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Discussion of: Expectations during the US Housing Boom: Inferring Beliefs from Actions by Ben David, Towbin and Weber

Paul Willen

Federal Reserve Bank of Boston and NBER

Financial Dysfunction Conference LSE, June 6, 2019

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• I am speaking today as a researcher and as a concerned citizen

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• When I say "we", I don't mean Jay and me.

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		Intuition		
Rent	Own	 Hous servi Rent Buy: 	seholds need a flow of ho ces :: Get a flow of housing s	ousing services

- Current flow of housing
- All future flows of housing

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		Intuition		
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Rent	Own	•	Households need a flow of housing services Rent: Get a flow of housing services Buy:
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Conclusion

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		Intuitio	n
Rent	Own		Households need a flow of housing services Rent: Get a flow of housing services Buy:
	Contraction of the second seco	-	 Current flow of housing All future flows of housing Relaxing constraints increases demand for milk price of cow and price of milk

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		Intuition	
Rent	Own	• H s [.] • R • B	louseholds need a flow of housing ervices Rent: Get a flow of housing services Buy:
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• affects only price of cow

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	Th	ne model		

• Gordon Growth Model

$$\frac{\mathsf{Price}}{\mathsf{Rent}} = \frac{1}{r-g}$$

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• Gordon Growth Model

$$\frac{\mathsf{Price}}{\mathsf{Rent}} = \frac{1}{r-g}$$

• Take logs

 $\log \mathsf{Price} - \log \mathsf{Rent} \approx \log g - \log r$

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• Gordon Growth Model

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$$\begin{array}{l} \log \operatorname{Price} - \log \operatorname{Rent} \approx \log g - \log r \\ \underbrace{P}_{\equiv \log \operatorname{Price}} - \underbrace{R}_{\equiv \log \operatorname{Rent}} = \underbrace{\varepsilon_{p_r}}_{\equiv \log g} - \underbrace{I}_{\equiv \log r} \end{array}$$

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• Equation 1 in BTW ($p_r = 1, p_i = 1$)

$$P = p_r R - p_i I + \varepsilon_{p_r}$$

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- Demand for houses (Eq. 2 in BTW) $D = -d_r R + \varepsilon_D$
 - Demand Decreasing function of rent

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- Supply of houses (Eq. 3 in BTW)

$$S = s_p P + \varepsilon_s$$

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= $s_p R + \varepsilon_s + s_p (P - R)$

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= $s_p R + \varepsilon_s + s_p (-I + \varepsilon_{p_r})$

• Supply increasing function of rent

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$$S = s_p P + \varepsilon_s$$

= $s_p R + \varepsilon_s + s_p (P - R)$
= $s_p R + \varepsilon_s + s_p (-I + \varepsilon_{p_r})$

- Supply increasing function of rent
- AND Price/Rent ratio

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Equation 4 in BTW



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Equation 4 in BTW



• Demand for vacancies

 $V = -v_r R$

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Equation 4 in BTW



• Demand for vacancies

$$V = -v_r R$$

• Supply of houses $S = s_p R + \varepsilon_s + s_p (-I + \varepsilon_{p_r})$

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Equation 4 in BTW



• Demand for vacancies

 $V = -v_r R$

- Supply of houses $S = s_p R + \varepsilon_s + s_p (-I + \varepsilon_{p_r})$
- Demand for houses

$$D = -d_r R - \varepsilon_D$$

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Equation 4 in BTW



Demand for vacancies

 $V = -v_r R$

- Supply of houses $S = s_p R + \varepsilon_s + s_p (-I + \varepsilon_{p_r})$
- Demand for houses

$$D = -d_r R - \varepsilon_D$$

• Price-Rent Ratio

$$P-R=-I+\varepsilon_{Pr}$$

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Relation to Existing Literature

(1)
$$\underbrace{-v_r R}_{\text{Demand for Vacancies}} = \underbrace{(s_p + s_d)R + \varepsilon_s - \varepsilon_D + s_p(I + \varepsilon_{p_r})}_{\text{Supply of Vacancies}}$$
(2)
$$P - R = -I + \varepsilon_{p_r}$$

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Relation to Existing Literature

(1)
$$\overline{v} = (s_p + s_d)R + \varepsilon_s - \varepsilon_D$$

Demand for Supply of Vacancies
(2) $P - R = -I + \varepsilon_{p_r}$

Three strands of literature

1. Credit expansion: $\uparrow \varepsilon_D \underset{\text{eqn (1)}}{\Longrightarrow} \uparrow R \underset{\text{eqn (2)}}{\Longrightarrow} \uparrow P$

Favilukis et al. (2017), Greenwald (2017)

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2. Interest rate shock:
$$\downarrow I \Longrightarrow_{eqn (2)} \uparrow P - R \Longrightarrow_{eqn (1)} \leftrightarrow R$$

Justiniano et al. (2017)

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3. Expectations shock:
$$\uparrow \varepsilon_{r_p} \Longrightarrow_{eqn (2)} \uparrow P - R \Longrightarrow_{eqn (1)} \leftrightarrow R$$

Kaplan, Mitman and Violante (2017), Ben-David, Towbin and Weber (2019)

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Kaplan, Mitman and Violante (2017), Ben-David, Towbin and Weber (2019)

What does the data say?

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(1)
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Kaplan, Mitman and Violante (2017), Ben-David, Towbin and Weber (2019)

What does the data say?





Price-Rent Ratio (Davis et al, 2008)



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• Potential problem

- Rent data: renter-occupied units
- Price data: owner-occupied units

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- Potential problem
 - Rent data: renter-occupied units
 - Price data: owner-occupied units
- Accounting Identity

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$$p_{\text{own}} = \underbrace{\operatorname{rent}}_{(1)} \times \underbrace{\frac{p_{\text{own}}}{p_{\text{rent}}}}_{(2)} \times \underbrace{\frac{p_{\text{rent}}}{rent}}_{(3)}$$

• Guren and Greenwald (2019): Own and rent are two separate markets

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 - BTW misinterpreteding $P R = -I + \varepsilon_n$

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Begley, Loewenstein and Willen (2019)

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Begley, Loewenstein and Willen (2019)

• Micro data with prices and rents on owned and rented property

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 - BTW misinterpreteding $P R = -I + \varepsilon_{Pr}$

Begley, Loewenstein and Willen (2019)



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- Potential problem
 - Rent data: renter-occupied units
 - Price data: owner-occupied units
- Accounting Identity



- Guren and Greenwald (2019): Own and rent are two separate markets
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- BTW interpretation of P R is correct.

Begley, Loewenstein and Willen (2019)



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• Survey data does not show change in expectations Piazzesi et al. (2019), Mian and Sufi (2019)

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 - 2007: 70% Prices ↑
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- User Cost = $\underbrace{p}_{\text{Price}}$



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Discussion of Towbin et al.



% of respondents

100

75

50

25

175

an

/% "Good time to buy"

"Expect House Prices to Rise"

Year

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Fact 8: Investors understood the risks

• *Brookings Papers on Economic Activity*, Fall 2008: 69–145. Joint with Gerardi, Lehnert and Sherlund.

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#	Name	Scenario	Loss	Probability
(1)				
(2)				
(3)				
(4)				
(5)				

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#	Name	Scenario	Loss	Probability
(1)	Aggressive	11% HPA over the life of the pool		
(2)		8% HPA for life		
(3)	Base	HPA slows to 5% by end-2005		
(4)				
(5)				

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(4)	Pessimistic	0% HPA for the next 3 years 5% thereafter		
(5)	Meltdown	-5% for the next 3 years, 5% thereafter		

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#	Name	Scenario	Loss	Probability
(1)	Aggressive	11% HPA over the life of the pool	1.4%	
(2)		8% HPA for life	3.2%	
(3)	Base	HPA slows to 5% by end-2005	5.6%	
(4)	Pessimistic	0% HPA for the next 3 years 5% thereafter		
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• Actual HPA: -10% annualized from Q4, 2005 to Q4, 2008

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- Actual HPA: -10% annualized from Q4, 2005 to Q4, 2008
- Forecast losses as of 2/2009 in 2006-1 ABX from JPM: 23.44% (assuming -30% HPA in 2009!)

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#	Name	Scenario	Loss	Probability
(1)	Aggressive	11% HPA over the life of the pool	1.4%	15%
(2)		8% HPA for life	3.2%	15%
(3)	Base	HPA slows to 5% by end-2005	5.6%	50%
(4)	Pessimistic	0% HPA for the next 3 years 5% thereafter	11.1%	15%
(5)	Meltdown	-5% for the next 3 years, 5% thereafter	17.1%	5%

- Actual HPA: -10% annualized from Q4, 2005 to Q4, 2008
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The slide you've all been waiting for...

• The end.

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