Housing and Commuting:

The Theory of Urban Residential Structure

John Yinger

APPENDIX 1.2.A

REFERENCES TO URBAN MODELS WITH MORE GENERAL ASSUMPTIONS

This appendix provides citations for selected journal articles that examine urban models with more general assumptions than the ones in the text of this chapter. This list does not provide an overview of the field of urban economics; indeed, the articles in this category constitute a small (and declining) fraction of the literature in urban economics. Instead, this appendix simply points to some of the articles that have extended one or more of the assumptions in the text.

Articles that appear elsewhere in this book are not included in this appendix. Many excellent review articles that examine urban models with more general assumptions are also available in the handbooks of urban and regional economics that are published by Elsevier. In addition, several variants of urban models are presented in Edward L. Glaeser, *Cities, Agglomeration, and Spatial Equilibrium* (Oxford University Press, 2008).

For the purposes of this appendix, *JUE* stands for the *Journal of Urban Economics*.

Assumption 1

(Utility Function Takes Cobb-Douglas Form with Housing and Composite Good)

William C. Wheaton. 1974. "A Comparative Static Analysis of Urban Spatial Structure." *Journal of Economic Theory*, pp. 223-37. [Provides complete comparative static analysis of urban model with land but no housing and with general functional form for utility function.]

Jan K. Brueckner. 1983. "The Economics of Urban Yard Space: An 'Implicit-market' Model for Housing Attributes." *JUE*, March, pp. 216-34. [Solves and urban model with explicit housing attributes instead of housing services.]

Joseph H. DeSalvo. 1985. "A Model of Urban Household Behavior with Leisure Choice." *Journal of Regional Science*, 11, pp. 99-111.[Solves an urban model with leisure in the utility function.]

Assumption 2

(Housing Supply is Cobb-Douglas with Absentee Landlords)

A. Studies with Explicit Models of the Construction Decision

David Harrison and John F. Kain. 1974. "Cumulative Urban Growth and Density Functions," JUE, January, pp. 61-98. [Introduces the possibility that the spatial development of cities occurs in time-based phases and in successive spatial rings.]

Alex Anas. 1978. "Dynamics of Urban Residential Growth." *JUE*, January, pp. 66-87. [Provides a model of urban growth with durable housing capital and myopic foresight.]

Jan K. Brueckner. 1980. "A Vintage Model of Urban Growth." *JUE*, November, pp. 389-402. [Provides a model of urban growth with durable capital and perfect foresight.]

William C. Wheaton. 1982. "Urban Spatial Development with Durable but Replaceable Capital." *JUE*, July, pp. 53-67. [Provides a model of urban growth with long-lived but replaceable capital and perfect foresight.]

B. Models with local land ownership

David Pines, and Efraim Sadka. 1986. "Comparative Static Analysis of a Fully Closed City." *JUE*, July, pp. 1-20. [Solves a closed urban model in which land rents are redistributed to residents.]

Komei Sasaki. 1987. "A Comparative Static Analysis of Urban Structure in the Setting of Endogenous Income. *JUE*, 22, pp. 53-72. [Solves a closed urban model in which land rents are redistributed to residents.]

Assumption 3

(Commuting is in a straight line with a constant cost per mile)

A. Articles generalizing assumptions about the transportation network

Takahiro Miyao. 1978. "A Note on Land Use in a Square City." *Regional Science and Urban Economics*, December, pp. 313-396. [Solves an urban model with a street grid.]

Alex Anas and L.M. Moses. 1979. "Mode Choice, Transport Structure and Urban Land Use." *JUE*, April, pp. 228-46. [Solves urban models with more than one mode of transportation, assuming radial and circular streets.]

Youngsun Kwon. 2002. "Rent-Commuting Cost Function Versus Rent-Distance Function." *Journalof Regional Science*, November, pp. 773-791. [Shows how to specify and solve anurban model based on commuting costs instead of distance.]

Youngsun Kwon. 2005. "Urban Comparative Statics when Commuting Cost Depends on Income. *Journal of Housing Economics*, March, pp. 48-56. [Shows how basic comparative statics results change when commuting costs depends on income, that is, on the value of time spent commuting.]

Nathanial Baum-Snow. 2007. "Suburbanization and Transportation in the Monocentric Model, *JUE*, November, pp. 405-423. [Solves an urban model with radial commuting arteries and shows how they can encourage suburbanization.]

B. Articles introducing traffic congestion

Robert M. Solow. 1972. "Congestion and the Use of Land in Transportation." *Swedish Journal of Economics* (March): 602-18. [Solves a highly simplified urban model with congestion, assuming radial streets.]

Edwin S. Mills. 1972. *Studies in the Structure of the Urban Economy*. Baltimore: The Johns Hopkins Press. [Simulates an urban model with congestion, assuming radial streets.]

William C. Wheaton. 1998. "Land Use and Density in Cities with Congestion." *JUE*, March, pp. 258-272. [Shows how congestion raises optimal central density in a standard urban model.]

Assumption 4

(Access to work is the only locational characteristic that matters)

A. Mitchell Polinsky and Stephen Shavell. 1976. "Amenities and Property Values in a Model of an Urban Area." *Journal of Public Economics*, January/February, pp. 119-30. [Solves an urban model with a neighborhood amenity.]

Brueckner, Jan K., Jacques-Francois Thisse, and Yves Zenou. 1999. "Why Is Central Paris Rich and Downtown Detroit Poor? An Amenity-based Theory." *European Economic Review* 43 (1) (January): 91-107. [Shows how amenity patterns can affect household sorting.]

Assumption 5

(All households are alike)

Martin J. Beckman. 1969. "On the Distribution of Urban Rent and Residential Density." *Journal of Economic Theory*, pp. 60-7. [Proposes an urban model with a continuous income distribution.]

A. Montesanto. 1972. "A Restatement of Beckman's Model on the Distribution of Urban Rent and Residential Density," *Journal of Economic Theory*, pp. 329-54. [Fixes a problem in Beckman's article and solves one special case.]

John Hartwick, U. Schweizer, and P. Varaiya. 1976. "Comparative Statics of a Residential Economy with Several Classes." *Journal of Economic Theory*, pp. 396-413. [Provides comparative statics results for an urban model with more than one income class.]

Blackley, Dixie M., and James R. Follain. 1987. "Tests of Locational Equilibrium in the Standard Urban Model." *Land Economics* 63 (1) (February): 46-61. [Shows how an urban model predicts a different location for different income classes and compares predicted with actual locations.]

Herrin, William E., and Clifford R. Kern. 1992. "Testing the Standard Urban Model of Residential Choice: An Implicit Markets Approach." *Journal of Urban Economics* 31 (2) (March): 146-163. [Extends the approach in Blackley and Follain (1987) to estimate the demand for location with variation in income.]

Youngsun Kwon. 2003. "The Effect of a Change in Wages on Welfare in a Two-Class Monocentric City." *Journal of Regional Science*, February, pp. 63-72. [Derives comparative statics results for the impact of an increase in wages for the rich on the welfare of the poor.]

Edward L. Glaeser, Matthew E. Kahn, and Jordan Rappaport. 2008. "Why Do the Poor Live in Cities? The Role of Public Transportation." *JUE*, January, pp. 1–24. [Shows how mode choice can affect household sorting based on income.]

Assumption 6

(Income is fixed and all households have one CBD worker)

Michelle J. White. 1976. "Firm Suburbanization and Urban Subcenters." *JUE*, October, pp. 129-52. [Solves an urban model with a suburban employment ring.]

Jan K. Brueckner. 1979. "A Model of Noncentral Production in a Monocentric City." *JUE*, October, pp. 444-63. [Provides comparative statics for an urban model with local employment in addition to employment in the CBD.]

Kenneth F. Wieand. 1987. "An Extension of the Monocentric Urban Spatial Equilibrium Model to a Multicenter Setting: The Case of the Two-Center City." *JUE*, May, pp. 259-71. [Partially solves an urban model with a suburban business district (SBD), assuming radial streets out of the CBD and the SBD.]

Komei Sasaki and Michihiro Kaiyama. 1990. "The Effects of Urban Transportation Costs on Urban Spatial Structure with Endogenous Wage Income," *RSUE*, September, pp. 223-244. [Provides comparative statics for a standard closed urban model with endogenous wages and firm competition for land.]

Yang Zhang and Komei Sasaki. 1997. "Effects of Subcenter Formation on Urban Spatial Structure," *RSUE*, June, pp. 297-324. [Provides comparative statics for a standard closed model with a suburban employment center.]

Masahisa Fujita, Jacque-Francois Thisse, and Yves Zenou. 1997. "On the Endogenous Formation of Secondary Employment Centers in a City," *JUE*, May, pp. 337-357.

[Presents a model of subcenter formation in a linear city.]

Stephen L. Ross. 1996. "The Long-Run Effect of Economic Development Policy on Resident Welfare in a Perfectly Competitive Urban Economy." *JUE*, November, pp. 354-380. [Shows how some key comparative static results--and related policy implications--can change with a complete labor market and endogenous CBD boundaries.]

Robert E. Lucas, Jr., and Esteban Rossi-Hansberg. 2002. "On the Internal Structure of Cities." *Econometrica*, July, pp. 1445-1476. [Solves a monocentric urban model with endogenous formation of employment rings; an impressive technical achievement!]

Assumption 7

(Households are perfectly mobile)

Susan Rose-Ackerman. 1975. "Racism and Urban Structure." *JUE*, pp. 85-103. [Solves and urban model with racial segregation and racial prejudice.]

Clifford Kern. 1981. "Racial Prejudice and Residential Segregation: The Yinger Model Revisited." *JUE*, September, pp. 164-73. [Argues that discrimination in an urban area may not be driven by price incentives (as in the Yinger model), but concludes that discrimination may still arise as the black population grows.]

Assumption 8

(There are no local governments)

Richard J. Arnott and James G. MacKinnon. 1977. "The effects of the property tax: A general equilibrium simulation." *JUE*, October, pp. 389-407. [Simulates a closed urban model with a single local government funded by a property tax.]

A. Mitchell Polinsky and Daniel L. Rubinfeld. 1978. "The Long Run Effects of a Residential Property Tax and Local Public Services." *JUE*, April, pp. 241-262. [Analyzes an open urban model with a single local government funded by a property tax.]

Charles A.M. de Bartolome and Stephen L. Ross. 2003. "Equilibria with Local Governments and Commuting: Income Sorting vs. Income Mixing." JUE, July, pp. 1–20. [Explores an urban model with two income classes and a central city surrounded by a ring-shaped suburb.]