Discussion of

"Housing and Debt over the Life Cycle and over the Business Cycle"

by Iacoviello and Pavan

Dirk Krueger

University of Pennsylvania, CEPR, and NBER

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Introduction

- Macro: i) great moderation: $\sigma(Y), \sigma(I_h) \downarrow$, ii) decline in $\sigma(D), corr(Y, D)$.
- Micro: a) Increase in idiosyncratic income risk $\sigma(y)$, b) reduction in mortgage downpayment constraints m of households
- Question of the paper: Can a) and b) explain i) and ii).

Motivating Facts

Var.	Y	I_h		D		y	m	home	P_h
Stat.	$\sigma(Y)$	$\sigma(I_h)$	$\frac{\sigma(I_h)}{\sigma(Y)}$	$\sigma(D)$	$\rho(Y,D)$	$\sigma(\varepsilon)$	share	share	$\frac{P_h}{CPI}$
60/70	2.09%	8.24%	3.94	2.23	0.78	0.30	75%	64%	1.0
80/90	1.20%	3.61%	3.01	1.56	0.16	0.45	85%	69%	1.4

Key Model Elements

- Macro: RBC model where cycles are driven by technology shocks
- Micro:
  - OLG model with idiosyncratic income shocks & β heterogeneity.
  - Financial asset.
  - Housing: provides consumption services in utility function.
  - If own: is lumpy, costly to adjust, but provides utility gain over renting and can be borrowed against.

Key Results

- Cross-sectional results: model matches distributions well.

- Macro business cycle results: reasonable, but I_h is not volatile enough, D far too volatile in the model.

- Experiments: $\Delta\sigma(y)$ alone does not matter at all. But in conjunction with Δm it significantly reduces $\sigma(D)$,$\sigma(I_h)$ and $\rho(Y, D)$, reduces $\sigma(Y)$ somewhat.

Table 2: US Economy and Model. Cyclical Statistics. Comparison for the Early Period.

	DATA: 1952.I -1982.IV			MODEL		
	stdev %	ratio[i]	corr. w/ GDP	stdev%	ratio[i]	corr. w/ GDP
GDP[ii]	2.09	1.00	1.00	2.09	1.00	1.00
C[iii]	1.20	0.57	0.92	1.69	0.81	0.95
IH	8.24	3.94	0.84	4.68	2.24	0.90
IK	5.03	2.41	0.77	3.50	1.68	0.86
$Debt$[iv]	2.23	1.06	0.78	7.77	3.72	0.88

Key Mechanisms

- $\Delta m \uparrow$ implies smoother adjustment of housing choices to shocks, thus reduction in $\sigma(I_h), \sigma(Y)$. Since houses mostly bought on credit, fall in $\sigma(D)$ as well.

- $\Delta m \uparrow$ implies more young (indebted) homeowners.
  - Homeowners respond less with labor supply to negative TFP shocks. $\sigma(Y)$ falls.
  - Homeowners respond less with demand for housing than renters (because of adjustment costs). $\sigma(I_h)$ falls.

Table 3: Model predictions, changing downpayment requirements and income volatility

	Baseline (1)	(2)	(3)	(4)
	Early Period			Late Period
	$m = 0.75$	$m = 0.85$	$m = 0.75$	$m = 0.85$
	$\sigma_Z = 0.3$	$\sigma_Z = 0.3$	$\sigma_z = 0.45$	$\sigma_Z = 0.45$
stdev%				
GDP[ii]	2.092	2.040	2.093	2.038
C[iii]	1.69	1.67	1.70	1.70
IH	4.68	4.39	4.78	4.12
IK	3.50	3.24	3.53	3.34
$Debt$[iv]	7.77	2.22	6.72	1.72
Corr($Debt, GDP$)	0.88	0.52	0.80	0.10
% $Homeown$	64%	75%	63%	67%
Debt to GDP	0.31	0.46	0.27	0.35
$\sigma\left(\Delta C_{it}/C_i\right)$	0.14	0.14	0.17	0.17
Gini wealth	0.76	0.76	0.76	0.77
Gini labor income	0.43	0.43	0.49	0.49
Gini consumption	0.26	0.26	0.30	0.31

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Key Mechanisms

- Add $\Delta\sigma(y) \uparrow$. Mainly $\sigma(D) \downarrow$ and $\rho(Y, D) \downarrow$.

- Higher leverage (due to higher m) and higher $\sigma(y)$ induces more precaution with respect to aggregate shocks.

- Less adjustment of housing and debt in response to aggregate shocks (Ss bands become larger).

Computation/Calibration

- Computation: is hard! Krusell-Smith (1998) with two continuous state variables, non-convex household problem. Are you sure quasi-aggregation holds?

- Calibration: Aggregate technology shocks "symmetric", give rise to symmetric business cycles. But: recessions are sharp, short. Also: idiosyncratic earnings shocks about 75% larger in recessions than in expansions (Storesletten et al., 2004).

- Simulation: Why compare "stochastic steady states" rather than time series where aggregate shocks mimic actual timing of cycles?

Main Comments

- Do we need a model of this complexity?
  - For cross-sectional facts no aggregate risk needed. $\sigma(A) = 0$ would hugely reduce computational (and interpretational) complexity.
  - For effects of Δm on $\Delta\sigma(Y)$ less household heterogeneity and less frictions may be sufficient.
  - For effects of $\Delta\sigma(y)$ on $\Delta\sigma(Y)$ need a model of this sort. But: by itself $\Delta\sigma(y)$ does not do much. Thus key to understand why interaction between $\Delta\sigma(y)$ and Δm_h is so important for results.

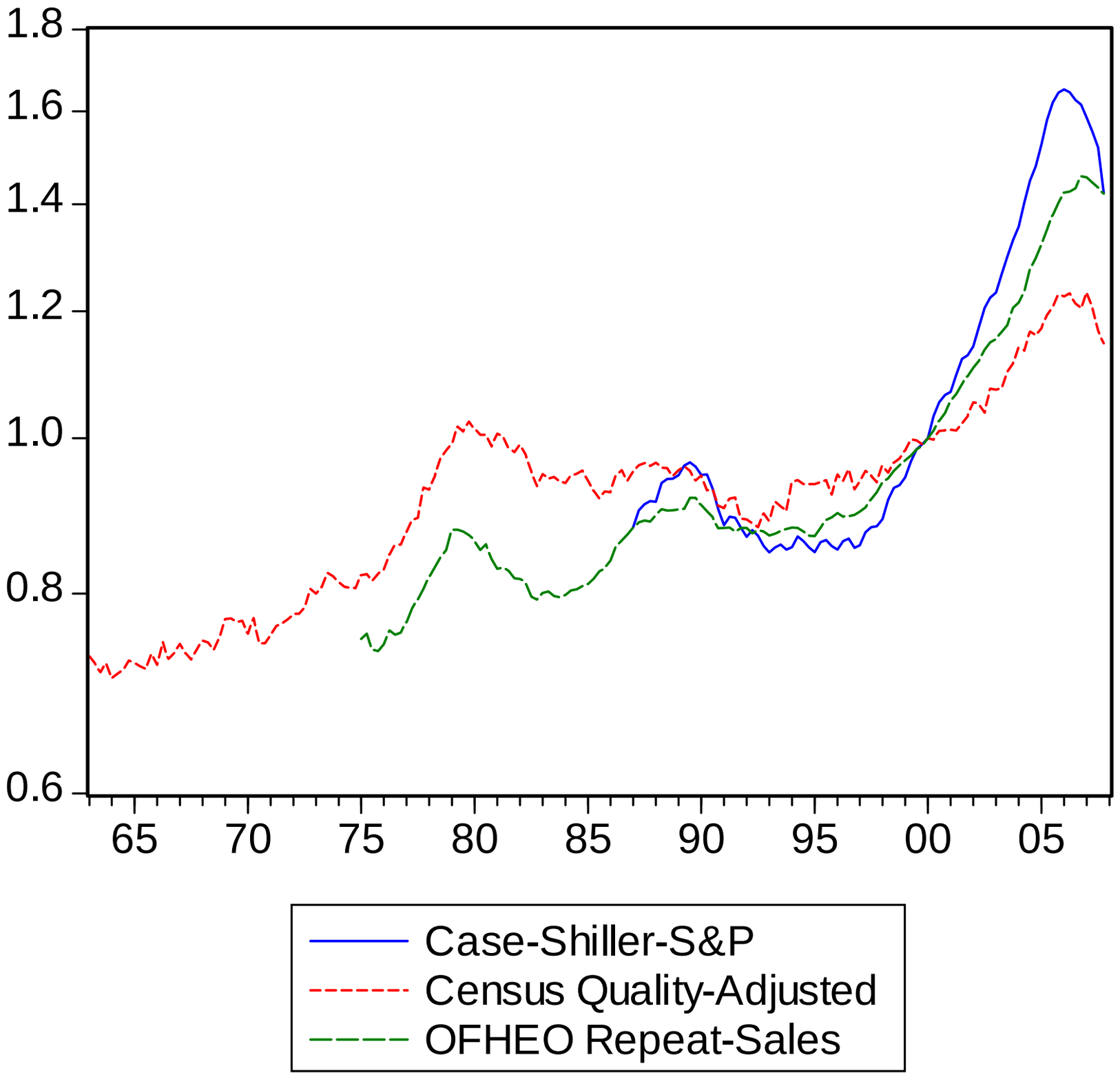
Bigger Picture

- Can we really study the question at hand with housing model where the relative price of housing is constant over time?

- Data: large secular increase in relative price of housing. This is not a cyclical phenomenon.

- But: crucial for cyclical dynamics is increase in home ownership rate, and with big increases in P this might not have happened in model. Of course, rents also adjust.

Figure 1: Alternative Home Price Indexes (Inflation-Adjusted)



Note: Logarithmic scale, 2000:Q1 = 1.00

Bigger Picture

- Quick fix: embed exogenous (possibly stochastic) house price process into the model that mimics data. See e.g. Li and Yao (2007).

- Bigger question: what rationalizes big changes in house prices? Productivity? Interest rates? See Kiyotaki et al. (2008), Kahn (2008) Muraki (2008).

- These papers fill big need for good model of endogenous house price movements (over the cycle, over the long run).