

# Discussion of “Housing Wealth Effects in Japan: Evidence based on Household Micro data” by Hori & Niizeki

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# Summary of the paper

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A nicely written empirical paper about a particularly important economic issue for Japan

1. 500K observations of Japanese household panel data
2. Cross-section and pseudo panel, reduced-form, linear, regressions
3. Marginal propensity to consume out of housing wealth is 0.006-0.008.
4. Older households are more responsive to housing wealth shocks
5. Renters have a small MPC

# Comments

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1. What is the wealth effect of housing on consumption?
2. Errors and biases in “Koji” land price complicate the estimation
3. The assumed structure depreciation rate is very large
4. International comparison requires institutional details
5. The renter result is puzzling

# 1. Wealth effect of housing on consumption

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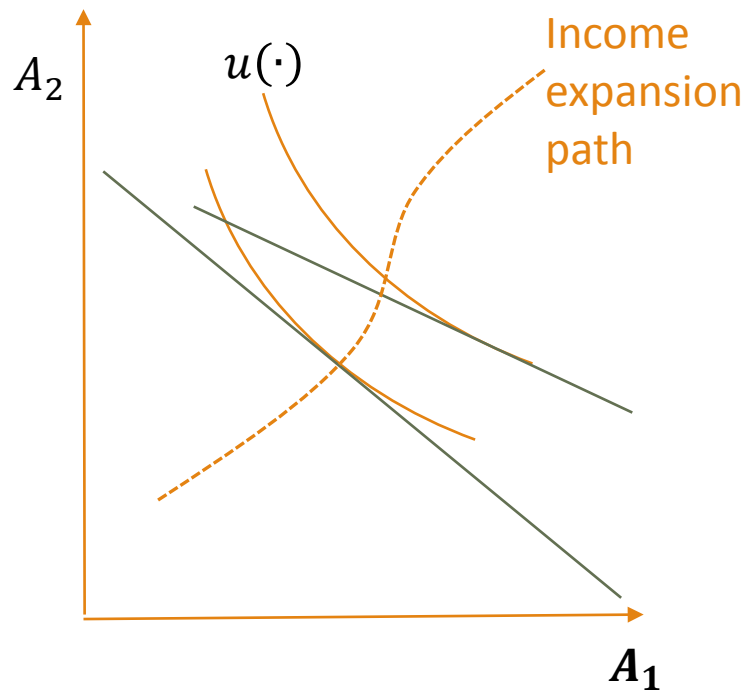
## Two-period consumption choice

- $\max E[u(A(C_1, H_1)) + \beta u(A(C_2, H_2))]$  s. t.
- $p_1 H_0 + r_1 S_0 = C_1 + p_1 H_1 + S_1$
- $p_2 H_1 + r_2 S_1 = C_2 + p_2 H_2$ 
  - $A_t$ : Aggregate consumption
  - $C_t$ : Non-housing consumption
  - $H_t$ : Housing consumption
  - $p_t H_{t-1}$ : Housing wealth at time  $t$ .
  - $r_t S_{t-1}$ : Financial wealth at time  $t$ .
- A housing wealth shock: An increase in  $p_1$

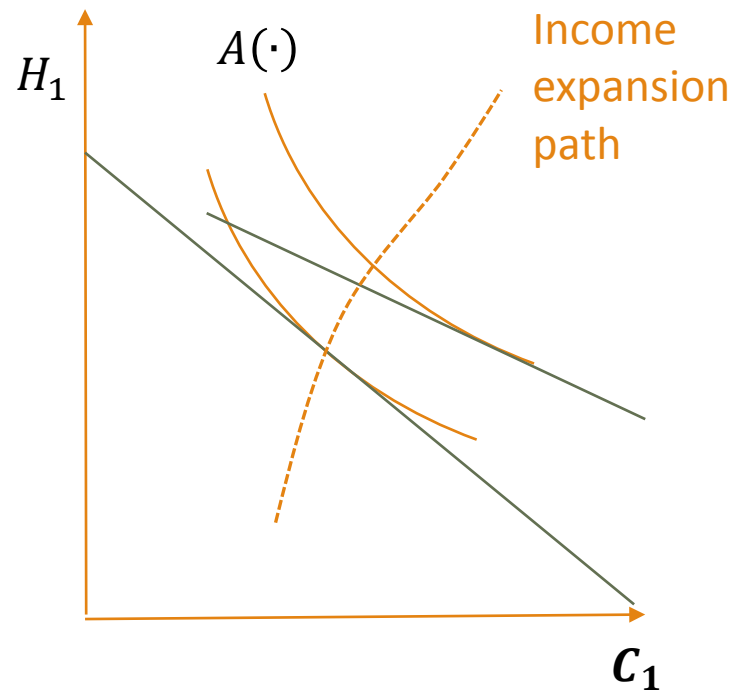
Housing wealth affects consumption in two steps:

$$p_1 H_0 \rightarrow A_1 \rightarrow C_1$$

# A Two-Step Impact of Housing Wealth on Consumption



Interest rate often decreases  
→ Intertemporal substitution increases the current consumption.



Housing prices are higher.  
→ Intra-temporal substitution increases the non-housing consumption.

How should substitutions be treated?

# Evidence of Non-Homotheticity

## Davidoff and Yoshida (2013)

$$u(C, H) = \left[ (1 - \alpha) C^{1-1/\rho} + \alpha H^{1-\eta/\rho} \right]^{1/(1-1/\rho)}$$

Panel B:  $H_t$  = BEA-based Housing Stock

(1947:2-2004:1,  $N = 227$ )

	Pricing kernel 1		Pricing kernel 2		
	CES	GES	CES	GES	
$\rho$ (SES)	0.813 (0.104)	0.379 (0.054)	0.731 (0.102)	0.409 (0.055)	***
$\theta$ (IES)	0.041 (0.013)	0.051 (0.016)	0.107 (0.028)	0.093 (0.024)	
$\alpha$ (weight on housing)	0.473 (0.003)	0.410 (0.012)	0.474 (0.003)	0.417 (0.012)	***
$\beta$ (subjective discount factor)	1.111 (0.040)	1.094 (0.039)	1.034 (0.014)	1.039 (0.016)	
$\eta$ (non-homotheticity)	–	1.217 27	–	1.179	***

## 2. Complications by errors and biases in “Koji” land price

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Annual **appraisal** of 26,000 locations

→ A point for each [2.2 km x 2.2 km] habitable area

Latent individual home valuation:  $V_{i,t}^H$

$$\rightarrow P_{i,t}^H = V_{i,t}^H + \varepsilon_{i,t}, i \in \text{Sale} \quad (\text{pricing errors } \varepsilon)$$

$$\rightarrow P_{k,t}^H = \frac{1}{n} \sum_{i \in (\text{Sale} \cap \text{Koji})} \sum_{v=t-1}^t P_{i,v}^H \quad (\text{averaging around Koji})$$

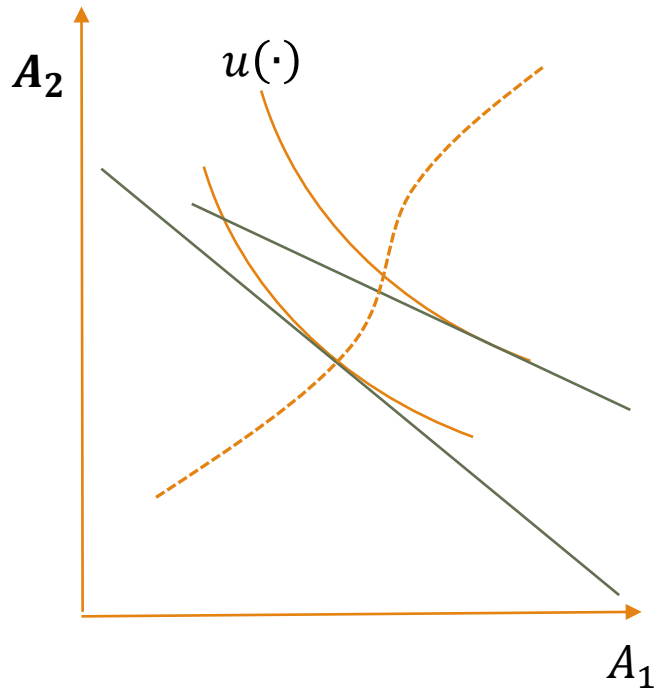
$$\rightarrow V_{k,t}^A = f(P_{k,t-L}^H, \dots, P_{k,t}^H, \mathbf{HBU}) \quad (\text{lag } L \text{ and HBU } A)$$

$$\rightarrow L_{k,t}^A = g(V_{k,t}^A, \mathbf{K}_{k,t}^A) \quad (\text{construction cost } \mathbf{K}_{k,t}^A)$$

In this study,  $\tilde{V}_{i,t}^H = L_{k,t}^A + \delta K_{i,t} =$

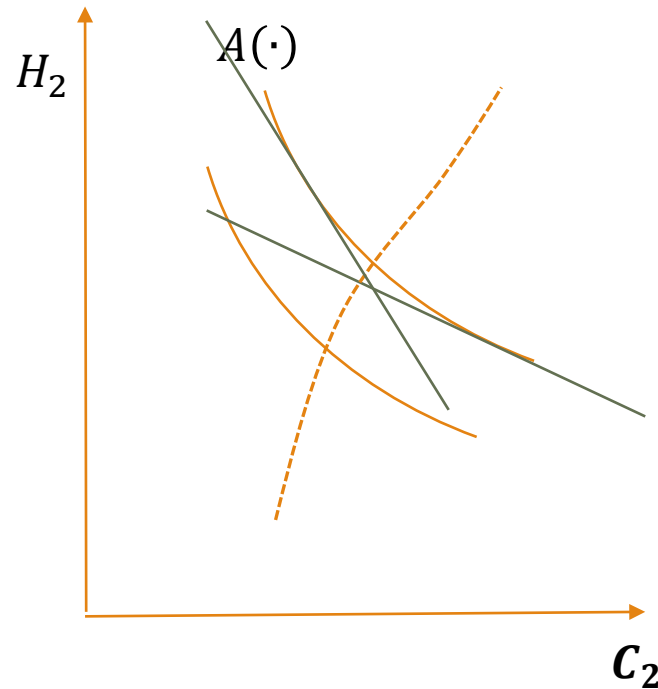
$$g \left( f \left( \begin{array}{l} \frac{1}{n} \sum_{i \in (\text{Sale} \cap \text{Koji})} \sum_{v=t-L-1}^{t-L} V_{i,v}^H + \varepsilon_{i,v}, \dots, \\ \frac{1}{n} \sum_{i \in (\text{Sale} \cap \text{Koji})} \sum_{v=t-1}^t V_{i,v}^H + \varepsilon_{i,v}, \mathbf{HBU} \end{array} \right), K_{A,t} \right) + \delta K_{i,t}$$

By lags in appraisal value,  
mapping  $V_{i,t-L}^H \rightarrow C_t$  is analyzed



Intertemporal substitution  
decreases the future consumption.

→ Underestimation



At  $t=2$ , housing prices may be higher or  
lower than  $t=1$

→ Under/ovder-estimation



# Biases by appraisal smoothing and measurement errors

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Appraisal smoothing makes housing shocks smaller than the actual.

- $V_{k,t}^A = f(\mathbf{P}_{k,t-L}^H, \dots, \mathbf{P}_{k,t}^H, HBU)$
- $P_{k,t}^H = \frac{1}{n} \sum_{i \in (Sale \cap Koji)} \sum_{v=t-1}^t P_{i,v}^H$

→ MPC is overestimated.

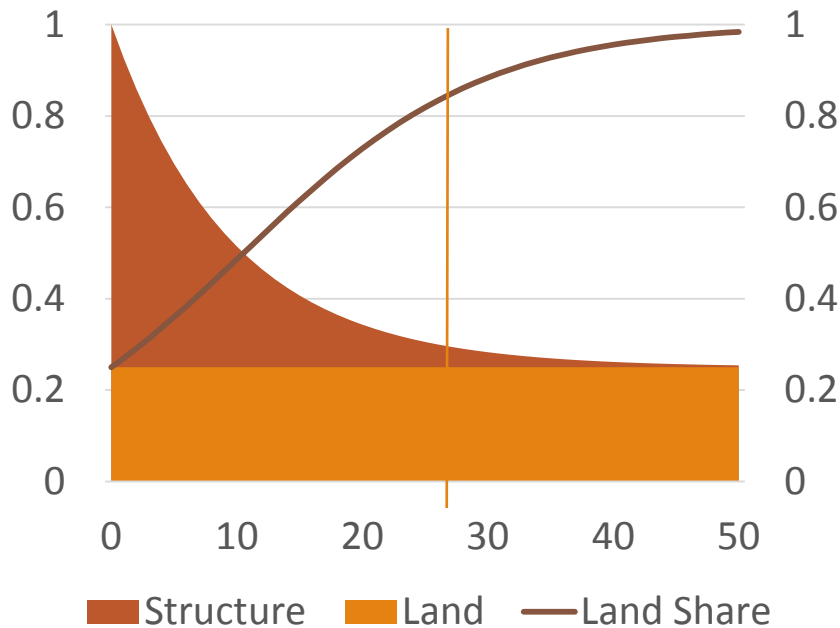
Measurement errors creates an attenuation bias

- $i \in (Sale \cap Koji), \varepsilon_{i,t-L}, HBU, K_{A,t}$

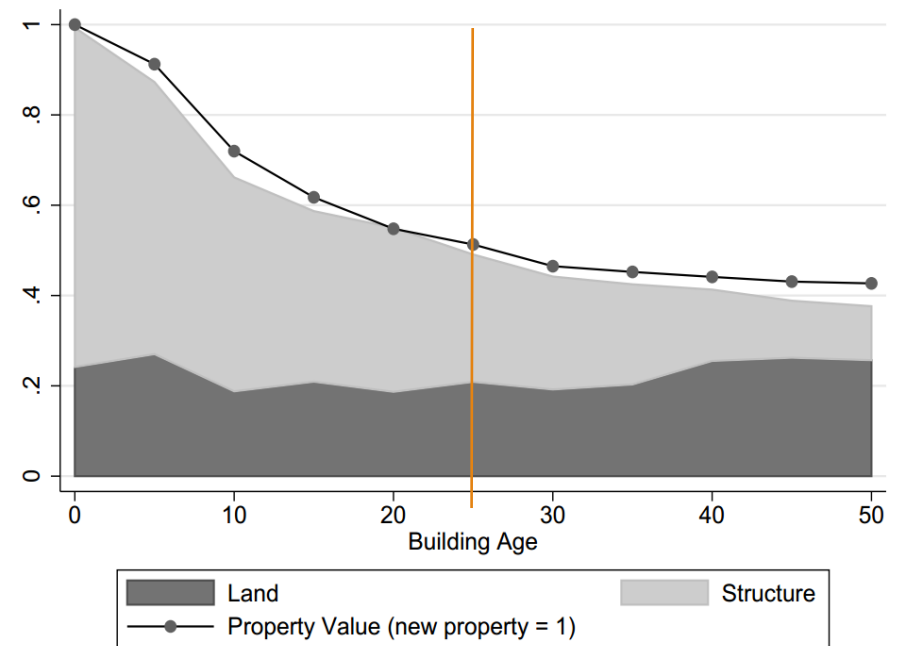
→ MPC is underestimated.

# 3. Structure Depreciation Rate

This study: Land share is 85% by 10% depreciation



Yoshida (2017): Land share is 40% at 25 years old



(b) Outside Tokyo

# Housing wealth shocks are overestimated

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In this study, land accounts for 85% of housing value

- A 1% change in land value → A 0.85% change in housing value

If the true land share is 42.5%,

- A 1% change in land value → A 0.425% change in housing value

Housing wealth shocks are overestimated by the factor of 2

The estimated MPC is underestimated.

**The true MPC is two times larger than the estimate.**

# 4. Difficulties in the International Comparison

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The wealth effect of housing in Japan is difficult to compare with the effect in other countries

Institutional details and the role of housing wealth are very different.

Housing value is difficult to monetize in Japan

- Mortgages are recourse in Japan
- Second mortgages, home equity loans, home equity line of credit are virtually unavailable
- Housing markets are illiquid

# 5. Renter Result is Puzzling

Renters have a short position in housing asset

- House price increase means an increase in the future rental cost  
( $\text{Rent} = \text{Price} * \text{User\_Cost\_Rate}$ )
- PIH suggests that renters should not spend more even if renters give up future homeownership

A positive MPC for renters is a violation of PIH

- The housing wealth variable may be proxying for other wealth/income factors

Correlation b/w House & Stock  
(Yoshida, 2017)

