

The Investment Value of Green Buildings in Japan

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ERES conference, Vienna, 4th July 2013

Why another 'green value' study?

- Most existing studies conducted on US and Western European markets. More evidence on Japanese markets needed.
- Yoshida & Shimizu (2010) , Shimizu (2010) new condominium market using asking prices and transaction prices. Small N of transaction price data samples was extremely small, and the results did not ensure a sufficient level of statistical reliability.
- Enhanced and new dataset might yield additional insights into pricing mechanisms.

Tokyo Green Building Label

- Tokyo Metropolitan Government's Green Labeling System for Condominiums.
- Green Labeling System for Condominiums (2002, revised in 2005 & 2010), mandatory for new construction and major refurbishment to organize and publish information based on a) building insulation, b) energy efficiency & performance, c) lifespan extension (durability) and d) greening (plants etc.) of the building. The evaluation results for the respective items are expressed as a number of star symbols, max: ★ ★ ★ .

Method: Hedonic model

$$P_{(i,j,t)} = f(G_i, X_{(i,j)}, NE_k, HH_{(i,j)})$$

$P_{(i,j,t)}$: New condominium price of condominium i and dwelling j at time t (1: asking price, 2: transaction price)

G_i : Green label of condominium i

$X_{(i,j)}$: Building characteristics of condominium i & dwelling j

NE_k : Location characteristics of region k

$HH_{(i,j)}$: Buyer characteristics of condominium i and dwelling j

(Quasi) cross-sectional hedonic model with robust S.E., time fixed effects and buyer characteristics

Data

Tokyo condominium transaction database with property and buyer characteristics 2001-2011 (N=48,740):

- Data source: Japanese Real Estate Economic Institute's database combined with large-scale questionnaire survey of prices and characteristics (Recruit Housing Institute).
- Variables:
Asking price, transaction price, name of development company, development scale, size and age of property, location characteristics (coordinates, address, nearest station, distance to nearest station), building characteristics (building area, land area, building structure).

Data

Variables (continued):

- Buyer characteristics (annual income, size of family, etc.) gathered by the Recruit Housing Institute.
- Tenure type (leasehold types etc.)
- Property management type (24-hour etc.)
- First-month contract rate (i.e. time on market). Higher the first month contract rate, the more affordable prices are in relation to the condominium's features.

Estimation results 1

	<i>Model 1</i> <i>log (price)</i>	
<i>Regressor</i>	<i>Coefficient</i>	<i>t stat</i>
<i>cost</i>	0.005***	10.59
<i>Green asking price</i>	0.064***	19.45
<i>Green * transaction price</i>	-0.009**	-2.37
<i>Property & condo attributes</i>	Yes	
<i>Developer fixed effects</i>	Yes	
<i>Location controls</i>	Yes	
<i>Management fixed effects</i>	Yes	
<i>Buyer characteristics</i>	No	
<i>Time fixed effects</i>	Yes	
<i>N</i>	48,740	
<i>R²</i>	0.805	

Estimation results 2

	<i>Model 2: log(price)</i>
<i>Regressor</i>	<i>Coefficient</i>
<i>green2005</i>	0.045**
<i>green2006</i>	0.0487***
<i>green2007</i>	0.0596***
<i>green2008</i>	0.0844***
<i>green2009</i>	0.096***
<i>green2010</i>	0.0438***
<i>tgreen2005</i>	-0.0486**
<i>tgreen2006</i>	-0.003
<i>tgreen2007</i>	0.010
<i>tgreen2008</i>	-0.034**
<i>tgreen2009</i>	-0.029**
<i>tgreen2010</i>	0.008
<i>Property & condo attributes</i>	Yes
<i>Developer fixed effects</i>	Yes
<i>Location controls</i>	Yes
<i>Management fixed effects</i>	Yes
<i>Buyer characteristics</i>	Yes
<i>Time fixed effects</i>	Yes
<i>N</i>	48,740
<i>R</i>²	0.814

Conclusions

- Compared to non-labelled properties, labelled buildings commanded a premium of 5.8% for the base asking price and 4.7% for the base transaction price (5.8% - 1.1%).
- The model was expanded to add in buyer characteristics as well (Model 2), but this did not significantly change the effect in Model 1.
- Premium appears to rise over time (exception: 2010)
- Future work: details of environmental performance
- More in-depth modelling of buyer characteristics
- Incorporate information on cost premium of green label

Thank you!

Paper is available at:

Social Science Research Network:

<http://ssrn.com/author=377440>