## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>xiii</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>xvii</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Method</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Reader Outcomes</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Themes</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Relevance and Applicability</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>1 Production</strong></td>
<td>8</td>
</tr>
<tr>
<td>1.1 <em>The Production Function</em></td>
<td>9</td>
</tr>
<tr>
<td>1.2 <em>The “Law” of Variable Proportions</em></td>
<td>11</td>
</tr>
<tr>
<td>1.3 <em>Substitution</em></td>
<td>13</td>
</tr>
<tr>
<td>1.4 <em>Measuring Substitution</em></td>
<td>15</td>
</tr>
<tr>
<td>1.5 <em>Specific “Functional Forms” for Production Functions</em></td>
<td>16</td>
</tr>
<tr>
<td>1.6 <em>Attributing Products to Inputs: Distributing Income from Production</em></td>
<td>17</td>
</tr>
<tr>
<td>1.7 <em>Efficiency and the Choice of How to Produce</em></td>
<td>18</td>
</tr>
<tr>
<td>1.8 <em>Predictions of Production Theory 1: Input Price Changes</em></td>
<td>20</td>
</tr>
<tr>
<td>1.9 <em>Predictions of Production Theory 2: Technological Changes</em></td>
<td>21</td>
</tr>
<tr>
<td>1.10 <em>Stocks and Flows</em></td>
<td>22</td>
</tr>
<tr>
<td>1.11 <em>The Distribution of Income</em></td>
<td>23</td>
</tr>
<tr>
<td>1.12 <em>Production Functions in Achaemenid Babylonia</em></td>
<td>25</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>26</td>
</tr>
<tr>
<td><strong>Suggested Readings</strong></td>
<td>27</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>27</td>
</tr>
<tr>
<td><strong>2 Cost and Supply</strong></td>
<td>29</td>
</tr>
<tr>
<td>2.1 <em>The Cost Function</em></td>
<td>31</td>
</tr>
<tr>
<td>2.2 <em>Short Run and Long Run</em></td>
<td>32</td>
</tr>
<tr>
<td>2.3 <em>The Relationship between Cost and Production</em></td>
<td>33</td>
</tr>
<tr>
<td>2.4 <em>Producers’ Objectives</em></td>
<td>34</td>
</tr>
<tr>
<td>2.5 <em>Supply Curves</em></td>
<td>35</td>
</tr>
</tbody>
</table>
Contents

2.6 Demands for Factors of Production 40
2.7 Factor Costs in General: Wages and Rents 41
2.8 Allocation of Factors across Activities 43
2.9 Organizing Production: The Firm 43
2.10 A More General Treatment of Cost Functions 46
2.11 The Economics of Mycenaean Vases, I: Supply and Cost 47
2.12 Accounting for Apparent Cost Changes in Minoan Pottery 49
2.13 Production in an Entire Economy: The Production Possibilities Frontier 50

References 52
Suggested Readings 53
Notes 53

3 Consumption
3.1 Rationality of the Consumer 57
3.2 The Budget 57
3.3 Utility and Indifference Curves 58
3.4 Demand 60
3.5 Demand Elasticities 63
3.6 Aggregate Demand 65
3.7 Evaluating Changes in Wellbeing 66
3.8 Price and Consumption Indexes 70
3.9 Intertemporal Choice 73
3.10 Durable Goods and Discrete Choice 75
3.11 Variety and Differentiated Goods 79
3.12 Value of Time and Household Production 82
3.13 Risk, Risk Aversion, and Expected Utility 86
3.14 Irrational Behavior 88
3.15 Fixed Prices 90
3.16 Applying Demand Concepts: Relationships between Housing Consumption, Housing Prices, and Incomes in Pompeii 93
3.17 The Economics of Mycenaean Vases, II: Demand 96

References 99
Suggested Readings 99
Notes 100

4 Industry Structure and the Types of Competition
4.1 Perfect Competition 104
4.2 Competitive Equilibrium 106
4.3 Monopoly 108
4.4 Oligopoly 110
4.5 Monopolistic Competition 111
4.6 Contestable Markets 112
4.7 Buyer’s Power: Monopsony 113
4.8 The Economics of Mycenaean Vases, III: Industry Structure 114
4.9 Ancient Monopoly and Oligopoly: Religion and Foreign Trade 115

References 117
Suggested Readings 118
Notes 118

5 General Equilibrium
5.1 General Equilibrium as a Fact and as a Model 120
5.1.1 The facts 121
5.1.2 The models 121
5.1.3 The questions 123
## Contents

5.2 The Walrasian Model 124  
5.3 Exchange 127  
5.4 The Two-Sector Model 128  
5.4.1 The basics with the Lerner–Pearce diagram 128  
5.4.2 Growth in factor supplies 130  
5.4.3 Technical change 132  
5.5 Existence and Uniqueness of Equilibrium 133  
5.6 Computable General Equilibrium Models 134  
References 136  
Suggested Readings 137  
Notes 137

6 Public Economics 139  
6.1 Government in the Economy: Scope of Activities, Modern and Ancient 139  
6.2 Private Goods, Public Goods, and Externalities 141  
6.2.1 Private goods 141  
6.2.2 Public goods 142  
6.2.3 Externalities 143  
6.3 Raising Revenue 149  
6.3.1 Taxation 1: rationales and instruments 149  
6.3.2 Taxation 2: effects of taxes 154  
6.3.3 Taxation 3: tax incidence (who really pays?) 165  
6.3.4 Taxation 4: optimal tax systems 169  
6.3.5 Other revenue sources 173  
6.4 The Theory of Second Best 174  
6.5 Government Productive Activities 175  
6.5.1 Public production and pricing 175  
6.5.2 The supply of public goods and social choice mechanisms 181  
6.5.3 Public investment and cost–benefit analysis 186  
6.6 Regulation of Private Economic Activities 191  
6.6.1 Rent seeking 191  
6.6.2 The costs of regulation: the Averch–Johnson effect 193  
6.7 The Behavior of Government and Government Agencies 194  
6.7.1 Theories of government 194  
6.7.2 Theories of bureaucracy 195  
6.7.3 Levels of government 196  
6.8 Suggestions for Using the Material of this Chapter 196  
References 197  
Suggested Readings 199  
Notes 199

7 The Economics of Information and Risk 202  
7.1 Risk 202  
7.1.1 The ubiquity of risky decisions 203  
7.1.2 Concepts and measurement 205  
7.1.3 Risk and behavior: expected utility 209  
7.1.4 Risk versus uncertainty: the substance of probabilities 215  
7.2 Information and Learning 217  
7.2.1 The structure of information 217  
7.2.2 Learning as Bayesian updating 218  
7.2.3 Experts and groups 223  
7.3 Dealing with Nature’s Uncertainty 225  
7.3.1 Contingent markets 225  
7.3.2 Portfolios and diversification 230
### Contents

#### 7.4 Behavioral Uncertainty  
- 7.4.1 Asymmetric information: problems and solutions  
- 7.4.2 Strategic behavior  

#### 7.5 Expectations  
- 7.5.1 The role of expectations in resource-allocation decisions  
- 7.5.2 Adaptive models of expectations  
- 7.5.3 The rational expectations hypothesis  

#### 7.6 Competitive Behavior under Uncertainty  
- 7.6.1 Production behavior  
- 7.6.2 Search problems  

#### 7.7 Suggestions for Using the Material of this Chapter  

#### References  

#### Suggested Readings  

#### Notes  

#### 8 Capital  

##### 8.1 The Substance and Concepts of Capital  
- 8.1.1 Capital as stuff  
- 8.1.2 Capital in the production function  
- 8.1.3 Stocks, flows, and accumulation  
- 8.1.4 Prices and values  
- 8.1.5 Temporal aspects of capital  
- 8.1.6 Measuring capital  
- 8.1.7 The labor theory of value  

##### 8.2 Quasi-Rents  

##### 8.3 Interest Rates  

##### 8.4 The Theory of Capital  
- 8.4.1 Present and future consumption, investment, and capital accumulation  
- 8.4.2 Demand for and supply of capital: flows and stocks  
- 8.4.3 Capital richness and interest rates  

##### 8.5 Use of Capital by Firms  
- 8.5.1 Investment  
- 8.5.2 Maintenance  
- 8.5.3 Scraping and replacement  

##### 8.6 Consumption and Saving  
- 8.6.1 Intertemporal utility maximization  
- 8.6.2 Hypotheses about consumption  
- 8.6.3 Individual and aggregate savings  

##### 8.7 Capital Formation  

##### 8.8 Suggestions for Using the Material of this Chapter  

#### References  

#### Suggested Readings  

#### Notes  

#### 9 Money and Banking  

##### 9.1 The Services of Money  
- 9.1.1 Money as a medium of exchange  
- 9.1.2 Money as a store of value  
- 9.1.3 Money as a unit of account  
- 9.1.4 Stability of value  
- 9.1.5 Monetization prior to currency  

##### 9.2 The Types of Money  
- 9.2.1 Commodity money  
- 9.2.2 Credit money  
- 9.2.3 One special case of credit money: bank money  

#### References  

#### Suggested Readings  

#### Notes  


10.6 Migration 391
  10.6.1 Economic incentives for migration 392
  10.6.2 Consequences of migration 394
  10.6.3 Refugee migration 396
  10.6.4 Equilibrating migration flows when the wage rate doesn’t adjust 396

10.7 Families 398
  10.7.1 Marriage 398
  10.7.2 Intrafamily resource allocation 405
  10.7.3 Children and the economics of fertility and child mortality 412

10.8 Labor and the Family Enterprise 414
  10.8.1 The farm family household and the separability of production decisions from consumption decisions 415
  10.8.2 Effects of missing markets on labor allocation 418
  10.8.3 Restrictions on household activities 420
  10.8.4 Implications of the family farm model 422

10.9 Slavery 423
  10.9.1 The supply of slaves 424
  10.9.2 The demand for slaves 426
  10.9.3 Investment in slaves 427
  10.9.4 Market consequences of slaves 427
  10.9.5 Slaves’ incentives 427

10.10 Suggestions for Using the Material of this Chapter 428

References 429
Suggested Readings 432
Notes 433

11 Land and Location 440
  11.1 The Special Characteristics of Land 440
  11.2 Land as a Factor of Production 441
    11.2.1 Supply 441
    11.2.2 Demand 441
  11.3 The Location of Land Uses 442
    11.3.1 The Thünen model 442
    11.3.2 The bid-rent function 447
    11.3.3 Equilibrium in a region 450
    11.3.4 Modifying the social context 451
  11.4 The Location of Production Facilities 452
    11.4.1 Individual facilities 452
    11.4.2 Industries 455
  11.5 Consumption and the Location of Marketing 457
    11.5.1 The structure of transportation costs 457
    11.5.2 The shopping tradeoff: frequency versus storage 458
    11.5.3 Aggregate demand in a spatial market 460
    11.5.4 Hierarchies of marketplaces: central place theory 461
    11.5.5 Periodic markets 462
  11.6 Transportation 463
    11.6.1 Infrastructure 463
    11.6.2 Equipment 465
    11.6.3 Pricing of transportation services 465

11.7 Suggestions for Using the Material of this Chapter 467

References 468
Suggested Readings 469
Notes 470
## Contents

14 Growth

14.1 Introduction 535
  14.1.1 Economic growth: delimiting the scope 535
  14.1.2 Growth in antiquity: is there anything to explain? 536

14.2 Essential Concepts 536
  14.2.1 Production functions again 536
  14.2.2 Technical change 537
  14.2.3 Growth versus development 537

14.3 Neoclassical Growth Theory 538
  14.3.1 The Solow model 538
  14.3.2 Technology and growth in the Solow model 541
  14.3.3 Endogenizing technical change 543
  14.3.4 Extent of the market, division of labor, and productivity 545

14.4 Structural Change 546
  14.4.1 Sectoral concepts as organizing devices 546
  14.4.2 A two-sector model of an economy 548
  14.4.3 Some stylized facts 549

14.5 Institutions 551
  14.5.1 Property rights 552
  14.5.2 Governments 552
  14.5.3 Stability and change 553

14.6 Studying Economic Growth in Antiquity 553
  14.6.1 What there is to explain 554
  14.6.2 Organizing inquiry about economic growth with the help of growth theory 554
  14.6.3 Studying episodes of growth following declines: beyond growth theory 557
  14.6.4 Summary 559

14.7 Suggestions for Using the Material of this Chapter 559
  14.7.1 Evidence of growth 559
  14.7.2 Sectoral structure 561

References 561
Suggested Readings 564
Notes 564

Index 569