Contents

Preface ix
Acknowledgments xi
Chapter 1 Introduction and Axioms of Urban Economics 1
What Is Urban Economics? 1
What Is a City? 2
Why Do Cities Exist? 3
 The Five Axioms of Urban Economics 7 Prices Adjust to Achieve Locational Equilibrium 7 Self-Reinforcing Effects Generate Extreme Outcomes 9 Externalities Cause Inefficiency 9 Production Is Subject to Economies of Scale 10 Competition Generates Zero Economic Profit 11
What's Next? 11
References and Additional Reading 12
Appendix Census Definitions 12
Urban Population 12
Metropolitan and Micropolitan Statistical Areas 13
Principal City 14

Chapter 2 Why Do Cities Exist? 17	
A Region without Cities—Backyard Production 17	
A Trading City 18 Comparative Advantage and Trade 19 Scale Economies in Exchange 19	
Trading Cities in Urban History 20 Trading Cities in World History 20 Trading Cities in American History 21	
A Factory City 22 Determining Wages and Prices 22 The Market Area of a Factory City 23	
The Industrial Revolution and Factory Cities 24 Innovations in Manufacturing 25 Innovations in Transportation 26 Innovations in Agriculture 26 Energy Technology and Location Decisions 26	
A System of Factory Cities 27	
Resources-Oriented Firms and Processing Cities 29 Scale Economies and Market Areas 29 System of Processing Cities 30 Other Examples of Resources-Oriented Industries 30	
Innovation Cities 31	
Summary 33	
Applying the Concepts 34	
References and Additional Reading 37	
Appendix Location Decisions of Transfer-Oriented Firms	38
Resource-Oriented Firms 39	
Market-Oriented Firms 40	
The Principle of Median Location 42	
Transshipment Points and Port Cities 43	

Chapter 3 Why Do Firms Cluster?
Sharing Intermediate Inputs 47 Dresses and Buttons 48 High-Technology Firms 49 Intermediate Inputs in the Movie Industry 49
Self-Reinforcing Effects Cause Industry Clusters 50 The Benefits and Costs of Clustering 50 The Profit Gap and the Size of the Cluster 52
Sharing a Labor Pool 52 The Isolated Firm 53 Locating in a Cluster 54 Expected Profits Are Higher in the Cluster 54 Labor Pooling in the Movie Industry 55
Labor Matching 55 A Model of Labor Matching 56 Agglomeration Economies: More Workers Implies Better Matches 57
Knowledge Spillovers 58
Evidence of Localization Economies 59
Urbanization Economies 60 Sharing, Pooling, and Matching 60 Corporate Headquarters and Functional Specialization 60 Knowledge Spillovers 61 Evidence of Urbanization Economies 62
Other Benefits of Urban Size 62 Joint Labor Supply 63 Learning Opportunities 63 Social Opportunities 64
Summary 64
Applying the Concepts 64
References and Additional Reading 67
Chapter 4 City Size
Utility and City Size 70 Benefits and Costs of Bigger Cities 70 Locational Equilibrium, Land Rent, and Utility within a City 72
A System of Cities 73 Cities Are Not Too Small 73 Cities May Be Too Large 75

Specialized and Diverse Cities 76 A Model of Laboratory Cities 76 Example: The Radio Industry in New York 77 Evidence of Laboratory Cities 77	
Differences in City Size 78 Differences in Localization and Urbanization Economies 78 Local Goods and City Size 79 Local Employment Amplifies Size Differences 79	
The Size Distribution of Cities 80 The Rank-Size Rule 81 Urban Giants: The Puzzle of Large Primary Cities 82	
Summary 83	
Applying the Concepts 84	
References and Additional Reading 87	
Appendix Central Place Theory References 91	88
Chapter 5 Urban Growth Economic Growth: Increase in Per-Capita Income 92	92
City-Specific Innovation and Income 93 Regionwide Innovation and Income 95	
Human Capital and Economic Growth 95	
The Urban Labor Market 96 Urban Labor Demand 96 Shifting the Urban Labor Demand Curve 98 Export versus Local Employment and the Multiplier 99 The Labor-Supply Curve 101 Equilibrium Effects of Changes in Supply and Demand 102	
Employment Growth and Decline of the U.S. Manufacturing Belt 105 The Role of Human Capital 105 Labor and Housing Markets in Shrinking Cities 106	
Public Policy and Equilibrium Employment 107 Taxes and Firm Location Choices 107 Public Services and Location Decisions 108 Subsidies and Incentive Programs 108 Professional Sports, Stadiums, and Jobs 109 Environmental Quality and Employment 110	
Projecting Changes in Total Employment 111	

Who Benefits from Increased Employment? 112 Who Gets the New Jobs? 112 Effects on Real Income per Capita 112	
Summary 114	
Applying the Concepts 114	
References and Additional Reading 117	
Appendix The Regional Context of Urban Growth	118
The Neoclassical Model 119 Differences in Natural Advantage Cause Concentration 119 A Decrease in Transport Costs Causes Regional Dispersion 120	
Regional Concentration and Dispersion in the United States 121	
References and Additional Reading 123	
PART II LAND RENT AND LAND-USE PATTERNS	125
Chapter 6 Urban Land Rent	127
Introduction to Land Rent 127	
Bid-Rent Curves for the Manufacturing Sector 128 The Negatively Sloped Rent Curve 129 Rent on Industrial Space in Los Angeles 130	
Bid-Rent Curves for the Information Sector 130 Travel for Information Exchange 131 Office Bid-Rent Curve with a Fixed Lot Size 132	
Office Bid-Rent Curves with Factor Substitution 134 Building Options: The Office Isoquant 134 Factor Substitution: Choosing a Building Height 135 Factor Substitution Generates a Convex Bid-Rent Curve 136 Rent on Office Space: Los Angeles and Atlanta 138	
Housing Prices 139 Linear Housing-Price Curve: No Consumer Substitution 139 Consumer Substitution Generates a Convex Housing-Price Curve 141 Apartment Rents in Portland, Oregon 143	
The Residential Bid-Rent Curve 143 Fixed Factor Proportions 143 Factor Substitution 144 Residential Density 145	

Relaxing the Assumptions: Time Costs, Public Services, Taxes, Amenities	145
Land-Use Patterns 146 Bid-Rent Curves for Business 147 Territories of Different Sectors 149	
Henry George and the Single Tax on Land 150	
Summary 151	
Applying the Concepts 152	
References and Additional Reading 155	
Appendix Consumer and Factor Substitution	156
Consumer Choice and the Law of Demand 156 Maximizing Utility: MRS = Price Ratio 157 Consumer Substitution 157 Locational Equilibrium 158 Input Choice and Factor Substitution 159	
Chapter 7 Land-Use Patterns	161
The Spatial Distribution of Employment 161 Jobs Inside and Outside the Central Area 161 A Closer Look at the Spatial Distribution of Jobs: Portland and Boston 163 Employment Subcenters: Los Angeles and Chicago 164 The Spatial Distribution of Office Employment and Office Space 166 Edge Cities 166 The Role of Subcenters in the Metropolitan Economy 168	
The Spatial Distribution of Population 169 Population Density in Portland and Boston 169 Density in World Cities 171 Commuting Patterns 172	
The Rise of the Monocentric City 174 Innovations in Intracity Transportation 174 The Technology of Building Construction 175 The Primitive Technology of Freight 176	
The Demise of the Monocentric City 176 Decentralization of Manufacturing: Trucks and Highways 176 Other Factors: Automobile, Single-Story Plants, and Airports 178 Decentralization of Office Employment 178 Decentralization of Population 180	
Urban Sprawl 181 Sprawl Facts 181 The Causes of Sprawl 183 European Policies 184	

The Consequences of Sprawl 184 Policy Responses to Sprawl? 186	
Are Skyscrapers Too Tall? 186	
Summary 188	
Applying the Concepts 189	
References and Additional Reading 191	
Appendix The Monocentric Model and Applications	193
The Monocentric Model 193 Income and Location 195 Trade-off between Commuting and Housing Costs 195 Other Explanations 197	
A General Equilibrium Model of a Monocentric City 198 Interactions between the Land and Labor Markets 198 The General Equilibrium Effects of the Streetcar 198	
Applying the Concepts 201	
Chapter 8 Neighborhood Choice	202
Diversity versus Segregation 202	
Sorting for Local Public Goods 203 Diversity in Demand for Local Public Goods 204 Problems with Majority Rule and Formation of Municipalities 205 Variation in Consumption of the Taxed Good 206	
Neighborhood Externalities 207	
Neighborhood Choice 208 Segregation Equilibrium 210 Integration as a Stable Equilibrium 211 Mixed Neighborhoods 212 Lot Size and Public Policy 213 Minimum Lot Size Zoning and Segregation 214	
Neighborhood Choices: The Roles of Education and Crime 215 Education and Neighborhood Choice 215 Crime and Neighborhood Choice 216	
Racial Segregation 218 Racial Preferences and Neighborhood Choice 219 Other Reasons for Racial Segregation 221	
The Consequences of Segregation 222 Unfavorable Neighborhood Effects 222 Limited Access to Jobs: The Spatial Mismatch 223 Moving to Opportunity 224	

Applying the Concepts 225	
References and Additional Reading 228	
Chapter 9 Zoning and Growth Controls	230
Land-Use Zoning 230 The Early History of Zoning 231 Zoning as Environmental Policy? 231 Fiscal Zoning 232 Minimum Lot Zoning and the Space Externality 233 Provision of Open Space 234	
The Legal Environment of Zoning 235 Substantive Due Process 236 Equal Protection 237 Just Compensation 237	
A City without Zoning? 238	
Growth Control: Urban Growth Boundaries 239 Precise Growth Control: Limiting Land Area and Lot Size 240 Winners and Losers from Growth Boundaries 241 Urban Growth Boundary and Density 242 Portland's Urban Growth Boundary 244 Municipal versus Metropolitan Growth Boundaries 244 Trade-offs with Growth Boundaries and Open Space 244	
Other Growth-Control Policies 245 Limiting Building Permits 245 Development Taxes 247	
Housing Regulations and Housing Prices 247	
Summary 249	
Applying the Concepts 250	
References and Additional Reading 253	
PART III URBAN TRANSPORTATION	255
Chapter 10 Autos and Highways	257
Congestion Externalities 260 The Demand for Urban Travel 261 The Private and Social Costs of Travel 262 Equilibrium versus Optimum Traffic Volume 263	

Summary 225

The Congestion Tax 264 Benefits and Costs of the Congestion Tax 264 Congestion Taxes and Urban Growth 266
Practicalities of the Congestion Tax 267 Peak versus Off-Peak Travel 267 Estimates of Congestion Taxes 268 Implementing Road Pricing: Tolls and HOT Lanes 269
Alternatives to a Congestion Tax 270 Gasoline Tax 271 Subsidies for Transit 271 The Pricing of Parking 272
The Road Capacity Decision 272 Interpreting the Spaghetti Cost Curves 272 Widen the Road If Congestion Tax Revenue Exceeds the Cost 274 Capacity Expansion and Latent Demand 275 Who Pays for Roads? 275
Autos and Air Pollution 275 Internalizing the Externality 276 A Gasoline Tax 276 Greenhouse Gases and a Carbon Tax 277
Motor Vehicle Accidents 278 Vehicle Safety Policies: Bikers Beware 278 Pay to Drive Policies 280 Accidents and Congestion 282
Automobiles and Poverty 283
Summary 284
Applying the Concepts 284
References and Additional Reading 288
Chapter 11 Urban Transit
Commuting and Transit Ridership 290
The Cost of Travel and Modal Choice 291 An Example of Modal Choice 292 Elasticities of Demand for Transit 294
The Efficient Volume of Ridership 295 System and Rider Costs 296 Optimum Ridership and Price 298

Transit Subsidies

Rationale for Transit Subsidies: Congestion, Environment, and Accidents Incentive Effects of Transit Subsidies 302	301
Designing a Transit System 302 Design Features for Mass Transit 302 Choosing a System: Automobile versus Rail versus Bus 303 A Closer Look at Light Rail 305 The Role of Density 306	
Deregulation: Contracting and Paratransit 307 Contracting for Transit Services 308 Paratransit 308 The British Experience with Deregulation 309	
Transit and Land-use Patterns 309	
Summary 310	
Applying the Concepts 311	
References and Additional Reading 313	
PART IV EDUCATION AND CRIME IN CITIES Chapter 12 Education	315 317
1	317
Spending and Educational Achievement 317 The Education Production Function 319 The Home Environment 320 Peer Effects 320	
School Inputs: The Importance of Teachers 321 Differences in Teacher Productivity 321 Characteristics of High-Productivity Teachers 322 The Effect of Class Size 323 Teacher Compensation 325	
Innovation: Charter Schools 327 Promise Academy 327 Boarding Schools 328	
Spending Inequalities and Public Policy 328 Intergovernmental Grants: Foundation Plans 329 Response to a Foundation Grant 330 Matching Grants: Guaranteed Tax Base 331	
Effects of Equalization Plans on Spending and Achievement Inequalities	332

Summary 334	
Applying the Concepts 334	
References and Additional Reading 336	
Chapter 13 Crime	338
Crime Facts 338 The Victims of Crime 339 The Costs of Crime 340	
The Rational Criminal 340 The Economics of Double Parking 341 Expected Utility and the Decision to Commit Crime 342 Preventing Crime 344 Morality and Anguish Costs 345	
The Equilibrium Quantity of Crime 346 Drawing the Supply Curve 346 The Marginal-Benefit Curve and the Equilibrium Quantity of Crime 347 Increasing the Certainty of Punishment 348 Increasing the Severity of Punishment 349	
Legal Opportunities and Education 349 Lawful Opportunities and Crime 349 Education as Crime-Fighting Policy 350	
Applications: Big-City Crime and the Crime Drop 351 Why Are Crime Rates Higher in Big Cities? 351 Why Did Crime Rates Decrease in the 1990s? 352	
How Much Crime? 354 The Optimal Amount of Crime 354 Crime Substitution and the Principle of Marginal Deterrence 356	
The Role of Prisons 358 Incapacitation 358 Rehabilitation 359	
Summary 359	
Applying the Concepts 360	
References and Additional Reading 362	

Education in Central Cities

Chapter 14 Why Is Housing Different?	367
Heterogeneity and Hedonics 367	
Durability, Deterioration, and Maintenance 368 Picking the Quality Level 369 Changes in Quality and Retirement 371 Abandonment and Public Policy 372 Durability and Supply Elasticity 373	
Moving Costs and Consumer Disequilibrium 374	
The Filtering Model of the Housing Market Filtering and the Housing Stepladder 376 Subsidies for New Housing 378 The Effects of Growth Controls 379 Filtering with Rising Income 380 The Price Effects of Growth Controls 380	
Summary 382	
Applying the Concepts 382	
References and Additional Reading 385	
Chapter 15 Housing Policy	386
Public Housing 386 Public Housing and Recipient Welfare 387 Subsidies for Private Housing 389 Low-Income Housing Tax Credit 390 The Market Effects of Subsidized Housing 390	
Housing Vouchers 392 Vouchers and Consumer Welfare 392 Market Effects of Vouchers 393 Portable Vouchers: Moving to Opportunity 395	
Community Development and Urban Renewal 395 Urban Renewal 396 Recent Community Development Programs 396 Homelessness 397	
Which Housing Policy Is Best? 398	
Subsidies for Mortgage Interest 398 Mortgage Subsidy and Efficiency 399 Mortgage Subsidy and Home Ownership 400	

Summary 403	
Applying the Concepts 403	
References and Additional Reading 405	
PART VI LOCAL GOVERNMENT	409
Chapter 16 The Role of Local Government	411
The Role of Local Government 412	
Local Public Goods: Equilibrium versus Optimum 413 The Efficient Quantity of Local Public Goods 414 The Median Voter Picks the Equilibrium Quantity 415 Tiebout Model: Voting with Feet 415 Benefit Taxation 416	
Natural Monopoly 417	
Externalities 419 Public Education Externalities and Vouchers 419 Externalities from Public Safety Programs 420	
Federalism and Metropolitan Government 421	
A Closer Look at the Median Voter Result 422 A Series of Budget Elections 422 The Median Voter in a Representative Democracy 423 Implications of the Median-Voter Rule 425 Limitations of the Median-Voter Model 426	
Summary 426	
Applying the Concepts 427	
References and Additional Reading 429	
Chapter 17 Local Government Revenue	431
Who Pays the Residential Property Tax? 432 The Land Portion of the Property Tax 434 Structure Portion: A Partial-Equilibrium Approach 434 Structure Portion: A General-Equilibrium Approach 436 Changing the Assumptions 439	

Rent Control and Rent Regulation

From Models to Reality 440 What about Rental Property Owners and Homeowners? A Practical Guide for Policy Makers 440 What about the Business Property Tax? 441	440
The Tiebout Model and the Property Tax 442	
Limits on Property Taxes 443	
Intergovernmental Grants 445 Lump-Sum Grants 446 Matching Grants 447 Summary: The Stimulative Effects of Grants 448 Welfare Reform: Matching Grants to Lump-Sum Grants	449
Summary 450	
Applying the Concepts 451	
References and Additional Reading 453	
Appendix Tools of Microeconomics 455	
Index 479	