

Contents

Introduction	1
PART I Demand	5
1 A Reassessment of the Characterisation of Congestion on an Urban Road Network – Some Theoretical Suggestions and Illustrative Experiments	
T.P. Truong, D.A. Hensher	7
1.1 Introduction.....	7
1.2 Defining ‘Capacity’ and ‘Congestion’	8
1.3 Linking ‘Capacity’ and ‘Congestion’ Concepts to the Basic Individual Travel Activity across a Transport Link	11
1.4 Equilibrium Condition for a Heterogenous Population of Travellers	17
1.5 Application	19
1.5.1 Application to a Hypothetical Network of Two Parallel Links	21
1.5.2 An Illustrative Experiment Using Empirical Data from Some Sydney Road Links	23
1.6 Conclusions.....	31
References.....	31
2 Estimation of the Economic Value of Student Urban Travel Time	
P. Coto-Millán, V. Inglada, M.A. Pesquera, R. Sáinz, N. Sánchez	33
2.1 Introduction.....	33
2.2 Overview of Time Value Theories.....	34
2.2.1 Train-McFadden’s Synthesis Model (Compromise Model between Goods and Leisure Activities).....	39
2.2.2 Jara-Díaz and Farah Model (1987).....	41
2.3 Time Value in Journeys to Study Locations in Santander	42
2.3.1 The Data.....	43
2.3.2 Empirical Specifications	44
2.3.3 Empirical Results	45
2.4 Summary and Conclusions	46
References.....	47

3 Price and Income Elasticities for Intercity Public Transport in Spain	
P. Coto-Millán, J. Baños-Pino, G. Carrera-Gómez, J. Castanedo-Galán, M. A. Pesquera, V. Inglada, R. Sainz.....	51
3.1 Introduction	51
3.2 Theoretical Model.....	53
3.3 Empirical Evidence.....	56
3.4 Fitted Time Series Models.....	59
3.5 Conclusions	61
References	61
PART II Supply and Efficiency	63
4 Classifying Urban Passenger Transportation Services	
W. K. Talley	65
4.1 Introduction	65
4.2 Service Structure and Type.....	66
4.3 Transit Services	67
4.4 Private Services	69
4.5 Paratransit Services.....	70
4.6 U. S. Street Railway and Motorbus Transit Services: A Historical Perspective.....	71
4.6.1 Street Railways.....	71
4.6.2 Street Railways and Motorbus Operators.....	73
4.6.3 Transit Decline: Post World War II	74
4.7 Summary.....	75
References	76
5 Analysis of the Allocative Efficiency in Public Firms: the Case of Railway	
P. Coto-Millán, J. Baños-Pino, A. Rodríguez-Álvarez	79
5.1 Introduction	79
5.2 Formalization of the Theoretical Model	80
5.3 Conclusions to the Theoretical Model	82
5.4 The Distance Function.....	82
5.5 Properties of the Distance Function.....	84
5.6 The Shadow Price Estimation through the Use of a Shephard Distance Function.....	85
5.7 The Functional Form	88
5.8 The Econometric Estimation	88
5.9 Data.....	89
5.10 Empirical Results.....	90
5.11 Summary and Conclusions	94
References	94

6 The Effect of Using Aggregated Output in the Economic Analysis of Cargo Handling Operations

S. R. Jara-Díaz, B. Tovar de la Fé, L. Trujillo.....**97**

6.1 Introduction: Cargo Handling in Multipurpose Port Terminals 97

6.2 Data and Aggregate Model Formulation 98

6.3 A Cost Function with Distinct Outputs 102

6.4 Comparisons and Discussion 105

6.5 Conclusion 106

References..... 107

7 Scale Economies, Elasticities of Substitution and Behaviour of the Railway Transport Costs in Spain

P. Coto-Millán, G. Carrera-Gómez, V. Inglada, R. Núñez-Sánchez, J. Castanedo, M. A. Pesquera, R. Sainz**111**

7.1 Introduction..... 111

7.2 The Model..... 112

7.3 The Data..... 115

7.4 Empirical Results 115

7.5 Summary and Conclusions 119

References..... 119

8 Efficiency Stochastic Frontiers: a Panel Data Analysis for Spanish Airports (1992-1994)

P. Coto-Millán, G. Carrera-Gómez, J. Castanedo-Galán, M. A. Pesquera, V. Inglada, R. Sainz, R. Núñez-Sánchez**121**

8.1 Introduction..... 121

8.2 The Model..... 122

8.3 The Data..... 124

8.4 Econometric Results 125

8.5 Conclusions..... 126

References..... 126

9 Multi-Output Analysis of the Costs and Productivity of Cargo Handling in Spanish Ports

E. Martínez-Budría, J. J. Díaz-Hernández**127**

9.1 Introduction..... 127

9.2 Cargo Handling Operations in Spain 128

9.3 The Theoretical Framework..... 131

9.3.1 Multi-Output Theory 131

9.3.2 Measurement and Decomposition of Productivity 132

9.4 The Model..... 134

9.4.1 The Normalized Quadratic Specification of Multi-Output Cost Function	134
9.4.2 The Data.....	135
9.4.3 Estimated Cost Function	136
9.5 Analysis of Results	136
9.5.1 Cost Structure.....	136
9.5.2 Analysis of Productivity and Technical Change	138
9.6 Summary and Conclusions	140
References	141
Estimated Coefficients.....	142

PART III Market and Economic Impact Studies 145

10 Economic Impact Study: Application to Ports

B. Francou, G. Carrera-Gómez, P. Coto-Millán, J. Castanedo-Galán, M. A. Pesquera.... **147**

10.1 Introduction	147
10.2 Aims and Utility	148
10.3 Analysis of Different Methodologies.....	148
10.3.1 Methodology I.....	148
10.3.2 Methodology II.....	149
10.3.3 Methodology III	151
10.4 A Dynamic View of Port Impact Studies	152
10.5 Criticisms and Defences of Port Impact Studies.....	152
10.6 New Openings	155
10.7 Final Reflections.....	155
References	156

11 Airport Management and Airline Competition in OECD Markets

G. Bel, X. Fageda..... **159**

11.1 Introduction	159
11.2 Airport Management Practices in OECD Countries	160
11.2.1 European Union	160
11.2.2 United States	166
11.2.3 Other Countries	172
11.3 Competition in the Air Transport Industry: the Interaction between Airports and Airlines	173
11.3.1 Airline Competition.....	173
11.3.2 Airport Competition	175
11.4 Concluding Remarks	178
References	179

12 Dynamising Economic Impact Studies: the Case of the Port of Seville
 J. I. Castillo, L. López-Valpuesta, M. J. Aracil **183**

12.1 Introduction..... 183
 12.2 System Dynamics Model of the Port of Seville 185
 12.3 Economic Impact of the Port of Seville on the Province of Seville..... 197
 12.4 Dynamising Employment through the Simulation Model 198
 12.5 Sensitivity Analysis 200
 12.6 Main Results and Conclusions..... 203
 References..... 209

PART IV Valuation of Benefits and Costs **217**

13 Estimating the Economic Benefits of Bicycling and Bicycle Facilities: an Interpretive Review and Proposed Methods
 K. J. Krizec..... **219**

13.1 Introduction..... 219
 13.2 Overview of Issues Central to Estimating Bicycle Benefits 220
 13.3 Review of Previous Research 225
 13.4 Proposed Benefits and Methods..... 231
 13.5 Summary and Conclusions 243
 References..... 244

14 Valuation of Transport Externalities by Stated Choice Methods
 J. De Dios Ortúzar, L. I. Rizzi..... **249**

14.1 Introduction..... 249
 14.2 Discrete Choice Models and Stated Choice Data 250
 14.3 First Case Study: Urban Road Accidents..... 253
 14.4 Second Case Study: Valuation of Local Air Pollution..... 260
 14.5 Third Case Study: Valuation of Quietness..... 264
 14.6 Summary 269
 References..... 270

15 Externalities Analysis of Investments in Infrastructure: a Practical Approach
 P. Coto-Millán, V. Inglada, J. Castanedo-Galán, M. A. Pesquera, R. Núñez-Sánchez..... **273**

15.1 Introduction..... 273
 15.2 Evolution of Transport Demand 274
 15.3 Transport Externalities..... 276
 15.3.1 Concept..... 276
 15.3.2 Internalization..... 276
 15.3.3 Theoretical Framework 276
 15.3.4 Valuation 277

15.4 Policy of Prices: the Case of Madrid-Seville	282
15.4.1 Elasticities	282
15.4.2 Results	283
15.5 Investment Policy: the Case of the Madrid-Seville AVE	284
15.5.1 Impact on Modal Distribution	284
15.5.2 Cost-Benefit Analysis	285
15.5.3 Results	286
15.6 Conclusions	287
References	288

PART V Transportation Network and Information and Communications Technology 291

16 ITS-Based Transport Concepts and Location Preference: Will ITS Change ‘Business as Usual’?

R. Argioli, R. van der Heijden, V. Marchau	293
16.1 Introduction	293
16.2 Theorizing Preferences Regarding Business Locations	295
16.2.1 Location Development, Matching Supply and Demand.....	299
16.3 Unfolding ‘ <i>Attractiveness</i> ’ of ITS	300
16.4 Location Development, the Link with ITS	303
16.5 Methodological Framework.....	309
16.6 Conclusion	312
References	313

17 The Economics of Transportation Network Growth

L. Zhang, D. Levinson	317
17.1 Introduction	317
17.2 Literature Review	318
17.3 An Analytical Model of Pricing, Capacity Choice and Ownership Structure	320
17.3.1 Demand Side: Models of Road Users	320
17.3.2 Supply Side: Road Provision Cost	323
17.3.3 Ownership and Policies: Models of Road Providers	324
17.3.4 A Numerical Example.....	325
17.4 Equilibrium Toll and Capacity under Various Ownership Regimes.....	327
17.4.1 Parallel Network.....	327
17.4.2 Serial Network	328
17.4.3 Returns to Scale.....	332
17.4.4 Parallel-Serial Network	333
17.5 Conclusions	334
References	335

18 Transport Network Development and the Location of Economic Activity

A. Holl **341**

 18.1 Introduction..... 341

 18.2 Literature Review: Transport Infrastructure Investment and the Location of Economic Activity..... 342

 18.2.1 Empirical Evidence 343

 18.3 Dynamic Effects – the Spanish Motorway Building Programme 350

 18.3.1 Data and Variables 351

 18.3.2 Estimation and Empirical Results..... 354

 18.4 Conclusions..... 356

 References..... 358

19 Mapping the Terrain of Information and Communications Technology (ICT) and Household Travel

K. J. Krizec, A. Johnson **363**

 19.1 Introduction..... 363

 19.2 Part I) Previous Research..... 365

 19.3 Part 2) Trends and Issues for Further Research 371

 19.4 Summary 377

 References..... 378