CONTENTS

List of Tables	xi
List of Figures	xiii
Preface	xv
Chapter	
1 Introduction	1
The Malthusian Problem: Perception and Reality	1
Pre-Malthus (1500–1790)	3
Malthus (1767-1834)	4
The Latter Nineteenth Century	6
World War I and Its Aftermath	7
The 1920s	9
The 1930s: Depression	11

The 1940s: The Immediate Post-World War II Period	12
The 1950s	13
The 1960s: The Development Decade	15
Into the 1970s: The Green Revolution and Beyond	17
The Basis of It All: The Underlying Methodology	21
Conclusion	30
Notes	31
2 The Analytical Framework	37
The Classical Model	40
The Induced Technological Change Model	42
The Stages Model	44

The Science Model	47
Summary	48
Notes	50
3 Methodology	52
Key Conceptual Considerations	52
The Nature of the Technology	53
The Treatment of Capital	56
The Epochal Framework	60
An Interpretation of the Parameters	62
A Parametric Taxonomy	65
The Models	66
The Classical Model	66
The Malthusian Variant of the Classical Model	66
The Primitive-Expansive Variant of the Classical Model	66
The Disaster Variant of the Classical Model	67
The Induced Model	67
The Modern Intensive Variant of the Induced Model	69
The Modern Extensive Variant of the Induced Model	69
The Abundant Earth Model	70
The Expansion Variant of the Abundant Earth Model	70
The Replication Variant of the Abundant Earth Model	70
The Modern Extensive Variant of the Abundant Earth Model	70
The Stages Model	71
The Science Model	71
Summary	71
The Data	73
The Data Required	73
The Independent Variables	73

The Dependent Variables	75
Total Food Production: Suitable Proxies	79
The Data Used	83
The Processing of the Data	85
Regional Classificatory Criteria	85
The Epochal Analysis	89
The Derivation of the Epochal Parameters	93
Notes	95
4 Worldwide Impending Hunger: The Empirical Picture	97
Background	97
The World: All Wheat Producers	100
The World: All Rice Producers	107
Regional Perspectives: The Less Developed Countries	112
Northwest Europe	117
Eastern Europe	123
Overseas New Settlement: Wheat Exporters	126
Asian Rice Exporters	131
Asian Rice Importers	136
Central America: Rice	139
South America	142
Notes	144
5 The Evidence of Effective Malthusian Pressures:	
The Empirical Record	147
Post-World War II	150
The Less Developed World	151
Notes	153
Appendix 5.A. The Malthusian Paradigm: How Real?	153
Test 1. The Effects of Food (Rice) Availability on Population Growth: Individual Country	
Time Series	154

x / Contents

Test 2. A "Sims Test" for Direction of Causality	161
Test 3. The Relative Contributions of Acreage and Yield	s 165
Notes	167
6 Changes in the Agricultural Technology	168
	168
The Science Model	100
Macroeconomic Determinants of the Diffusion of the Green Revolution	172
The Induced Innovation Model	173
The Land Intensity Parameter and the Elasticity of Substitution	178
The Abundant Earth Model and the Stages Model	180
Agricultural-Technological Change and the Level	
of Development	182
Notes	186
7 Summary	188
Notes	194
Appendixes	
A The Data	198
B The Level of Aggregation and the Choice	
of Regional Composition	213
The Covariance Test Sequence for Regression	
Coefficient Homogeneity	215
Time Series Test Sequence: The Test Sequence Applied	216
Summary of the Results of the Covariance Analysis	222
Note	223
C The Isolation of Technological Epochs	224
Notes	232
Bibliography	233
Index	241