

---

## *CURRICULUM VITAE*

**Alvin D. Murphy**

---

### **ADDRESS**

Department of Economics  
Duke University  
Box 90097  
Durham, NC 27708-0097  
Office: (919) 660-8157

**E-MAIL** [alvin.murphy@duke.edu](mailto:alvin.murphy@duke.edu)

**WEBPAGE** [www.econ.duke.edu/~ado15](http://www.econ.duke.edu/~ado15)

### **HOME**

3328 Swansea St.  
Durham, NC 27707  
Cell: (919) 672-3412

### **EDUCATION**

Ph.D. in Economics (expected May 2008), Duke University, Durham, NC, USA

M.A. in Economics, University College Dublin, Dublin, Ireland, 2002

B.A. in Economics and Political Science, Trinity College, Dublin, Ireland, 2000

### **AREAS OF SPECIALIZATION**

Primary Field: Public Economics

Secondary Fields: Industrial Organization, Econometrics

### **DISSERTATION**

Title: The Microfoundations of Housing Market Dynamics

Committee: P. Bayer (chair), P. Arcidiacono, T. Nechyba, C. Timmins, J. Vigdor

## **ACADEMIC EXPERIENCE**

- 2003-2007 Department of Economics, Duke University, Durham, NC, USA
- Research Assistant for Patrick Bayer (Fall 2006 – Spring 2007)
  - Research Assistant for Christopher Timmins (Spring 2006)
  - Research Assistant for Patrick Bajari and Han Hong (Spring 2005 - Spring 2006)
  - Teaching Assistant, "Globalization in the Twentieth Century" (Fall 2004)
- 2003 Smurfit Graduate School of Business, University College Dublin, Ireland
- Course Instructor, "European Economic Environment" (Spring 2003)
- 2001-2003 Department of Economics, University College Dublin, Ireland
- Course Instructor, "Intermediate Macroeconomics," Evening Course (Fall 2002)
  - Teaching Assistant, "Quantitative Techniques," "Intermediate Microeconomics," "Intermediate Macroeconomics" (Fall 2001 - Spring 2003)

## **WORKING PAPERS**

1. "A Dynamic Model of Housing Supply: Construction in the Bay Area," October 2007 (Job Market Paper)
2. "A Dynamic Model of Housing Demand," with Patrick Bayer, Robert McMillan, and Christopher Timmins, July 2007
3. "Explaining Cross-Racial Differences in Teenage Labor Force Participation: Results from a General Equilibrium Search Model," with Peter Arcidiacono and Omari Swinton, June 2007, revision submitted at *Journal of Econometrics*

## **WORK IN PROGRESS**

1. "An Equilibrium Model of Housing and Labor Market Dynamics," with Patrick Bayer, Kelly Bishop, and Christopher Timmins
2. "The Dynamics of Racial Segregation: The Role of Preferences and Expectations in Neighborhood Formation," with Marcus Casey
3. "The Spatial Evolution of Housing Prices," with Patrick Bayer and Marcus Casey

## **ACADEMIC HONORS and AWARDS**

The Benjamin H. Stevens Dissertation Fellowship in Regional Science, 2007-2008

Summer Research Fellowship, Duke University, 2006 and 2007

John Fitzgerald Kennedy Graduate Fellowship, 2005-2006

Calvin B. Hoover Fellowship, Department of Economics, Duke University, 2003-2004

Selected for Fulbright Scholarship (declined), 2003

## **CONFERENCE AND SEMINAR PRESENTATIONS**

North American Regional Science Council, Annual Meetings (November 2007)

Econometric Society, North American Summer Meetings (June 2007)

Conference on Structural Models in Labor, Aging, and Health, Fuqua School of Business (Sept. 2005)

Applied Micro Seminar, Department of Economics, University College Dublin (September 2005)

## **COMPUTER SKILLS**

Matlab, Fortran, Stata; LaTeX, MS-Office, HTML; Windows, Linux

## **REFERENCES**

Patrick Bayer, Associate Professor of Economics, Duke University  
Box 90097, Durham NC 27708-0097  
phone: (919) 660-1832, email: [patrick.bayer@duke.edu](mailto:patrick.bayer@duke.edu)

Peter Arcidiacono, Associate Professor of Economics, Duke University  
Box 90097, Durham NC 27708-0097  
phone: (919) 660-1816, email: [peter.arcidiacono@duke.edu](mailto:peter.arcidiacono@duke.edu)

Thomas Nechyba, Professor of Economics, Duke University  
Box 90097, Durham NC 27708-0097  
phone: (919) 660-1815, email: [nechyba@econ.duke.edu](mailto:nechyba@econ.duke.edu)

Christopher Timmins, Associate Professor of Economics, Duke University  
Box 90097, Durham NC 27708-0097  
phone: (919) 660-1809, email: [timmins@econ.duke.edu](mailto:timmins@econ.duke.edu)

Jacob Vigdor, Associate Professor of Public Policy Studies and Economics, Duke University  
Box 90312, Durham, NC 27708-0312  
phone: (919) 613-9226, email: [jacob.vigdor@duke.edu](mailto:jacob.vigdor@duke.edu)

## Dissertation Synopsis

The goal of my dissertation is to provide a coherent and computationally feasible basis for the analysis of the dynamics of both housing supply and demand from a microeconomics perspective. The importance of the housing market within the U.S. economy has been well documented. The national average portion of income spent on housing related expenditures is 32.9% and housing constitutes two-thirds of the average household's asset portfolio. The current empirical housing and urban literature uses aggregate data to document and explain interesting housing market patterns across metropolitan areas and through time. However, a constraint on the current literature has been the lack of micro data. Therefore, in order to address a new set of housing questions, I develop new datasets. I then use these data to estimate microeconomic models that examine the fundamentals underlying previously documented housing market patterns of prices and construction levels.

The starting point for the analysis provided in my dissertation is two unique datasets. On the supply side, I combine micro level construction/transactions data with an inventory of individual land parcel data. At the street address level, I can observe which parcels were developed and when they were developed. In addition, the richness of construction/transactions data means that the type of construction (e.g., square footage, lot size, and number of rooms) is also observable. By capturing development and construction at a very fine level of geography, this dataset facilitates new research that would not be possible using previous city level aggregate construction data. To address housing demand, I use the transactions data set and link information about buyers and sellers. In addition to demographic and economic information about buyers and sellers, this dataset contains information about the structure and lot, transaction price, attributes of the mortgage, exact location, exact sales date, and a house ID that identifies repeat sales of the same property.

The three papers briefly outlined below incorporate this micro data with new methodological approaches to examine housing market dynamics. My job market paper models the development decisions of land owners as a dynamic discrete choice problem to recover the primitives of housing supply. The second paper develops a new methodology for dynamically estimating the demand for durable goods such as housing when the choice set is large and the third paper uses this methodology to examine the dynamics of racial segregation.

### *Job Market Paper: A Dynamic Model of Housing Supply: Construction in the Bay Area*

Using the new dataset discussed above, I develop and estimate the first dynamic microeconomic model of supply. Parcel owners maximize the discounted sum of expected per-period profits by choosing the optimal time and nature of construction. In addition to current profits, the owners of land also take into account their expectations about future returns to development, balancing expected future prices against expected future costs. This forward looking behavior is crucial in explaining observed aggregate patterns of construction. Finally, the outcomes generated by the parcel owners' profit maximizing behavior, in addition to observable sales prices, allow me to identify the parameters of the per-period profit function at a fine level of geography.

By modeling the optimal behavior of land owners directly, I can capture important aspects of profits that explain both market volatility and geographic differences in construction rates. In particular, the model captures the role expectations and more abstract costs (such as regulation) play in determining the timing and volatility of supply in way that would not be possible using aggregate

data. The model returns estimates of the various components of profits: prices, variable costs, and the fixed costs of building, which incorporate both physical and regulatory costs.

Estimates of the model suggest that changes in the value of the right-to-build are the primary cause of house price appreciation, that the demographic characteristics of existing residents are determinants of the cost environment, and that both physical and regulatory costs are pro-cyclical. Finally, using estimates of the profit function, I explain the role of dynamics in determining the timing of supply by distinguishing between the effects of expected future cost changes and expected future price changes. A counterfactual simulation suggest that pro-cyclical costs, combined with forward looking behavior, significantly dampen construction volatility. These results sheds light on one of the empirical puzzles of the housing market - what determines the volatility of housing construction?

*Paper 2: A Dynamic Model of Housing Demand (with P. Bayer, R. McMillan, and C. Timmins)*

In this paper, we develop a tractable model of neighborhood choice in a dynamic setting along with a computationally straightforward estimation approach. The approach, which combines and extends the insights of Rust (1987), Berry (1994), and Hotz and Miller (1993) allows the observed and unobserved features of each neighborhood to evolve in a completely flexible way and uses information on neighborhood choice and the timing of moves to recover semi-parametrically: (i) preferences for housing and neighborhood attributes, (ii) preferences for the performance of the house as a financial asset (e.g., expected appreciation, volatility), and (iii) moving costs. In order to accommodate a number of important features of housing market, this approach extends methods developed in the recent literature on the dynamic demand for durable goods in a number of key ways.

We estimate the model using a dataset linking buyer and seller demographics to detailed house characteristics. We use the dynamic model to recover estimates of moving costs and the marginal willingness to pay for neighborhood attributes and compare these results with an alternative static estimator to explain the biases associated with static approaches. The model and estimation approach is applicable to the study a wide set of dynamic phenomena in housing markets and cities. These include, for example, the analysis of the microdynamics of residential segregation and gentrification within metropolitan areas. More generally, the model and estimation approach can be easily extended to study the dynamics of housing and labor markets in a system of cities.

*Paper 3: The Dynamics of Racial Segregation: The Role of Preferences and Expectations in Neighborhood Formation (with Marcus Casey)*

We apply the estimation routine developed in the preceding paper to examine the dynamics of neighborhood racial segregation. A key feature of the data we analyze is that sales are reported on a daily basis at a fine level of geography, allowing us to observe racial composition changes in census blocks in real time. We apply the model to determine to what extent racial segregation is driven by racial preferences per se versus expectations about how prices and future changes in neighborhood demographics are affected by current changes in neighborhood demographics. The nature of how a neighborhood is transitioning will determine whether static models of residential sorting overstate or understate the strength of racial preferences.