

# Comments on Proposed Methodology for Measuring Flow of Services from Owner- Occupied Housing

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# Outline

A. Summary: Not Good Enough for Government Work, But Fixable

B. Questions 1&2

- Big Picture: Measurement Goal, and OC
- Shortfalls of Heston/Nakamura study for owner premium
- Halket, Nesheim and Oswald (2015/2020?): Alternative Method 1, and Other Implications
- L<sup>3</sup>: Need ACS Microdata for this purpose
- Better justification needed for “beta” adjustments

C. ACS: Noise reduction?

D. CE Weighting in CPI: Incorporates Owner Premium; Alt. Method 2

E. Thoughts on User Costs (and Alt. Method 3)

F. Question 3: Vacant Units

G. Question 5: Other Issues

## Questions 1 and 2

1. Does the proposed approach seem well-suited to measuring nominal housing services given the approaches used in the academic literature and by other government statistical agencies?
2. Does the calculation of the owner premium seem reasonable given the underlying assumptions? If not, how might the computation of the owner premium be improved?

## Response Summary

# The Proposed Approach is Not Good Enough for Government Work, But Fixable

I offer three alternatives for computing the owner premium, in addition to briefly discussing user cost approaches – which address unobserved quality in a different way.

## Big Picture: The Measurement Goal

- The measurement objective given in 1993 SNA says that the services are deemed equal in value to rentals that **would be paid on the market** for accommodation of the **same size, quality and type**.
- Market rent  $\neq$  opportunity cost
  - Opportunity cost would be closer to **net** rental income
  - Landlord costs such as vacancy risk, screening, collecting late payments, etc. do not appear in owner cost expressions, but do appear in landlord cost expressions
  - General point: the owner service flow is a hypothetical; should we measure only one part of that hypothetical? Is the answer different for national accounts vs. price indexes?

## Heston/Nakamura study is insufficient basis.

- Best off-the-shelf estimate
- Not robust enough:
  - Self-reported rents, with some well-known deficiencies
  - Very few cities, mostly atypical
  - Particular point in real estate cycle
- Better alternative methods exist

## Halket, Nesheim and Oswald (2015/2020?)

- Hedonic rent and price regressions, plus a Heckman selection equation
- Selection into owned or rental universe based upon two unobserved quality variables
  - Type 1: “standard” amenities like view, south-facing windows – no maintenance
  - Type 2: “headache to maintain in a rental” amenities like hot-tub; raise rents, but raise costs more
  - Units with high type-2 amenities unlikely to be in rental market
- One can determine the rental premium applicable to an owned unit, using estimates of unobservables.

## Other relevant findings

- Rent/value relationship is not necessarily concave in value; the gradient is non-monotonic and quite different from gradient one estimates when ignoring selection. (This would affect weighting in both old BEA method, and current CPI method.)
- Landlord costs evidently rise rapidly with the size of the structure.

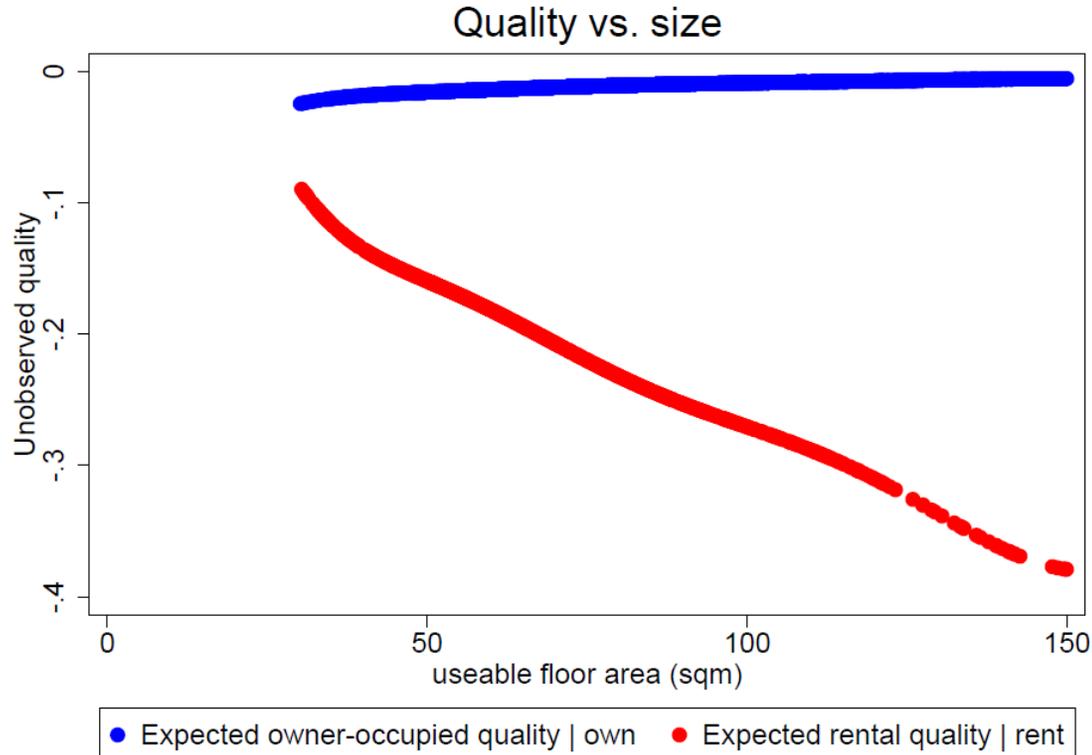
# Representative Result

(slide from presentation by authors, 2016)

Results

Unobserved qualities vs. dwelling size

EHS 2011: Preference for owning?



## Replicate using ACS data

- This study is probably best method to estimate owner premium.
- I advise replicating this study using ACS microdata (need the microdata for location info).
- CE data could also be used to replicate; probably would require pooling some years. (CE data would also allow both house valuation and OER valuation responses to be used.)  
(Deficient location information, though.)

## Location, and Justification of Premium Function

- Land values and rent values vary tremendously across a city.
- “State” is too broad for location for estimating  $\beta$ . (Perhaps necessary for smaller states.)
- Owner’s premium formula (e.g., use of  $\beta$ , and functional form) must be better justified.
- However, this may change if another method for estimating the owner premium is adopted.

## ACS Noise

- In my experience, ACS data delivered noisy hedonic rent growth estimates; ACS data are repeated cross-section rather than panel data.
- Stratification and averaging may be reducing sensitivity to extreme observations.
- (Zillow estimates are unsuitable for rent growth estimation at the unit level.)

## CE-based Weighting in the CPI

- If Heston/Nakamura are correct, then weight estimates used in the CPI are (approximately) correct – they incorporate the owner premium.
- Since CE-based data have the typical concavity in rent/value ratio, the Halket et al. study casts some doubt on the correctness.
- CE data could be used to provide updated estimates of the Heston/Nakamura estimates, based on a nationally-representative sample. (May need to pool a couple of years of data.)
- At a minimum, using CE data to replicate Heston/Nakamura study an important reality check.

## Thoughts on user costs

- User costs “cleanly” pick up any unobserved quality (at expense of many headaches).
- Goeyvaerts and Buyst (2018) find pretty high coherence between user costs and rent – intriguing (but unusual).
- From Diewert/Nakamura chapter, full ex ante user costs include: normal maintenance, property taxes, depreciation (not offset by maintenance), opportunity cost of funds, and expected nominal capital gains.
- Latter term missing from some background documents. OECD suggestion, Iceland, my own research suggests that plugging in expected inflation “seems to work.” Iceland does some smoothing, perhaps acceptable for BEA.
- Expected capital gains a function of location within a city. Big challenge; need microdata and a lot of effort...

## Braga and Lerman (2018): Novel Approach

- These authors use University of Michigan Survey data to deduce the implicit forecasting model used by respondents (i.e., estimated coefficients of a linear forecasting model)
- Then use the “U of M” forecasting model to generate expected appreciation based on microdata
- A way to “tame” wild expected appreciation forecasts

## Hill, Steurer and Walzl (2017)

- New approach to user costs: add a risk premium to nominal financial opportunity cost, which cancels with expected excess return of housing.
- Resulting user cost is simple, proportional to house prices (and very close to previous suggestion, and to what was actually done in background documents).
- Very strong assumption but perhaps a way forward.

## HSW (2017) Approach to Unobserved Quality

- Use quantile regression: one quantile regression for rents, another for house values. Assign rental units to 10 different deciles; assign houses to 10 different deciles.
- If owned home  $j$  is in 4<sup>th</sup> decile, then hedonic rent coefficients from 4<sup>th</sup> decile are used to impute OER for that unit.
- In their data, this gives reliable out-of-sample predictions.
- Intuitively, this is the reason that the BEA proposal uses a  $\beta$  formula rather than a straight 15% premium.
- This quantile regression approach is a third way one could generate an owner premium in a data-intensive and timely fashion, using ACS data.

## Question 3: Vacant Units

- Conceptually, what is the best way to think of housing services for vacant properties? BEA's current method assumes they provide fifty percent of the service of comparable properties in some cases (e.g., a seasonal property may be occupied roughly half the year). Other cases, such as properties that have been sold but remain unoccupied, are treated as 100 percent occupied. These treatments are consistent with European guidelines.

## Vacant Units

- Probably well-discussed before, but here are my naïve thoughts anyway.
- We don't adjust for intensity of use in any other commodity. (e.g., sports car that is driven once a year; mansion where kitchen, pool, most rooms never used)
- Service flow is "running" even if no one is "using" it.
- This service flow should include an owner premium; the premium should be addressing unobserved quality, not an internal "warm glow" received by owners (or even the utility boost awarded by the "option value" to customize the home).
- But homes which are bought for speculation, or for renting out using Airbnb, should be treated differently.

## Question 5: Other Issues?

- Are there other high priority aspects of the measurement of housing services that BEA should consider?
- Late payment fees are a big deal in the lower end of the rental market, a way to capture higher rents. Does BEA take these into account?
- Depreciation applies to the structure, so the value of structure compared to total value matters for depreciation estimates. BEA is well-aware of this, but does it take this into consideration across the board?