Market Acceptance of Smart Growth Development

9th Annual
Partners for Smart Growth Conference
February 4, 2010

Mark J. Eppli (Marquette University) and
Charles C. Tu (University of San Diego)
Contact: mark.eppli@marquette.edu

Research Purpose

- Determine if a price premium exist in smart growth communities (relative to conventional development)

- If a price premium exists:
  - Is the price premium sustained across time?
  - Is the price premium maintained when competitive smart growth enters the market?
  - Does the price premium hold in a housing downturn?

Why is a smart growth premium needed? Development Risk

- Morrow-Jones, Irwin, and Roe (2004) reveals:

  ". . . the potential demand for such [smart growth] developments is uncertain, and these projects are therefore risky . . . developers and lenders naturally try to avoid risk. . ."

- Gyourko and Rybczynski (2000), find that:

  "… lender and equity investor communities view the history of such [smart growth] projects unfavorably" and are particularly pessimistic about the viability of carrying the sizeable upfront infrastructure costs of smart growth developments

- Costas (2005) finds that the movement needs to overcome:

  1) a skeptical citizenry;

  2) deep-seated prejudices against greater density, mixed use, public transit, and affordable housing; and

  3) a lack of consistent federal support.

What other researchers found . . . .

- Matthews and Turnbull (2007):
  - Smart growth owners pay a walkability premium to retail, which peaks at 560 feet and disappears at ¼ mile
- Song and Knapp (2003 and 2004):
  - Smart growth owners pay a 14% premium for a set of six smart growth characteristics
- Eppli and Tu (1999, and 2001):
  - Smart growth owners pay on average an 11% smart growth premium, with a range of 4-25%

Smart Growth Community Selection

- Smart growth community selection process
  - 213 New urbanist developments (New Urban News, 2001)
  - 9 Listed on the EPA's (Lee Sobel's) list of smart growth developments and on the New Urban News list
  - 4 included a competitive smart growth development
  - 1 met time-series hedonic estimation data requirements
    - Annual data needs
    - Comparable surrounding conventional development
- Smart growth communities selected
  - Kentlands and Lakelands

Data

- Data source *PropertyView* (Maryland Department of Planning)
  - All single-family property sales in zip code 20878, Montgomery County, MD
  - Data collection period: 1997-2008
  - 15,902 single-family sale transactions
  - All are located in the same school district
  - All are located in the same tax district

Smart Growth and Comparable Sale Transactions

Table 2. Single-Family Residential Transactions by Development and Year

Year	Kentlands	Lakelands	Comparables
All Years	958	1629	13,315
1997	57	–	987
1998	88	–	1,252
1999	131	59	1,337
2000	145	392	1,492
2001	92	351	1,679
2002	72	253	942
2003	85	149	1,077
2004	76	116	1,248
2005	81	107	1,241
2006	50	73	952
2007	54	75	674
2008	27	54	434

Hedonic Price Estimation

- If all housing attributes were the same, except smart growth, we could compare average prices (i.e. no need for a hedonic pricing model)

- Hedonic price models estimate price as a bundle of housing attributes
  - Regression-based analysis (widely accepted as best practice)
  - Prices each housing characteristic
  - Reveals homebuyer preferences

The Bundle of Housing Attributes

Estimate house prices using 30+ controls

- Site characteristics
  - Lot size, garage size, pool
- Interior characteristics
  - Living area, number of bathrooms, basement
- Exterior characteristics
  - Exterior building material, number of stories, roofing material
- Housing quality
  - Property quality grade, property age
- Market characteristics
  - Year of sale, development type

Selected Summary Statistics

Attribute	Average
House price (dollars)	360,630
Lot size (square feet)	7,610
Living area (square feet)	1,970
Full bath (number)	2.31
Half bath (number)	1.00
Wood shingle roof (percent)	11.0
Property age (years)	14.2

Model Credibility

- 88% R-squared, very good, model explains 88% of house price variation
- Parameter estimate sign, significance, and size:
  - Each square foot of house is worth $77
  - Each full bathroom is priced at $14,000
  - A one-car garage is priced at $34,000
  - House prices depreciate $1,600 each year with age
  - House prices appreciated 1997-2005 and declined in value in 2007 and 2008

The Smart Growth Variables

Dependent Variable: Log Price						
	Model 1		Model 2		Model 3	
Attribute	Parameter Estimate	t Value	Parameter Estimate	t Value	Parameter Estimate	t Value
KENTLANDS	.191	21.33	.1406	5.41	.192	20.6
KENT98	----	----	.0282	0.87	----	----
KENT99	----	----	.0285	0.94	----	----
KENT00	----	----	.1477	4.95	----	----
KENT01	----	----	.0875	2.73	----	----
KENT02	----	----	.0420	1.24	----	----
KENT03	----	----	.0214	0.66	----	----
KENT04	----	----	.0311	0.93	----	----
KENT05	----	----	.0077	0.23	----	----
KENT06	----	----	-.0060	-0.16	----	----
KENT07	----	----	.0421	1.16	----	----
KENT08	----	----	.1518	3.42	----	----
LAKELANDS	.161	24.89	.1554	14.8	.158	23.4
LAKE01	----	----	.0027	0.19	----	----
LAKE02	----	----	.0077	0.47	----	----
LAKE03	----	----	-.0165	-0.87	----	----
LAKE04	----	----	.0429	2.10	----	----
LAKE05	----	----	.0279	1.33	----	----
LAKE06	----	----	.0253	1.03	----	----
LAKE07	----	----	.0140	0.57	----	----
LAKE08	----	----	.0612	2.43	----	----
KENTDOWN	----	----	----	----	-.0060	-0.33
LAKEDOWN	----	----	----	----	.0274	1.86
Adjusted R^2		0.88		0.88		0.88

Smart Growth Estimation Results

- Does a smart growth premium exist? Yes
  - 21% for Kentlands
  - 18% for Lakelands
- Is the smart growth premium sustained across time? Yes
  - Kentlands premium is maintained or grows across time
  - Lakelands premium is maintained or grows across time

Smart Growth Estimation Results

- Is the smart growth premium sustained in a competitive smart growth market? Yes
  - The Kentlands smart growth premium was positive during the period 2000-2002 when 996 Lakeland houses were sold.
- Does the smart growth price premium hold in a housing downturn? Yes
  - Kentlands premium is maintained or growing
  - Lakelands premium is maintained or growing

The Results are Robust

- Robustness tests (for the econometricians)
  - Linear hedonic models obtain consistent results
  - Using assessor-defined neighborhood delineations, returns consistent results
  - Using an interactive land and smart growth parameter, the results reveal attributes to determine the impact if consumers are simply purchasing a single-family lot, returns a premium for a buildable lot and a large and statistically significant smart growth was maintained

Conclusion

- Research Findings:
  - There is a price premium to reside in smart growth communities
  - And, smart growth premium is:
    - Stable to growing across time
    - Maintained when competitive smart growth development enters the market
    - Holds in a housing market downturn
  - Indicating a strong and sustained market acceptance for smart growth

Market Acceptance of Smart Growth Development

9th Annual Partners for Smart Growth Conference

February 4, 2010

Mark J. Eppli (Marquette University) and

Charles C. Tu (University of San Diego)

Contact: mark.eppli@marquette.edu