Discussion of “Default when Current House Prices are Uncertain”

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Summary

- Empirical literature focusing on beliefs about house prices: Piazzesi & Schneider (2009), Case & Shiller (2003), Pancrazi & Pietrunti (2014)
  - Explaining house prices: Burnside et al (2011); Branch et al (2014); Caines (2015)
  - Explaining home equity extraction: Pancrazi & Pietrunti (2014)
- Goal: Quantify the influence of household uncertainty about house prices on default decision
  - Use self-reported house prices from ACS to directly estimate rule for updating beliefs
  - Analyze effect of these beliefs in simple option-based model of default

Estimating Uncertainty

- Common observation: beliefs about house prices tend to mirror recent lags in data
- Consist with constant gain or rule-of-thumb updating

$$\begin{aligned} h_t^* &= \rho \cdot h_t^* + \varepsilon_t \\ h_{st} &= h_t^* + \upsilon_t \\ \text{Stationary Kalman Filter} \Longrightarrow h_{bt} &= (1-g) \cdot \rho \cdot h_{b,t-1} + g \cdot h_{st} \end{aligned}$$

- Directly estimate g and prior variances
  - Use ACS data on self-reported house values as measure of h_{bt}
  - Use city-level Case-Shiller as measure of signal h_{st}
- Estimated gain 0.554 on annual data, ≈ 0.18 quarterly gain
  - Adam, Kuang, Marcet (2011) estimate $g = 0.015$ for similar system

Default Model

- Household choice is sell or hold house each period
  - Hold: receive exog. & stochastic utility + continuation value
  - Sell: receive outside option + equity position
- Household doesn't know true price when making choice
  - Default is sale when household is revealed to be in negative equity
- Model stresses option value of housing
  - No ability-to-pay considerations
  - No constraint on household
  - No lender

Quantitative Exercise

- Maximum likelihood of default dates
  - Freddie Mac Single Family Loan-Level Data (30 yr, fixed rate mortgages)
  - Take mortgages with origination in 2006, CLTV at origination of 80%
  - NB: model doesn't seem to account for evolution in mortgage balance
- Simulate defaults when prior variance set to zero
  - Uncertainty creates option value to holding house, tends to decrease incidence of default
- Difficult to interpret counterfactual exercise given model struggles to explain default patterns
  - Struggles to capture level or profile of default pattern

Comments

Explaining hump shape in default series post-2006

- Can we know more about who is defaulting from 2006-09 in the sample?
  - Is there evidence that defaulters are more constrained?
  - FMSFLLD has credit score and DTI information
  - Has default been preceded by periods of temporary delinquency?
- Would be nice to see more about the shape of $\varepsilon^*(h_b, d)$ and value functions
  - How sensitive is sale choice to beliefs, or is sale/default driven predominately by rise in debt relative to observed prices
- Given estimation procedure $g \uparrow \Longrightarrow \sigma_v \downarrow$

Comments

- Need to incorporate income/unemployment
  - Observed decline in prices too small to generate sufficient number of households in negative equity
  - Either ACS not representative of loan-level data, or there are income/employment effects
- What is the advantage of using the utility shock as trigger for default instead of using pure option model?
  - Defaulters are subset of households in negative equity who (a) can't make payment, or (b) find it otherwise optimal
  - Model: defaulters are subset of households in negative equity who receive bad utility shock

Comments

Consider credit supplier

- Value of mortgage payments function of expected prob. of obtaining refinancing in future
  - Option model: default if $V(\text{House}) < V(\text{Mortgage}) < E[\text{payments}]$
- If lender tightens credit supply in response to $h_b \downarrow$ then $V(\text{Mortgage}) \uparrow$