What Do We Know About the Value of Owner-occupied Housing Services? Rental Equivalence and Other Approaches

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Outline

- Introduction
  - Importance
  - Purpose of this study
  - Summary of findings
- Approaches to value housing services
- Methods and data
- Results
- Conclusions
Introduction

- Prevalence of owner-occupied housing in U.S.
- Importance for economic well-being measurement
  - Consumption
  - Income
- Federal statistics
  - CPI
  - PCE and National Income Accounts
- Census Bureau and other agencies and groups
  - Request for income statistics for poverty measurement
Purpose

- To compare imputed rents for owners using three approaches
  - Hedonic regressions based on pooled sample of owners and renters (capitalization rates estimated)
  - Hedonic regressions based on contract rents
  - Reported rental equivalence

- To produce imputed rents using data from two surveys
  - Consumer Expenditure Survey (CE)
  - American Housing Survey (AHS)

- To compare imputed rents
  - Within surveys
  - Between

- To compare Consumer Expenditure Survey (CE) and American Housing Survey (AHS) population weighted samples in terms of characteristics
Caveats

- Preliminary results
  - *not to be quoted without permission*

- Statistical tests of differences within and between surveys not conducted
Summary of Findings

- Sample Comparison
  - AHS rents are relatively higher than CE rents and this difference is greater than the difference in property values
  - AHS housing units are more likely to be single detached units and to have window air conditioning

- Residential capitalization rates vary across geographic areas and across surveys
  - AHS rates are higher than CE rates

- Imputed rents based on rental equivalence are higher than those based on
  - Hedonic regressions of renters’ rents
  - Implicit capitalization rates

- AHS owner rents based on the two hedonic models are higher than CE rents using the same approaches
- CE rents based on reported rental equivalence are higher than those for the AHS
Approaches to Value Owner-occupied Housing Services

- Pooled-tenure hedonic model (renters and owners)-capitalization rate

\[ \text{Ln}(\text{price}) = BX + \gamma \text{Tenure} + \epsilon \]

- Renter hedonic model of rents

\[ \text{Ln}(\text{rent}) = BX + \epsilon \]

- Owner hedonic model of rental equivalence

\[ \text{renteq} = BX + \epsilon \]
Pooled-tenure hedonic model (renters and owners)

\[
\ln(price) = BX + γ\text{Tenure} + \varepsilon
\]

\[
\ln(propertyvalue) = BX + γ + \varepsilon
\]

\[
\ln(rent) = BX + \varepsilon
\]

\[
\ln(rent) - \ln(propertyvalue) = -γ
\]

\[
\ln\left(\frac{rent}{propertyvalue}\right) = -γ
\]

\[
caprate = \left(\frac{rent}{propertyvalue}\right) = e^{-γ} \times 12 \times 100
\]
Rental Equivalence from the CE

What would you say that your dwelling would rent for monthly unfurnished and without utilities?
Regressors

- Number of rooms not including baths
- Number of full baths
- Number of half baths
- Dwelling age
- Single detached home
- Mobile home
- Off-street parking
- Porch, balcony, patio
- Central AC
- Window AC
- Number of persons per room
- Median property value within PSU

- For pooled regression
  - Tenure
  - Energy utilities in rent
  - Water/trash utilities in rent

- For renter regression
  - Energy utilities in rent
  - Water/trash utilities in rent

- For rental equivalence
  - Value of property
Data

- **CE Interview**
  - Collected using personal interviews and telephone
  - Nationally representative of consumer units
  - Base sampling frame: 1990 Census
  - Panel rotation survey (in and out in five consecutive quarters)
  - 2003Q2-2004Q1
  - 30,000 interviews in 12 months
  - 14,612 unique consumer units in data collection period in analysis sample

- **AHS national survey**
  - Collected using personal interviews and telephone
  - Nationally representative of housing units
  - Base sampling frame: 1980 Census
  - Current sample of housing units have been interviewed since 1985 with some updates
  - 2003
  - 55,000 housing units interviewed
  - 44,323 housing units in analysis sample
Results

- Analysis conducted at region-MSA status level
  - Pooled regression for capitalization rates

- Analysis conducted at region level with results shown at region-MSA status level
  - Imputed rents based on renter hedonic
  - Imputed rental equivalence based on reported rental equivalence hedonics

- Present charts for regional central cities for the AHS and CE; all results are population weighted
Capitalization Rates-Central City

percent

National | Northeast | Midwest | South | West
---|---|---|---|---
CE | AHS | CE | AHS | CE | AHS
Owner Imputed Rents: Capitalization Rates

Northeast Midwest South West

CE AHS
Owner Imputed Rents: Renter Hedonic
Owner Imputed Rents: Rental Equivalence

The bar chart shows the owner imputed rents for different regions (Northeast, Midwest, South, West) and different equivalence categories (CE, AHS). The chart indicates the rental equivalence values in the ranges of $0 to $1,400.
Comparison of Rent and Cap Rate
Imputed Rents to Rental Equivalence: Regional Central Cities

Northeast Midwest South West
CE hedonic/renteq
CE caprate/renteq
AHS hedonic/renteq
AHS caprate/renteq
Conclusion…

What Do These Results Suggest?

- CE consumer unit housing units are different than housing units in the AHS
  - Further analysis is needed to identify reasons for the differences

- Owner imputed rents reflect sample differences as well as differences in the importance of housing unit characteristics in the models

- Further research is needed to identify reasons why rental equivalence is always higher than imputed rents based on the other two approaches
  - What is the role of housing unit quality and neighborhood quality?
  - What is the role of the presence of renters in a geographic area (i.e., renter intensity)?

- Caution should be followed before one approach is selected over another to produce measures of consumption and income that account for the value of owner-occupied housing in the U.S.

- Much more work needs to be done … *we have only just begun*