDENCES	8
2.1 Dynamic Output Correspondence	8
2.1.1 Axioms on the Output Sets $P(x)$	8
2.1.2 Weak Topology for the Output Space	15
2.1.3 Axioms on Time Spans of Outputs	19
2.2 Dynamic Input Correspondence	20
2.2.1 Properties Induced for $u \rightarrow L(u)$	21
2.2.2 Axioms on Time Extension of Inputs	25
2.2.3 Technically Efficient Input Histories	26
2.2.4 Axioms on Boundedness of Efficient Input Histories	31
2.2.5 Weak Topology for the Input Space	35
2.3 Freedom of Axioms from Contradiction	37
2.4 Independence of the Axioms	56
2.5 Existence of a Dynamic Neoclassical Production Function - Time Substitution	73
2.6 Steady State (Static) Production Correspondence	80
CHAPTER 3: LAWS OF RETURN	97
3.1 Essentiality of Factors	101
3.2 Jointness of Outputs	104
3.3 Limitation of Output Rates by Input Rates of Essential Factors of Production	106
3.4 Limitation of Summable Output Rate Histories by Input Rates of Essential Factors of Production	117
3.5 Laws of Return in the Norm	121
3.6 Limitation of Output Rates by Intervals of Time Over Which Essential Factors are Applied	129
3.7 Restriction of Output by Nondisposability of Factors	138
CHAPTER 4: FUNCTIONAL REPRESENTATION OF DYNAMIC PRODUCTION CORRESPONDENCES	143
4.1 The Output Distance Functional	143
4.2 The Input Distance Functional	146
4.3 The Joint Production Functional	149

CHAPTER 5: SPECIAL STRUCTURES	156
5.1 Globally Homothetic Correspondences	156
5.2 Semi-Homogeneous Correspondences	163
5.3 Ray Homothetic Correspondences	172
CHAPTER 6: COST AND REVENUE FUNCTIONALS	180
6.1 Minimal Cost Functional	180
6.2 Maximal Revenue Functional	186
6.3 Expansion Paths	190
6.3.1 Scaling of Output Histories	190
6.3.2 Scaling of Input Histories	196
CHAPTER 7: DUALITIES AND SHADOW PRICING	200
7.1 Duality Between Minimal Cost Functional and Distance Functional for Input Correspondence	200
7.2 Duality Between Maximal Revenue Functional and Distance Functional for Output Correspondence	208
7.3 Shadow Price Functions for Input and Output Histories	210
CHAPTER 8: INDEX FUNCTIONS FOR PRODUCTION THEORY	216
8.1 Price and Quantity Indices for Inputs	216
8.2 Price and Quantity Indices for Outputs	220
8.3 Index Functions for Homothetic Dynamic Production Structures	222
8.4 Macraeconomic Relationships	235
CHAPTER 9: INDIRECT DYNAMIC PRODUCTION CORRESPONDENCES	238
9.1 Cost-Indirect Output Correspondence	238
9.2 Return-Indirect Input Correspondence	243
9.3 Cost-Benefit Analysis Under Global Prices	246
9.4 Cost-Benefit Analysis Under a Representative Preference Structure	251
REFERENCES	257