Economics 881.09/881.10 Duke University
Christopher Timmins Spring 2014

READING LIST
Hedonics and Non-Market Valuation
Equilibrium Sorting

Time: T 8:45-11:25

Location: 111 Social Sciences

Office Hours: 209 Social Sciences Building, By Appointment

Summary

This reading list summarizes a number of related modules. The descriptions are combined in this document to emphasize the areas of overlap between the modules.

The requirements for this module are (i) an extended empirical problem set that will require you to program in a language such as C++, Fortran, or Matlab and use data to answer empirical questions, (ii) presentation of a paper from the reading list (chosen in consultation with the instructor), and (iii) class participation. The problem set is intended to build familiarity with programming tools and numerical techniques that can be useful to you in your dissertation research.

Readings

Some good general texts for reference are:

Champ, Brown, and Boyle (2003). *A Primer on Non-Market Valuation* (The Economics of Non-Market Goods and Resources, vol.3).

Kuminoff, Smith and Timmins (2013). "The New Economics of Equilibrium Sorting and Policy Evaluation Using Housing Markets." *Journal of Economic Literature*. 51(4):1-57.

Freeman (2003). *The Measurement of Environmental and Resource Values: Theory and Methods*. 2nd Edition.

Phaneuf and Requate (2010). "Property Value Models." Ch.17 of a forthcoming textbook.

Palmquist (2005). "Property Value Models." In *The Handbook of Environmental Economics*. Vol. 2. Ed. K. Goran-Maler and J.R. Vincent. Elsevier.

Part I: Hedonics and Non-Market Valuation

This module will cover non-market valuation techniques typically used to determine the value of local public goods and (dis)amenities. Topics covered include hedonics (property value and wage hedonics), techniques based on weak complementarity (travel cost) and weak substitutability (defensive expenditures), and stated preference (contingent valuation).[1] *Applications to public finance and environmental economics topics. Grades will be based on an extended empirical problem set and a short exam.*

1. Sources of Value

Krutilla (1967). "Conservation Reconsidered." *American Economic Review*. 57 (4):777-786.

Executive Order 12044 (Carter)
Executive Order 12291 (Reagan)
Executive Order 12866 (Clinton)

2. Hedonics

Rosen (1974). "Hedonic Prices and Implicit Markets: Product Differentiation in Perfect Competition." *Journal of Political Economy*. 82(1):34-55.

Brown and Rosen (1982). "On the Estimation of Structural Hedonic Price Models." *Econometrica*. 50(3):765-768.

Mendelsohn (1985). "Identifying Structural Equations with Single Market Data." *Review of Economics and Statistics.* 67(3):525-529.

Epple (1987). "Hedonic Prices and Implicit Markets: Estimating Demand and Supply Functions for Differentiated Products." *Journal of Political Economy*. 95(1):59-80.

Bartik (1987). "Estimating Hedonic Demand Parameters with Single Market Data: The Problems Caused by Unobserved Tastes." *Review of Economics and Statistics*. 69(1):178-80.

Bartik (1987). "The Estimation of Demand Parameters in Hedonic Price Models." *Journal of Political Economy*. 95(1):81-88.

Ekeland, Heckman, and Nesheim (2004). "Identification and Estimation of Hedonic Models." *Journal of Political Economy*. 112(1.2):S60-S109.

Heckman, Matzkin, and Nesheim (2010). "Nonparametric Identification and Estimation of Nonadditive Hedonic Models." *Econometrica*. 78(5):1569-1591.

[1] For weak complementarity, weak substitutability, and stated preference, see Part III, "Other Related Topics".

Bajari and Benkard (2005). "Demand Estimation With Heterogeneous Consumers and Unobserved Product Characteristics: A Hedonic Approach." *Journal of Political Economy*. 113(6):1239-1276.

Bajari and Kahn (2005). "Estimating Housing Demand With an Application to Explaining Racial Segregation in Cities." *Journal of Business & Economic Statistics*. 23(1):20-33.

Griffith and Nesheim (2010). "Estimating Households' Willingness to Pay." CEMMAP Working Paper CWP24/10.

Bishop and Timmins (2011). "Hedonic Prices and Implicit Markets: Estimating the Marginal Willingness to Pay for Large Reductions in Crime Without Instrumental Variables." Mimeo.

Kuminoff and Pope (2010). "Do 'Capitalization Effects' for Public Goods Reveal the Public's Willingness to Pay?" Arizona State University Department of Economics Working Paper.

Bajari, Cooley, Kim and Timmins (2012). "A Theory-Based Approach to Hedonic Price Regressions with Time-Varying Unobserved Product Attributes: The Price of Pollution." *American Economic Review*. 102(5):1898-1926.

Bishop and Murphy (2012). "Incorporating Dynamic Behavior into the Hedonic Model." Mimeo.

3. First-Stage Hedonic Analyses

Parmeter and Pope (2009). "Quasi-Experiments and Hedonic Property Value Methods." Prepared for the *Handbook on Experimental Economics and the Environment*. John List (ed). Edward Elgar Publishers.

Palmquist (1984). "Estimating the Demand for the Characteristics of Housing." *Review of Economics and Statistics*. 66(3):394-404.

Parsons (1992). "The Effect of Coastal Land Use Restrictions on Housing Prices: A Repeat Sales Analysis." *Journal of Environmental Economics and Management*. 22:25-37.

Chay and Greenstone (2005). "Does Air Quality Matter? Evidence from the Housing Market." *Journal of Political Economy*. 113(2):376-424.

Davis (2004). "The Effect of Health Risk on Housing Values: Evidence from a Cancer Cluster." *American Economic Review*. 94(5):1693-1704.

Linden and Rockoff (2008). "Estimates of the Impact of Crime Risk on Property Values from Megan's Laws." *American Economic Review*. 98(3):1103-1127.

Pope (2008). "Fear of Crime and Housing Prices: Household Reactions to Sex Offender Registries." *Journal of Urban Economics*. 64(3):601-614.

Black (1999). "Do Better Schools Matter? Parental Valuation of Elementary Education." *Quarterly Journal of Economics*. 114(2):577-99.

Greenstone and Gallagher (2008). "Does Hazardous Waste Matter? Evidence From the Housing Market and the Superfund Program." *Quarterly Journal of Economics*. 123(3):951-1003.

Gamper-Rabindran and Timmins (2011). "Does Cleanup of Hazardous Waste Sites Raise Housing Values? Evidence of Spatially Localized Benefits." Forthcoming in *Journal of Environmental Economics and Management*.

Davis, Lucas W., "The Effect of Power Plants on Local Housing Values and Rents," *Review of Economics and Statistics,* 93(4) (2011), 1391–1402.

Muehlenbachs, Spiller, and Timmins (2014). "The Housing Market Impacts of Shale Gas Development." Mimeo.

4. Wage-Hedonics

Hoch and Drake (1974). "Wages, Climate, and the Quality of Life." *Journal of Environmental Economics and Management*. 1(4):268-295.

Rosen (1979). "Wage-Based Indexes of Urban Quality of Life." In *Current Issues in Urban Economics*, edited by Peter Mieszhowski and Mahlen Straszheim. Baltimore: Johns Hopkins University Press.

Roback (1982). "Wages, Rents, and the Quality of Life." *Journal of Political Economy*. 90(6):1257-1278.

Roback (1988). "Wages, Rents, and Amenities: Differences Among Workers and Regions." *Economic Inquiry*. 26:23-41.

Blomquist, Berger, and Hoehn (1988). "New Estimates of Quality of Life in Urban Areas." *American Economic Review*. 78:89-107.

Albouy (2008). "Are Big Cities Really Bad Places to Live? Improving Quality-of-Life Estimates Across Cities." NBER Working Paper No. 14472.

Dahl (2002). "Mobility and the Return to Education: Testing a Roy Model with Multiple Markets." Econometrica. 70(6):2367-2420.

Bayer, Khan, and Timmins (2011). "Nonparametric Identification and Estimation in a Roy Model with Common Non-Pecuniary Returns." *Journal of Business and Economic Statistics*. 29(2):201-215.

Part II: Sorting Models – Theory and Application

This module will cover the class of estimable Tiebout sorting models that has arisen over the last twenty years, both to deal with the numerous problems that arise in the hedonic non-market valuation of local public goods and (dis)amenities, and to model re-equilibration in residential location decisions in response to non-marginal policy changes. The intellectual foundations for this literature will be explored, along with a focus on recent advances and frontiers for future research. Applications to education, environmental, and urban/regional economics. Grades will be based on an extended empirical problem set and a short exam.

1. Background

Kuminoff, Smith and Timmins (2013). "The New Economics of Equilibrium Sorting and Policy Evaluation Using Housing Markets." *Journal of Economic Literature*. 51(4):1-57.

Tiebout (1956). "A Pure Theory of Local Expenditures." *Journal of Political Economy*. 64(5):416-424.

Ellickson (1971). "Jurisdictional Fragmentation and Residential Choice." *American Economic Review*. 61(2):334-339.

Epple, Filimon, and Romer (1984). "Equilibrium Among Local Jurisdications: Toward an Integrated Treatment of Voting and Residential Choice." *Journal of Public Economics*. 24:281-308.

Kuminoff (2009). "Decomposing the Structural Identification of Non-Market Values." *Journal of Environmental Economics and Management*. 57:123-139.

2. Vertical Models: Applications

Sieg, Smith, Banzhaf, and Walsh (2004). "Estimating the General Equilibrium Benefits of Large Changes in Spatially Delineated Public Goods." *International Economic Review*. 45(4):1047-1077.

Walsh (2007). "Endogenous Open Space Amenities in a Locational Equilibrium." *Journal of Urban Economics*. 61:319-344.

Kuminoff (2008). "Recovering Preferences from a Dual-Market Locational Equilibrium." Mimeo.

3. Horizontal Models: Applications

Kahn (1995). "A Revealed Preference Approach to Ranking City Quality of Life." *Journal of Urban Economics*. 38:221-235.

Timmins (2007). "If You Can't Take the Heat, Get Out of the Cerrado... Recovering the Equilibrium Amenity Cost of Non-Marginal Climate Change in Brazil." *Journal of Regional Science.* 47(1):1-25.

Bayer, Ferreira and McMillan (2007). "A Unified Framework for Measuring Preferences for Schools and Neighborhoods." *Journal of Political Economy*. 115(4):588-638.

Bayer, Keohane, and Timmins (2009). "Migration and Hedonic Valuation: The Case of Air Quality." *Journal of Environmental Economics and Management*. 58:1-14.

Tra (2010). "A Discrete Choice Equilibrium Approach to Valuing Large Environmental Changes." *Journal of Public Economics*. 94:183-196.

Depro, Timmins, and O'Neil (2014). "White Flight and Coming to the Nuisance: Can Residential Mobility Explain Environmental Injustice?" Mimeo.

Kalouptsidi (2012). "From Market Shares to Consumer Types: Duality in Differentiated Product Demand Estimation." *Journal of Applied Econometrics*. 27:333-342.

4. Dynamics

Bishop (2010). "A Dynamic Model of Location Choice and Hedonic Valuation." Mimeo.

Bayer, MacMillan, Murphy, and Timmins (2011). "A Dynamic Model of Demand for Houses and Neighborhoods." NBER Working Paper No. 17250.

5. High Dimensional Sorting

Ellickson, Houghton, and Timmins (2012). "Estimating Network Economies in Retail Chains: A Revealed Preference Approach." Mimeo.

6. Housing Supply

Murphy (2012). "A Dynamic Model of Housing Supply." Mimeo. Olin Business School, Washington University in St. Louis.

7. Model Validation

Galiani, Murphy, and Pantano (2012). "Estimating Neighborhood Choice Models: Lessons from a Housing Assistance Experiment." Mimeo, Washington University in St. Louis.

8. Alternative Approaches

Nechyba (2000). "Mobility, Targeting, and Private-School Vouchers." *American Economic Review*. 90(1):130-146.

Ferreyra (2009). "An Empirical Framework for Large-Scale Policy Analysis, with an Application to School Finance Reform in Michigan." *American Economic Journal: Economic Policy*. 1(1):147-180.

Part III: Other Related Topics

1. Weak Substitutes (Travel Cost)

Phaneuf and Smith (2004). "Recreation Demand Models." Prepared for *Handbook of Environmental Economics*. K. Maler and J. Vincent, Editors.

Timmins and Murdock (2006). "A Revealed Preference Approach to the Measurement of Congestion in Travel Cost Models." *Journal of Environmental Economics and Management*. 53(2):230-249.

Phaneuf and Siderelis (2003). "An Application of the Kuhn-Tucker Model to the Demand From Water Trail Trips in North Carolina." *Marine Resource Economics*. 18:1-14.

2. Weak Complements (Defensive Expenditures)

Smith and Desvouges (1986). "Averting Behavior: Does It Exist?" *Economics Letters*. 20(3): 291-296.

Bartik (1988). "Evaluating the Benefits of Non-marginal Reductions in Pollution Using Information on Defensive Expenditures." *Journal of Environmental Economics and Management*. 15: 111-127.

Abrahams, Hubbell, and Jordan (2000). "Joint Production and Averting Expenditure Measures of Willingness to Pay: Do Water Expenditures Really Measure Avoidance Costs?" *American Journal of Agricultural Economics*. 82: 427-37.

Dickie and Gerking (1991). "Willingness to Pay for Ozone Control: Inferences from the Demand for Medical Care." *Journal of Environmental Economics and Management*. 21:1-16.

Abdalla, Roach, and Epp (1992). "Valuing Environmental Groundwater Changes Using Averting Expenditures: An Application to Groundwater Contamination." *Land Economics*. 68:163-169.

3. Contingent Valuation

Portney (1994). "The Contingent Valuation Debate: Why Economists Should Care." *Journal of Economic Perspectives*. 8 (4): 3-17.

Hanemann (1994). "Valuing the Environment Through Contingent Valuation." *Journal of Economic Perspectives*. 8 (4): 19-43.

Diamond and Hausman (1994). "Contingent Valuation: Is Some Number Better Than No Number?" *Journal of Economic Perspectives*. 8 (4): 45-64.

Department of Commerce (1/15/93). "Natural Resource Damage Assessments Under the Oil Pollution Act of 1990." *Federal Register*. 58(10): 4601-4614.

Carson, Mitchell, Hanemann, Kopp, Presser, and Ruud (1995). "Contingent Valuation and Lost Passive Use: Damages from the Exxon Valdez Oil Spill." Mimeo.

List (2001). "Do Explicit Warnings Eliminate the Hypothetical Bias in Elicitation Procedures? Evidence from Field Auctions for Sportscards." *American Economic Review*. 91(5):1498-1507.

4. Revealed Preference – Stated Preference

von Haefen and Phaneuf (2008). "Identifying Demand Parameters in the Presence of Unobservables: A Combined Revealed and Stated Preference Approach." *Journal of Environmental Economics and Management*. 56:19-32.

Berry, Levinsohn, and Pakes (2004). "Differentiated Products Demand Systems from a Combination of Micro and Macro Data: The New Car Market." *Journal of Political Economy*. 112(1):68-105.

5. Application: Value of a Statistical Life

Viscusi (1993). "The Value of Risks to Life and Health." *Journal of Economic Literature*. 31(4):1912-1946.

Shogren and Stamland (2002). "Skill and the Value of Life." *Journal of Political Economy*. 110(5):1168-1173.

Ashenfelter and Greenstone (2004). "Estimating the Value of a Statistical Life: The Importance of Omitted Variables and Publication Bias. *American Economic Review*. 94(2):454-460.

Deleire, Khan and Timmins (2012). "Roy Model Sorting and Non-Random Selection in the Valuation of a Statistical Life." Forthcoming in the *International Economic Review*.

6. Application: Ricardian Analysis

Mendelsohn, Nordhaus, and Shaw (1994). "The Impact of Global Warming on Agriculture: A Ricardian Analysis." *The American Economic Review*. 84 (4): 753-771.

Timmins (2006). "Endogenous Land Use and the Ricardian Valuation of Climate Change." *Environmental and Resource Economics*. 33(1):119-142.

Deschenes and Greenstone (2007). "The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather." *American Economic Review*. 97(1):354-385.

Fisher, Hanemann, Roberts, and Schlenker (2010). "The Economic Impacts of Climate Change: Evidence From Agricultural Output and Random Fluctuations in Weather: Comment." Forthcoming in *American Economic Review*.

7. Application: Benefit Transfer

Smith and Huang (1995). "Can Markets Value Air Quality? A Meta-Analysis of Hedonic Property Value Models." *Journal of Political Economy*. 103(1):209-27.

Smith,Van Houtven,and Pattanayak (2002). "Benefit Transfer Via Preference Calibration: Prudential Algebra for Policy." *Land Economics*. 78(1):132-52.