Mortgage Default with Positive Equity

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The views expressed are those of the author and do not necessarily reflect those of the Consumer Financial Protection Bureau.
Frictionless models ⇒ defaulters have negative equity.

Evidence ⇒ many defaulters have positive equity. Evidence has issues, so most research focuses on negative equity default.

Today, focus on positive equity default. Two major questions:

1. How many defaulters have positive equity?
2. Is this consistent with theory?
Available Evidence
**Intuition from Ratios**

Abovewater homeowners approximately:
- 70 times more common in 2005
- 3-5 times more common during crisis
- 15-30 times more common in 2017

Underwater default rate estimates $\approx 5 - 10$ times higher
Underwater homeowners default more, but most homeowners above-water. Issues? Measurement error, incompatible samples, “default” definition, etc.
Direct Evidence

Issues? Unrepresentative samples, only first lien observed, house price change ≠ HPI change, “default” definition, etc.
Evidence from Surveys

Issues? “Default” definition, homeowner-reported values biased and noisy
Available Evidence: Summary

Available evidence $\Rightarrow$ many defaulters have equity.

But this evidence has many issues.

Next: first formal estimates of defaulters’ equity.
Estimation
Panel data: 1997-2013 American Housing Survey

Rich set of controls for idiosyncratic shocks
- Broken window, cracks in walls or foundation, holes in roof, leaks, etc.

Some controls for local/regional shocks
- Census-division HPI, “fair market rent”, nearby abandoned buildings

Noisy signals of other unobserved shocks
- Transaction prices
- Homeowner-reported values

30,000+ properties used to estimate parameters
Focus: 46 properties occupied in 2011, vacant in 2013 due to foreclosure
- Misses re-occupied properties (likely more equity)
- Counts properties vacated before foreclosure occurs (likely less equity)
Empirical Approach

Extension of Bayesian Gibbs sampler from Korteweg & Sorensen (2016)

This extension:

1. Controls for observable changes to property value
2. Filters transaction prices, homeowner-reported values as noisy signals of unobservable changes to property value

⇒ Yields posterior distributions for LTVs, accounting for:
   1. Measurement error
   2. Changes in property value between measurements
   3. Uncertainty in parameter estimates of empirical model
47% of LTV posteriors have mean < 100
27% of LTV posteriors have 95th percentile < 100
Interpretation of Results

\[ 27\% - 47\% \text{ of foreclosures above water from 2011-2013} \]

Equity lower during recession than before or since (Fuster et al. (2016))
Estimates imply roughly 81-87\% of foreclosures above water 1998-2001

Is this consistent with theory?
Next: model with search frictions
Model
Model Outline

Many standard ingredients:

- Consumption, housing, and mortgage choices over lifecycle
- Income shocks, including “disastrous” shock
- Nonhomeowners can rent or buy
- Current homeowners can sell, refinance, pay, or not pay mortgage
- Mortgages priced endogenously, but subject to LTV & PTI constraints

Transaction costs $\Rightarrow$ default with equity $\lessdot$ transaction costs
Delinquent Homeowners in the Model

Delinquent homeowners may:

1. Repay delinquent debt, interest, & fees to keep home
   - Herkenhoff & Ohanian (2015)
2. Sell home in *frictional* market
   - Can ↓ price to ↑ probability of sale
   - Head et al. (2016), Hedlund (2016a,b), Garriga & Hedlund (2017)

⇒ Foreclosure occurs only if owner:

1. When current, chose delinquency over selling
2. When delinquent, did not make up their payment, and
3. When delinquent, did not sell in frictional market
Model Estimation & Results

Estimation targets number & default rate of underwater homeowners
⇒ model forced to match # of underwater foreclosures

Can model match number & default rate of abovewater homeowners?
- Foreclosure rate of .45% (.5% “long-run” rate in Jeske et al. (2013))
- 83% of defaulters abovewater (81-87% estimated earlier)

⇒ Abovewater default rates in data are compatible with theory
Policy Implications: Lender Recourse

“Recourse” allows lenders to seize assets of underwater defaulters

Frictionless models $\Rightarrow$ defaulters underwater $\Rightarrow$ recourse $\downarrow$ default

In this model, recourse lowers:

- Underwater foreclosure rate from 2.49% to 1.85%
- Aggregate foreclosure rate only from 0.45% to 0.43%

Why? Abovewater defaulters not subject to recourse

First model to match empirical evidence:

- Recourse $\downarrow$ underwater default rate
  (Ghent & Kudlyak (2011), Dobbie & Goldsmith-Pinkham (2015))
- Recourse $\times$ default rate
  (Clauretie (1987), Ghent & Kudlyak (2011), Li & Oswald (2014))
Conclusion

First formal estimates ⇒ many defaulters have positive equity
• Estimates from larger dataset & longer time period would be valuable

Model ⇒ abovewater default in data:
• Consistent with search frictions
• Consistent with evidence on recourse

Model ⇒ income shocks & search frictions only factors
• Other shocks (divorce, health, etc.)
• Information frictions
• Behavioral factors, etc.