Is There a Puzzle in Underwater Mortgage Default?

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Summary

- **Question:** What role do utility costs and economic fundamentals play in driving strategic default decisions?
- **Approach:** Sophisticated structural model of mortgage default with several innovations.
- **Main findings:**
  - Matching default patterns requires small utility penalty ψ (0.7% of lifetime consumption, vs. 25% to 70% in existing work).
  - Important role for fundamentals (rent) in driving default $\rightarrow$ "triple trigger."
- **This discussion:** trying to unpack what allows the small utility penalty.
  - Does not seem to be driven by novel model features, which **incentivize** default.
  - Instead, likely related to wedges between e.g., house prices and PV of rents.

A simple benchmark

- Let's consider the simplest possible static problem of whether to default on debt.
  - Value of not defaulting: $P - M$, where P is house price and M is mortgage balance.
  - Value of defaulting: $-\psi$, where ψ is utility cost.
- Borrower defaults if and only if

$$P - M \leq -\psi \iff \psi \leq (LTV - 1)P$$

  where $LTV = M/P$.
- Literature has shown that households begin strategically defaulting at $LTV \simeq 150\%$.
  - Implies $\psi \simeq 0.5 \times P$.
- Assuming $P \simeq 4 \times C$ and PV lifetime consumption $W \simeq 10 \times C$, we get $\psi \simeq 0.2 \times W$.

Model innovations

- In contrast the authors find that strategic default behavior can be explained using $\psi = 0.007 \times W$, around $30\times$ smaller.
- The model includes several realistic innovations.
  - Households can downsize into a smaller home when they default.
  - Households are not permanently excluded from the mortgage market after default.
  - No added utility from ownership.
- However, these changes mostly make default **more** appealing, not less.
  - Should require **larger** utility penalty ψ compared to models without these features.
  - So the resolution to the puzzle must be elsewhere.
  - One exception is ability to "cure" mortgage — depends on whether default or foreclosure drives disutility.

Back to the simple model

- Now let's replace the simple static model with a dynamic one including rents.
- Borrower will default if

$$\underbrace{\sum_{t=1}^{\infty}(1+r)^{-t}\text{rent}}_{\text{PV of rent}} - \underbrace{\sum_{t=1}^{\infty}(1+r)^{-t}r_m M}_{\text{PV of mortgage payments}} < -\psi.$$

- In frictionless model where $r = r_m$ and $P = PV(rent)$, this is just $P - M < -\psi$ as before.
- Instead, it seems like we must have

$$PV(rent \times H) - PV(r_m \times M) >> P - M$$

at least for typical borrowers at risk of default.

GE vs. PE

- Specific equalites $PV(rent) = P$ and $PV(r_m \times M) - M$ require frictionless model.
- But all general equilibrium models will have connections between these variables.
  - For example, a borrower constrained by loan to value can buy dH of housing and borrow $dM = \theta dH$ of mortgage, netting $PV(rent)dH - PV(r_m)dM - (dP - dM)$.
  - This expression should be zero if the marginal borrower is LTV-constrained.
- Instead, this model sets prices, rents, and mortgage rates in **partial equilibrium**.
  - Real rents and mortgage rates are constant.
  - House prices follow a stochastic process.
  - No endogenous links between these objects.

GE vs. PE

- This partial equilibrium approach has substantial advantages.
  - Much more tractable in a very sophisticated quantitative model.
  - Confront households with dynamics of house prices close to those in the data.
- However, there are also some disadvantages.
  - In the model, movements in house prices create a pure wedge relative to PV of rents, affecting default motives.
  - In reality, changes in prices could reflect changes in PV of rents, attenuating this effect.
- More generally, I think the paper should do more to explain and document these wedges.
  - These need to be large for the marginal **defaulting borrower** for small ψ.
  - But seems more plausible if the typical homeowner has smaller total wedges.

The role of rents

- The paper focuses on the role of rents.
  - Hold rents fixed, matching large fall in price-rent ratio during housing bust.
  - This corresponds to a large increase in the wedge between P and $PV(rent)$.
  - Reduces strategic default because households value stream of housing services from keeping their homes highly relative to the price.
- Seems to be the main factor resolving the puzzle
  - Shows that Campbell and Cocco (2015) requires a small penalty when rents held fixed.
- The pattern in the price-rent pattern is empirically correct.
  - But can we rule out that households were not discounting the rental stream more?

Aside: the role of the mortgage wedge

- While the paper emphasizes the rental wedge, the mortgage wedge could also play a role.
- One particularly important feature relates to refinancing
  - Technically, a refinance originates a new loan to replace the old one.
  - But for underwater households, a new loan of the same size violates LTV limit.
  - Locked underwater households out of receiving interest rate relief.
  - Eventually led to the HARP program designed to allow these households to refi.
- This is a very clear wedge that is unlikely to be undone by equilibrium considerations
  - Households are mechanically locked into above-market mortgage rates.
  - Double trigger models predict HARP is ineffective for preventing defaults.
  - Triple trigger (+ fundamentals) might imply larger effects!

Conclusion

- Impressive quantitative structural model studying the drivers of strategic default.
- Model innovations seem like advances relative to existing work.
  - But mostly make strategic default **more attractive** relative to past models.
  - Deepen the puzzle, rather than resolving it.
- Instead, lack of strategic default without a large utility penalty depends on wedges between household valuation of housing and mortgages and their market prices.
  - These wedges are very important for the results, but currently opaque.
  - Partial equilibrium approach may mask parallel movements in prices and present values with limited effects on default.
  - Suggestion: compare wedges for marginal defaulter and typical homeowner.