Valuing Open Space in a Locational Equilibrium Model of the Twin Cities

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ABSTRACT


This research employs recently developed econometric techniques to extend the literature on open space as well as present one of the first micro-level analyses of housing supply. To estimate horizontal sorting models for housing demand and housing supply, a new database consisting of over 460,000 residential transactions spanning 1990 through 2006 as well as detailed land use data identifying nine types of open space is obtained for the seven county Twin Cities metropolitan area in east-central Minnesota. Estimation of a horizontal sorting model allows the recovery of preferences for local public goods that vary across observable attributes of both households and builders. Several policy implications arising from the estimation results are that: (i) potential development of open space reduces the amenity value open space provides to households, (ii) different types of open space are associated with very different marginal willingness to pay measures indicating the importance of treating open space as a heterogeneous good, (iii) estimation of heterogeneous preferences shows that both households and builders are heterogeneous and accounting for that heterogeneity provides important information to policymakers, and (iv) policies restricting the amount of developable land can influence the location of the supply of new housing by builders.

The use of a horizontal sorting model to estimate both households' demand for housing and builders' supply of new housing allows analysis of not only marginal willingness to pay measures for local public goods, but also willingness to pay measures associated with non-marginal policy counterfactuals. Integrating both the demand and
supply sides of the housing market, I estimate general equilibrium welfare measures where both households and builders adjust their housing decisions in response to policy counterfactuals. To clear the market, I adjust the price of housing in order to remove excess demand and excess supply using an iterative numerical technique. I find that significant differences exist between partial and general equilibrium welfare measures and the incorporation of a supply response plays an important role.
BIOGRAPHY

Henry Allen Klaiber Jr. was born in Greensboro, NC on March 18, 1982 to parents Henry Klaiber and Barbara Stevens. While attending Grimsley High School he became interested in computer science and took introductory economics courses at the University of North Carolina at Greensboro. Also at this time, he met his future wife Denise who graduated alongside him in the spring of 2000. Allen pursued a Bachelor of Science degree in Computer Science at North Carolina State University beginning in the fall of 2000. He graduated summa cum laude in May of 2003 with a minor in Economics. Continuing to have interests in economics, he enrolled in the Economics Ph.D. program at North Carolina State University in the fall of 2003. The next year, he married his high school sweetheart on June 26, 2004 in Greensboro, NC. After completing his Ph.D., Allen will spend a year as a postdoctoral scholar at Arizona State University working under the direction of V. Kerry Smith and will then join the faculty of The Pennsylvania State University as an assistant professor in the fall of 2009.
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Lastly, I owe a great deal of thanks to my family who has supported me throughout this process. My wife Denise has been extremely patient and offers constant encouragement and love. My parents have instilled upon me the foundations of hard work and the importance of education. I will forever remember and appreciate my grandmother for the numerous things she has done to make graduate school both possible and enjoyable while always offering her unconditional love and support.
# TABLE OF CONTENTS

List of Tables ........................................................................................................... ix

List of Figures ........................................................................................................... xi

1 Introduction ........................................................................................................... 1

2 Using the Housing Market to Value Local Public Goods ................................... 7
   2.1 Introduction ..................................................................................................... 7
   2.2 Hedonic Model ............................................................................................... 9
       2.2.1 Open space hedonic literature ............................................................... 11
       2.2.2 Limitations of the hedonic literature ..................................................... 13
   2.3 Sorting Model ............................................................................................... 15
       2.3.1 Vertical sorting model .......................................................................... 16
       2.3.2 Horizontal sorting model ...................................................................... 18
   2.4 Aggregate Supply Models ............................................................................ 20
   2.5 Land Conversion Models ............................................................................. 22
   2.6 Conclusions ................................................................................................... 23

3 Data ..................................................................................................................... 26
   3.1 Introduction ................................................................................................... 26
   3.2 Twin Cities Study Area ............................................................................... 27
   3.3 Choice Set of Housing Types ....................................................................... 29
   3.4 Property Transactions .................................................................................. 31
       3.4.1 Single family detached ........................................................................ 32
       3.4.2 Builder transactions ............................................................................ 33
       3.4.3 Land transactions ................................................................................ 34
   3.5 Land Use Data ............................................................................................. 34
   3.6 Soil and Supply Characteristics .................................................................... 37
   3.7 Neighborhood Demographics ..................................................................... 39
   3.8 Household and Builder Characteristics ....................................................... 40
   3.9 Conclusions .................................................................................................. 42
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Introduction</td>
<td>55</td>
</tr>
<tr>
<td>4.2 Theoretical Model of Housing Choice by Agents</td>
<td>57</td>
</tr>
<tr>
<td>4.3 Empirical Sorting Model</td>
<td>60</td>
</tr>
<tr>
<td>4.3.1 First stage estimation</td>
<td>61</td>
</tr>
<tr>
<td>4.3.2 Second stage estimation</td>
<td>64</td>
</tr>
<tr>
<td>4.3.3 Asymptotic properties of the estimator</td>
<td>66</td>
</tr>
<tr>
<td>4.4 Price Index Estimation</td>
<td>67</td>
</tr>
<tr>
<td>4.4.1 Housing price indexes</td>
<td>68</td>
</tr>
<tr>
<td>4.4.2 Land price indexes</td>
<td>71</td>
</tr>
<tr>
<td>4.5 Conclusions</td>
<td>73</td>
</tr>
<tr>
<td>5.1 Introduction</td>
<td>80</td>
</tr>
<tr>
<td>5.2 Theoretical Sorting Model of Demand by Households</td>
<td>81</td>
</tr>
<tr>
<td>5.3 Empirical Estimation</td>
<td>83</td>
</tr>
<tr>
<td>5.4 Estimation Results</td>
<td>85</td>
</tr>
<tr>
<td>5.4.1 First stage results</td>
<td>86</td>
</tr>
<tr>
<td>5.4.2 Second stage results</td>
<td>87</td>
</tr>
<tr>
<td>5.5 Conclusions</td>
<td>90</td>
</tr>
<tr>
<td>6.1 Introduction</td>
<td>95</td>
</tr>
<tr>
<td>6.2 Theoretical Sorting Model of Builder Location Decisions</td>
<td>97</td>
</tr>
<tr>
<td>6.3 Choice Set of Housing Types Available to Builders</td>
<td>100</td>
</tr>
<tr>
<td>6.4 Empirical Estimation</td>
<td>101</td>
</tr>
<tr>
<td>6.5 Estimation Results</td>
<td>104</td>
</tr>
<tr>
<td>6.5.1 First stage results</td>
<td>104</td>
</tr>
<tr>
<td>6.5.2 Second stage results</td>
<td>106</td>
</tr>
<tr>
<td>6.5.3 Marginal willingness to pay</td>
<td>109</td>
</tr>
</tbody>
</table>
6.6 Robustness Checks ................................................................. 110
  6.6.1 Seconds stage estimation results for a range of quantiles ............. 111
  6.6.2 Estimation using only chosen new supply alternatives .......... 112
6.7 Conclusions ........................................................................ 114

7 Policy Analysis ....................................................................... 121
  7.1 Introduction ...................................................................... 121
  7.2 Interpretation of Willingness to Pay Measures ......................... 124
  7.3 Expanding Agricultural Preserves ......................................... 125
  7.4 Acquiring Additional DNR Land at the Urban Fringe ............... 128
  7.5 Acquiring Additional DNR Land inside the City .................... 129
  7.6 Welfare Estimates Excluding Non-Chosen Supply Alternatives ... 130
  7.7 Conclusions ...................................................................... 132

8 Results and Future Research .................................................... 137

References ............................................................................... 143

Appendices ............................................................................... 147

A Data Cleaning Procedures ...................................................... 148
  A.1 Property Transactions ....................................................... 148
    A.1.1 Data availability summary statistics ............................. 155
    A.1.2 Housing attributes summary statistics ......................... 157
  A.2 Land Transactions ............................................................ 159
  A.3 Land Use ......................................................................... 160
    A.3.1 Reinvest in Minnesota ............................................... 164
    A.3.2 Metropolitan Agricultural Preserve Program ............... 166
  A.4 Cost Characteristics .......................................................... 168

B Census Tract Spatial Units ....................................................... 179
  B.1 Introduction .................................................................... 179
  B.2 Demand Estimation ........................................................... 180
B.2.1 First stage estimation results ........................................... 181
B.2.2 Second stage estimation results ..................................... 182
B.3 Supply Estimation .............................................................. 183
  B.3.1 First stage estimation results ....................................... 184
  B.3.2 Second stage estimation results ................................... 184
B.4 Conclusions ....................................................................... 185
LIST OF TABLES

Table 3.1 Housing types with observed transactions.................................44
Table 3.2 Land use by time period in acreage and percentage ..................45
Table 3.3 Spatial divisions for census levels .........................................46
Table 3.4 Household summary statistics................................................46
Table 3.5 Builder summary statistics.......................................................46
Table 4.1 Price index regressions for 2000 census block groups by time period....75
Table 4.2 Summary statistics for house price indexes...............................75
Table 4.3 Land price index regressions for 2000 census tracts ..................76
Table 4.4 Summary statistics for land price indexes ................................77
Table 5.1 First stage interaction parameters .........................................93
Table 5.2 Second stage results using naïve OLS ......................................93
Table 5.3 Second stage estimation results using instrumental variables ........93
Table 5.4 Marginal willingness to pay heterogeneity ................................94
Table 6.1 First stage interaction parameters ........................................116
Table 6.2 Second stage results using naïve quantile regression (0.5) ..........116
Table 6.3 Second stage results using instrumental variables quantile
regression (0.5) .................................................................................117
Table 6.4 Marginal willingness to pay heterogeneity ................................117
Table 6.5 Instrumental variables quantile regression comparison for supply
estimation using all available alternatives ..........................................118
Table 6.6 First stage supply interaction parameters .................................118
Table 6.7 Second stage chosen alternative results using naïve quantile
regression (0.5) .................................................................................118
Table 6.8 Second stage chosen alternative results using instrumental variables
quantile regression (0.5) .................................................................119
Table 6.9 Marginal willingness to pay heterogeneity for builders using only
chosen alternatives ...........................................................................119
Table 7.1 Welfare results for hypothetical policies ....................................134
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2</td>
<td>Welfare results for hypothetical policies using only chosen alternatives</td>
<td>134</td>
</tr>
<tr>
<td>A.1</td>
<td>Transactions by year and county</td>
<td>171</td>
</tr>
<tr>
<td>A.2</td>
<td>Sales and new construction by year</td>
<td>171</td>
</tr>
<tr>
<td>A.3</td>
<td>Repeat sales occurring by year (as observed in the data)</td>
<td>172</td>
</tr>
<tr>
<td>A.4</td>
<td>Summary statistics for housing characteristics by time period and size</td>
<td>173</td>
</tr>
<tr>
<td>A.5</td>
<td>RIM sites located in metro 7 counties</td>
<td>173</td>
</tr>
<tr>
<td>A.6</td>
<td>Breakdown of RIM sites by duration</td>
<td>174</td>
</tr>
<tr>
<td>A.7</td>
<td>Distribution and enrollment of agricultural preserves over time</td>
<td>174</td>
</tr>
<tr>
<td>B.1</td>
<td>Housing types at the census tract</td>
<td>187</td>
</tr>
<tr>
<td>B.2</td>
<td>Price index regressions for 2000 census tracts by time period</td>
<td>188</td>
</tr>
<tr>
<td>B.3</td>
<td>First stage interaction parameters</td>
<td>189</td>
</tr>
<tr>
<td>B.4</td>
<td>Second stage results using naïve OLS</td>
<td>189</td>
</tr>
<tr>
<td>B.5</td>
<td>Second stage estimation results using IV</td>
<td>189</td>
</tr>
<tr>
<td>B.6</td>
<td>Marginal willingness to pay heterogeneity</td>
<td>190</td>
</tr>
<tr>
<td>B.7</td>
<td>First stage supply interaction parameters</td>
<td>190</td>
</tr>
<tr>
<td>B.8</td>
<td>Second stage supply results using naïve quantile regression (0.5)</td>
<td>191</td>
</tr>
<tr>
<td>B.9</td>
<td>Second stage supply results using instrumental variables quantile regression (0.5)</td>
<td>191</td>
</tr>
<tr>
<td>B.10</td>
<td>Marginal willingness to pay heterogeneity for builders</td>
<td>192</td>
</tr>
</tbody>
</table>