BOSTON COLLEGE
Department of Economics

Richard Arnott Spring 1998

Economics 894.01
Urban Economics II

**Course Outline**

This course will emphasize theory and the theory of policy rather than empirical or policy analysis, and will cover the core material in urban economic theory. The principal subject areas are urban spatial economics, urban transportation economics, housing economics, and urban public finance.

The grading scheme is as follows:

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|---|---|
| Problem sets | 10% |
| Final exam | 45% |
| Paper | 45% |

There will be two problems a week. The two problems will be assigned on the Wednesday and due the following Wednesday. I will return the graded problems and provide answers on the Friday.

The final exam will be in the assigned exam slot.

For the paper, I would like a modest (10-15 double-spaced pages) but polished piece of urban economics. One possibility is a "note" which provides a modest extension of a published paper or points out and corrects an error in a published paper. An empirical paper, or a more ambitious but less polished theoretical paper, is also acceptable, but a literature review is not. The topic should be chosen prior to the spring break, after consultation with me. The paper is due the last day of classes. I shall be pleased to provide assistance on the paper.

My office is located in Carney Hall, room 231; my telephone number is 552-3674; and my office hours are WF 3:30 to 5:00.

## Reading List I

There is no really good graduate urban economics textbook. There are good books covering specific topics but no book which is both really good and comprehensive.

Since the emphasis of the course is theoretical, I would like you to supplement the lectures with some more applied reading. Specifically, by the end of the term I will expect you to have read the best-known undergraduate urban economics textbook and to have absorbed the material:

E.S. Mills and B.W. Hamilton, Urban Economics (New York: Harper, 1993, 5th. ed).

Starred readings are essential. Bulleted readings are strongly recommended. The other readings are recommended. I will give out copies of all essential and strongly recommended readings plus some others. As time permits, I shall draw up longer reading lists related to specific topics for reference purposes.

Each lecture will focus on one reading.

### URBAN SPATIAL ECONOMICS

There is a very good book on urban spatial economics: M. Fujita, Urban Economic Theory, Cambridge, 1989. It is, however, rather technical and advanced. I recommend that you buy a copy for your home library, but it is not required.

I. Monocentric City Model

Lecture 1 Introduction to basic concepts.

*R. Arnott, "Urban Land Use Models", mimeo.

Lecture 2 The Mills-Muth Model.

*J.K. Brueckner, "The Structure of Urban Equilibria: A Unified Treatment of the Muth-Mills Model" in E.S. Mills, ed., Handbook of Regional and Urban Economics, Vol. II, Elsevier 1987.

•W. Wheaton, "A Comparative Static Analysis of Urban Spatial Structure", Journal of Economic Theory, 1974, 9, 223-237.

R.M. Solow, " On Equilibrium Models of Urban Location" J.M. Parkin, ed., Essays in Modern Economics, Longman, 1973.

Lecture 3 The Mills-Muth model (continued).

*P. Mieszkowski and E. Mills, "The Causes of Metropolitan Suburbanization", Journal of Economic Perspectives, 1993, 7, 135-147.

J.F. McDonald, "Econometric Studies of Urban Population Density: A Survey", Journal of Urban Economics, 1989, 26, 361-385.

E.S. Mills and J.P. Tan, "A Comparison of Urban Population Density Functions in Developed and Developing Countries", Urban Studies, 1980, 17, 313-321.

W.C. Wheaton, "Monocentric Models of Urban Land Use: Contributions and Criticisms" in Current Issues in Urban Economics, P. Mieszkowski and M. Straszheim, eds., Johns Hopkins University Press, 1979, 107-109.

*R.J. Arnott and J.G. MacKinnon, "Measuring the Costs of Height Restrictions with a General Equilibrium Model", Regional Science and Urban Economics, 1977, 7, 359-375.

Lecture 4 The optimum monocentric city without traffic congestion.

*R. Arnott, "Optimal City Size in a Spatial Economy", Journal of Urban Economics, 1979, 6, 65-89.

R.J. Arnott and J. Riley, "Asymmetric Production Possibilities, the Social Gains from Inequality and the Optimum Town", Scandinavian Journal of Economics, 1977, 79, 301-311.

J.A. Mirrlees, "The Optimum Town", Swedish Journal of Economics, 1974, 72, 114-135.

M. Fujita, Urban Economic Theory, Chs. 2-4.

II. Non-monocentric City Models

Lecture 1 Overview of the literature.

*A. Anas, R. Arnott, and K. Small, "Urban Spatial Structure", mimeo.

Lecture 2 The Fujita-Ogawa model.

*M. Fujita and H. Ogawa, "Multiple Equilibria and Structural Transition of Non-monocentric Urban Configurations", Regional Science and Urban Economics", 1982, 12, 161-196.

M. Fujita and T. Mori, "Structural Stability and Evolution of Urban Systems", Regional Science and Urban Economics, 1997, 27, 399-442.

Lecture 3 Economics of subcenter formation.

*A. Anas, "Agglomeration and Taste Heterogeneity: Equilibria, Stability, Welfare and Dynamics", Regional Science and Urban Economics, 1988, 18, 7-35.

J.V. Henderson and A. Mitra, "The New Urban Landscape: Developers and Edge Cities", Regional Science and Urban Economics, 1996, 26, 613-643.

J.V. Henderson and E. Slade, "Development Games in Non-monocentric Cities", Journal of Urban Economics, 1993, 34, 207-229.

Lecture 4 Retail location models.

*H. Hotelling, "Stability in Competition", Economic Journal, 1929, 39, 41-57.

*C. d'Aspremont, J.J. Gabszewicz, and J.-F. Thisse, "On Hotelling's 'Stability in Competition", Econometrica, 1979,47,1145-1150.

•R. Arnott, "Firm Location Theory with Strategic Interdependence", mimeo.

S. Anderson, A. dePalma, and J.-F. Thisse, Discrete Choice Theory of Product Differentiation, M.I.T. Press, 1992.

## URBAN TRANSPORTATION ECONOMICS

I. First-best Urban Transportation Economics

There are two books which provide very good coverage of the topic:

K. Small, Urban Transportation Economics, Harwood, 1992.
H. Mohring, Transportation Economics, Ballinger, 1976.

I advise you to buy both books for your home library, as well as a classic in the field:

J. Meyer, J. Kain, and M. Wohl, The Urban Transportation Problem, Harvard, 1966

Lecture 1 Standard theory.

*Skim the above books.

*A.A. Walters, "The Theory and Measurement of Private and Social Cost of Highway Congestion", Econometrica, 1961, 29, 676-699.

*R.H. Strotz, "Urban Transportation Parables", in The Public Economy of Urban Communities", J. Margolis, ed., Resources for the Future, 1965, 127-169.

•M. Kraus, "Scale Economies Analysis for Urban Highway Networks", Journal of Urban Economics, 1981, 9, 1-22.

W.S. Vickrey, "Pricing in Urban and Suburban Transport", American Economic Review, 1963, 53, 452-465.

K. Small, C. Winston, and C. Evans, Road Work, Brookings, 1989.

Lecture 2 Incorporation of standard, first-best treatment of traffic congestion into monocentric model.

*Y. Kanemoto, Theories of Urban Externalities, North Holland, 1980, relevant sections of Chapter 4.

•R. Solow and W. Vickrey, "Land Use in a Long, Narrow City", Journal of Economic Theory 1971, 3, 430-447.

A. Dixit, "The Optimum Factory Town", Bell Journal of Economics and Management Science", 1973, 4, 637-651.

You are advised to review optimal control theory. The best accessible book is Kamien and Schwartz, Dynamic Optimization.

II. Second-best Urban Transport Economics

Lecture 1 Non-spatial models.

*R. Arnott and K. Small, "The Economics of Traffic Congestion", American Scientist, 1994, 82, 446-455.

*W. Wheaton, "Price Induced Distortion in American Highway Investment", Bell Journal of Economics, 1978, 9, 622-632.

•J. Wilson, "Optimal Road Capacity in the Presence of Unpriced Congestion", Journal of Urban Economics, 1983, 13, 337-357.

W. Vickrey, "A Proposal for Revising New York's Subway Fare Structure", Journal of the Operations Research Society of America, 1955, 3, 38-69.

Lecture 2 Monocentric model.

*Y. Kanemoto, Theories of Urban Externalities, Chs. IV and V.

D. Pines and E. Sadka, "Optimum, Second-best, and Market Allocations of Resources within an Urban Area", Journal of Urban Economics, 1981, 9, 173-189.

W. Wheaton, "Land Use and Density in Cities with Congestion", mimeo.

There is a very good collection of readings in the economics of transport: The Economics of Transport, Edward Elgar, 1996 (?) edited by H. Mohring. It contains a very good introduction and stresses urban transportation.

III. Alternative Treatments of Congestion

Lecture 1 Traffic flow theory.

*M. Huber, "Traffic Flow Theory", in Transportation and Traffic Engineering Handbook, 2nd. edition, Institute of Transportation Engineers, 1982.

The Handbook is an excellent reference source, and I strongly recommend it for the home library of anyone interested in transportation.

Lecture 2 The bottleneck model.

*R. Arnott, A. dePalma, R. Lindsey, "Economics of a Bottleneck", Journal of Urban Economics, 1990, 27, 111-130.

R. Arnott, A. dePalma, R. Lindsey, "A Structural Model of Peak-Load Congestion: A Traffic Bottleneck with Elastic Demand", American Economic Review, 1993, 83, 161-179.

W.S. Vickrey, "Congestion Theory and Transport Investment", American Economic Review, 1969, 59, 251-261.

R. Arnott, A. dePalma, R. Lindsey, "Recent Developments in the Bottleneck Model", mimeo.

IV Other Topics

Lecture 1 Traffic demand analysis and current research topics.

*K. Small, Urban Transportation Economics, section 2 on Travel Demand.

The standard reference on the discrete choice theory approach to travel demand analysis is:

M. Ben-Akiva and S. Lerman, Discrete Choice Analysis: Theory and Application to Travel Demand, MIT Press, 1985.

This should be in the home library of anyone interested in transportation.

Lecture 2 Urban transport policy.

*R. Arnott, "Alleviating Traffic Congestion: Alternatives to Road Picing", mimeo.

E. Verhoef, The Economics of Regulating Road Transport, Edward Elgar, 1996.

A. Gomez-Ibanez and K. Small, "Experience with Road Pricing", mimeo.

## HOUSING ECONOMIC THEORY

There are no first-class books on housing economic theory. There is, however, one very good book which treats a number of issues related to housing economic theory, but its focus is on real estate:

D. DiPasquale and W. Wheaton, Urban Economics and Real Estate Markets, Prentice-Hall, 1996.

I strongly urge you to buy this for your home library because it is such a good book. And if you have an interest in housing, you really should have it.

Lecture 1 Overview

*R. Arnott, "Economic Theory and Housing", in E.S. Mills and P. Nijkamp, eds., Handbook of Regional and Urban Economics, North-Holland, 1987.

*Skim DiPasquale and Wheaton

K. Stahl, "Microeconomic Analysis of Housing Markets", in K. Stahl, ed., Microeconomic Models of Housing Markets, Springer-Verlag, 1985.

J. Quigley, "What Have We Learned about Urban Housing Markets?", in P. Mieszkowski and M. Straszheim,eds., Current Issues in Urban Economics, Johns Hopkins, 1979.

E. Olsen, "The Demand and Supply of Housing Service: A Critical Survey of the Empirical Literature", in Handbook of Regional and Urban Economics.

Lecture 2 Housing in static and dynamic, monocentric city models

*R. Arnott and F. Lewis, "The Transition of Land to Urban Use", Journal of Political Economy, 1979, 87, 161-169.

D. Harrison and J. Kain, "Cumulative Urban Growth and Urban Density Functions", Journal of Urban Economics, 1974, 1, 61-98.

A. Anas, "The Dynamics of Residential Growth", Journal of Urban Economics, 1978, 5, 66-87.

W. Wheaton, "Urban Spatial Development with Durable but Replaceable Capital", Journal of Urban Economics, 1982,12,53-67.

D. Capozza and Y. Li, "The Intensity and Timing of Investment: The Case of Land", American Economic Review, 1994, 84, 889-904.

J.K. Brueckner, "Urban Growth Models with Durable Housing: An Overview", mimeo.

Lecture 3 Filtering in housing markets.

There is a good book which focuses on filtering in housing markets:

J. Rothenberg et al., The Maze of Housing Markets, MIT Press, 1994

If you have a strong interest in housing, I urge you to buy this book for your home library.

*J.L. Sweeney, "A Commodity Hierarchy Model of the Rental Housing Market", Journal of Urban Economics, 1974, 1, 288-323.

J.L. Sweeney, "Quality, Commodity Hierarchies and Housing Markets", Econometrica, 1974, 42, 147-167.

R. Arnott, R. Davidson, and D. Pines, "Housing Quality, Maintenance and Rehabilitation", Review of Economic Studies, 1983, 50, 467-494.

R. Braid, "The Effects of Government Housing Policies in a Vintage Filtering Model", Journal of Urban Economics, 1984, 16, 272-296.

A. Anas, "Dynamic Housing Market Equilibrium with Taste Heterogeneity, Idiosyncratic Perfect Foresight and Stock Conversions", Journal of Housing Economics, 1991, 1, 2-32.

Lecture 4 Imperfectly competitive housing market models

*M. Igarashi and R. Arnott, "Rent Control, Mismatch Costs, and Search Efficiency", mimeo.

R. Arnott, "Housing Vacancies, Thin Markets, and Idiosyncratic Tastes", Journal of Real Estate Finance and Economics, 1989,2, 5-30.

W. Wheaton, "Vacancy, Search, and Prices in a Housing Market Matching Model", Journal of Political Economy, 1990, 98, 1270-1292.

R. Arnott, "Time for Revisionism on Rent Control?", Journal of Economic Perspectives, 1995, 9, 99-120.

F. Hubert, "Contracting with Costly Tenants", Regional Science and Urban Economics, 1995.

Lecture 5 The economics of homelessness.

This topic is particularly interesting because it concerns the appropriate scope of economics. There are two very good books on the topic:

B. O'Flaherty, Making Room: The Economics of Homelessness, Harvard U. Press, 1996.

C. Jencks, The Homeless, Harvard U. Press, 1994.

I urge you to purchase both for your home library. There is also an interesting book review of the O'Flaherty book:

J. Rothenberg, book review of Making Room, mimeo.

## LOCAL PUBLIC FINANCE

Lecture 1 Overview.

A good review of the literature up to 1985 is provided in:

D. Wildasin, Urban Public Finance, Harwood, 1986.

If you have an interest in local public finance, I strongly urge you to add this monograph to your home library. There are also three essays in The Handbook of Public Economics, Vol. II that are recommended: Theory of Public Goods by William Oakland, The Economics of the Local Public Sector by Daniel Rubinfeld, and Markets, Government, and the "New" Political Economy by Robert Inman.

A. Atkinson and J. Stiglitz, Lectures on Public Economics, McGraw-Hill, 1980.

remains the best book on public economics. It should be in your home library. While much of the book is useful for this section, Lecture 17 on Local Public Goods is the most directly relevant.

Lecture 2 Local taxation.

*W. Vickrey, "General and Specific Financing of Urban Services", Public Expenditure Decisions in the Urban Community, H.G. Schaller, ed., Resources for the Future, 1963, pp. 62-90.

There has been a long debate about the appropriate way to model the property tax. A good survey of the older literature is provided in:

H. Aaron, Who Pays the Property Tax? Brookings, 1975.

A more recent survey is:

G. Zodrow and P. Mieszkowski, "The Incidence of the Property Tax: The Benefit View versus the New View" in Local Provision of Public Services: The Tiebout Model after Twenty-Five Years, G. Zodrow, ed., Academic, 1982, pp. 109-30.

The older literature tended to treat the property tax as a tax on rent. A common theme in that literature was that site value rather than property value should be taxed. There is a newer literature which treats the property tax as a tax on value, and argues that site value taxation is distortionary, e.g. R. Arnott, "Neutral Property Taxation", mimeo.

R. Arnott and R. Grieson, "Optimal Fiscal Policy for a State or Local Government", Journal of Urban Economics, 1981, 9, 23-48.

Lecture 3 The Tiebout hypothesis and preference revelation.

*P. Samuelson, "The Pure Theory of Public Expenditure", Review of Economics and Statistics, 1954, 36, 387-389.

*P. Samuelson, "Diagrammatic Exposition of a Theory of Public Expenditure", Review of Economics and Statistics, 1955, 37, 350-356.

*C. Tiebout, "A Pure Theory of Local Expenditures", Journal of Political Economy, 1956, 64, 416-424.

F. Westhoff, "Existence of Equilibria in Economies with a Local Public Good", Journal of Economic Theory, 1977, 14, 84-112.

T.F. Bewley, "A Critique of Tiebout's Theory of Local Public Expenditures", Econometrica, 1981, 49, 713-740.

T. Nechyba.

W. Wheaton, "Land Capitalization, Tiebout Mobility, and the Role of Zoning Regulations", Journal of Urban Economics, 1993, 34, 102-117.

Lecture 4 Club theory.

*E. Berglas and D. Pines, "Clubs, Local Public Goods, and Transportation Models: A Synthesis", Journal of Public Economics, 1981, 15, 141-162.

•E. Berglas, "Distribution of Tastes and Skills and the Provision of Local Public Goods", Journal of Public Economics, 1976, 6, 409-423.

J.M. Buchanan, "An Economic Theory of Clubs", Economica, 1965, 33, 1-14.

S. Scotchmer, "Public Goods and the Invisible Hand", in Modern Public Finance, J. Quigley and E. Smolensky, eds., Harvard U. Press, 1994.

Lecture 5 Models of tax competition.

*J. Wilson, "A Theory of Inter-regional Tax Competition", Journal of Urban Economics, 1986, 19, 296-315.

Lecture 6 Fiscal federalism.

*W. Oates, Fiscal Federalism, Harcourt, Brace, Jovanovich, 1972.

W. Oates, "Federalism and Government Finance" in Modern Public Finance.

T. Nechyba.

Lecture 7 Local public education and school vouchers.

*T. Nechyba.

J. Stiglitz, “The Demand for Education in Public and Private School Systems", Journal of Public Economics, 1974, 3, 349-385.

D. Epple and R. Romano, "Competition between Private and Public Schools, Vouchers and Peer Group Effects", American Economic Review, forthcoming.

As the term proceeds, I shall make minor changes to the reading list.