The Mortgage-Cash Premium Puzzle

Michael Reher & Rossen Valkanov

UC San Diego Rady

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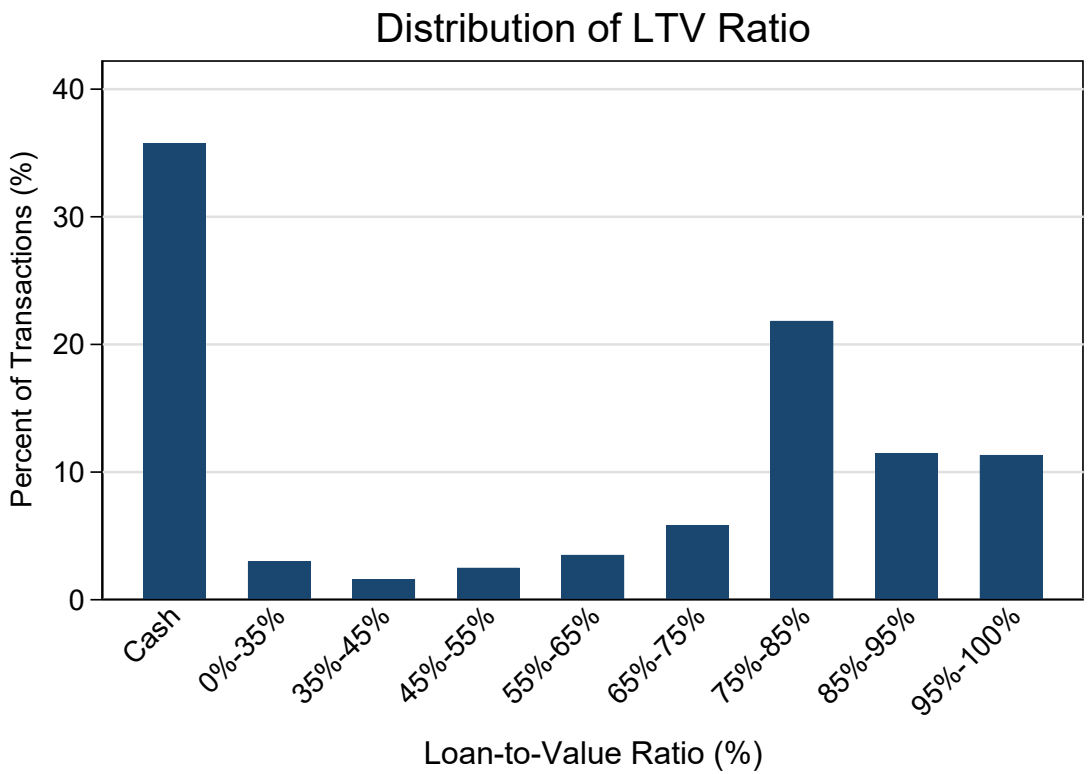
Motivation

- Modigliani-Miller theorem does not apply to real estate
- This Paper: Mortgage approval frictions



Note: Sample period is 1980-2017.

Mortgage-Cash Premium

What premium compensates home sellers for approval frictions?

$$0 = \underbrace{94\%}_{\text{Success Rate}} \times \textit{Premium} - \underbrace{6\%}_{\text{Failure Rate}} \times \underbrace{10\%}_{\text{Relisting Price Cut}}$$

- Theoretical Premium: 0.6%
  - ... with risk aversion, discounting, debt overhang, etc.: 3%
- Empirical Premium: 11.7%
  - Methodology: Repeat-sales hedonic regression
  - Data: Deeds records over 1980-2017

Explanations of the Puzzle

1. Omitted variables (i.e., "no puzzle")
   - Inconsistent with stable 11% premium across estimators and datasets
   - ... instrumental variable, semi-structural, data on non-accepted offers
2. Non-standard beliefs
   - Consistent with experimental survey of U.S. homeowners
   - Subjective Beliefs: Pessimistic priors explain 20% of puzzle
3. Non-standard preferences
   - Uncertainty aversion can explain 70% of puzzle
   - ... less support for disappointment, loss aversion, present bias

Empirical Premium

- Mortgage-Cash Premium: 11.7%

Outcome:	$\log(Price_{i,t})$			
$Mortgaged_{i,t}$	**0.117**	0.090	0.088	0.112
	(0.000)	(0.004)	(0.000)	(0.000)
Sample	Baseline	New Homes	No Flips	Non Institutional
Zip Code-Month FE	Yes	Yes	Yes	Yes
Hedonic-Month FE	Yes	Yes	Yes	Yes
Property FE	Yes	No	Yes	Yes
R-squared	0.907	0.647	0.963	0.895
Number of Observations	426,256	6,651	186,570	333,288

Note: P-values in parentheses. Subscripts i, t denote property, month.

Empirical Premium

- Similar premium for properties with less asymmetric information

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Empirical Premium

- Premium after differencing out non-accepted offers: 8.6%

Outcome:	log $Price_{i,j,t}$)
$Mortgaged_{i,j,t} \times Winning_{i,j,t}$	**0.086**
	(0.004)
$Mortgaged_{i,j,t}$	-0.006
	(0.279)
$Winning_{i,j,t}$	-0.060
	(0.025)
Month FE	Yes
Zip FE	Yes
Offers-on-Property FE	Yes
R-squared	0.620
Number of Observations	22,516

Note: P-values in parentheses. Subscripts i, j, t denote property, offer, month.

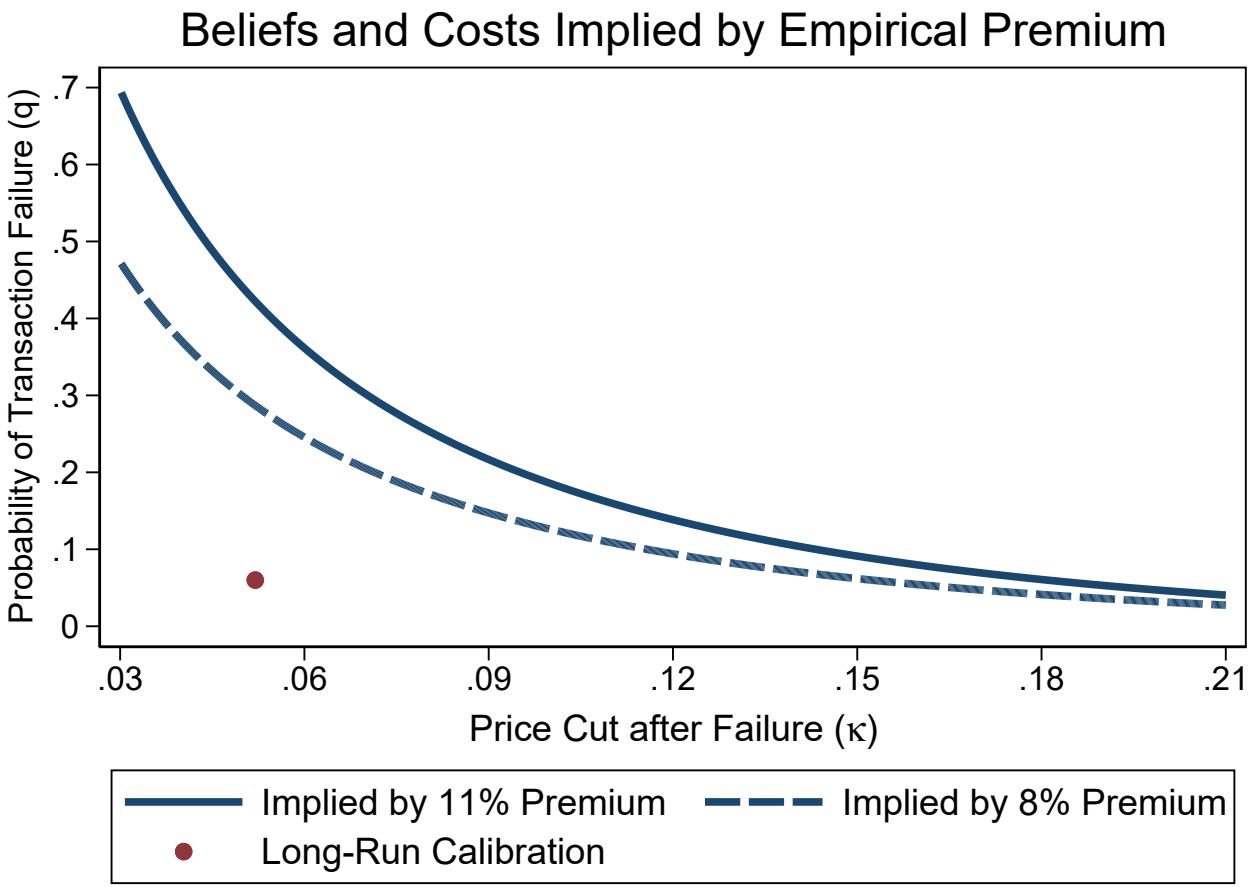
Framework

Home seller compares utility from two offers:

- All-cash offer: $u^C_{i,t}$
- Mortgaged offer: $u^M_{i,t}$
  - Price realized after transaction closes in one month
  - Success: Receive offer price $P^M_{i,t+1} \equiv P^C_{i,t} e^{\mu}$
  - Failure: Relist and sell at price $P^R_{i,t+1} \equiv P^C_{i,t} e^{-\kappa}$
- Equilibrium mortgage-cash premium solves $u^C_{i,t} = u^M_{i,t}$

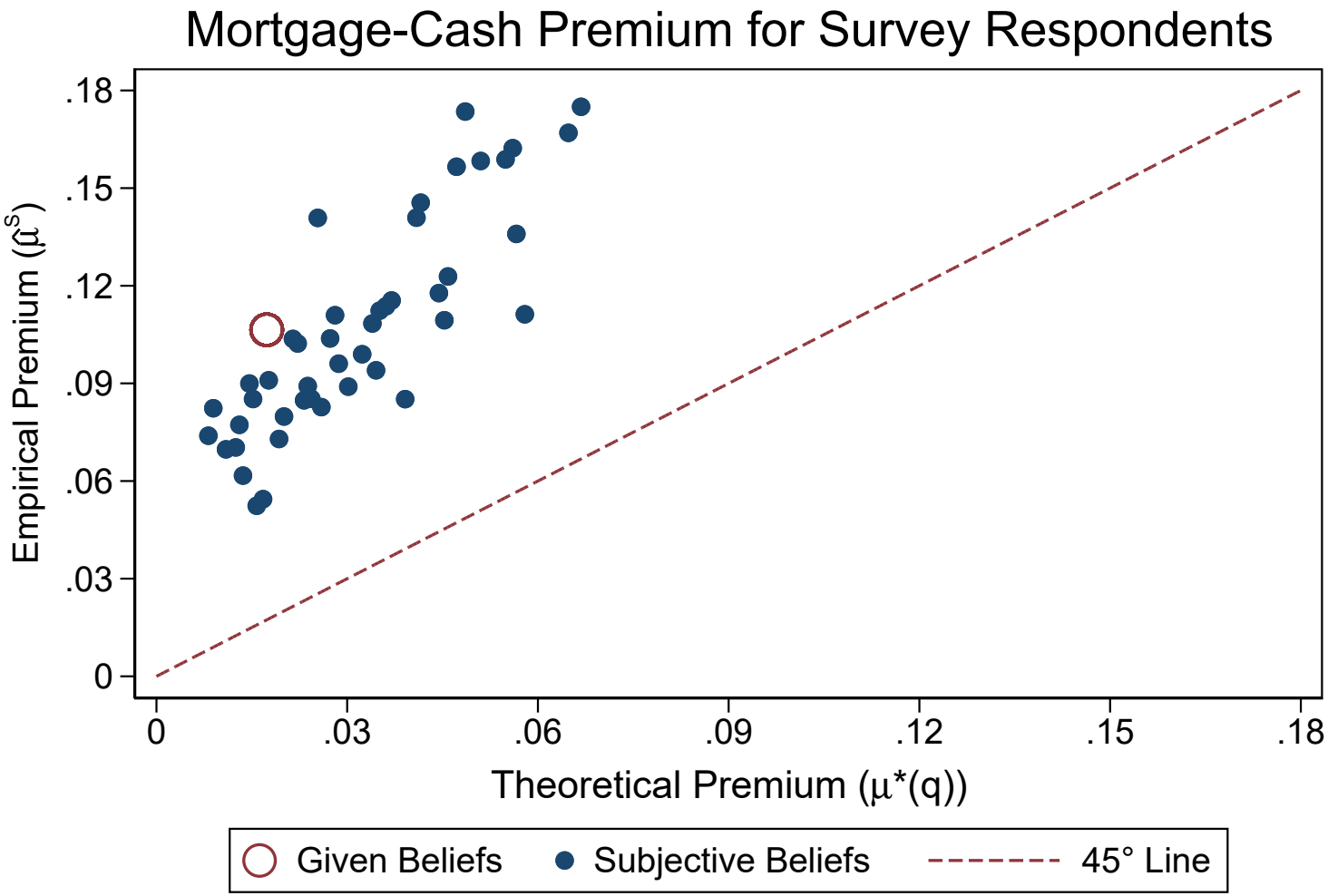
Theoretical Premium

- Implied probability of failure exceeds data by a factor of 5



Survey Results

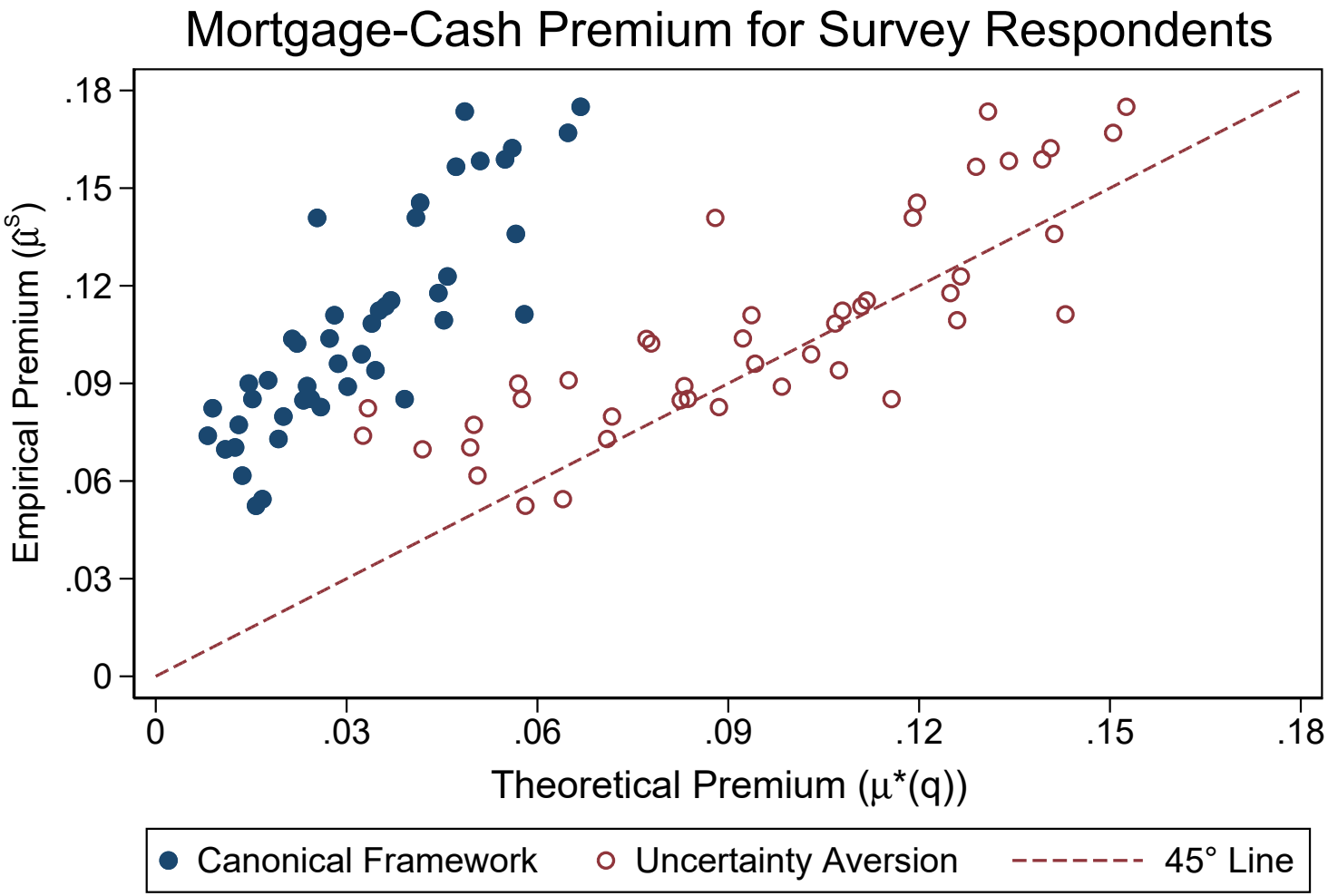
- Subjective pessimism reduces puzzle from 8.9% to 7.2%



Average Premium Gap: 0.09 (Given) ; 0.08 (Subjective)

Survey Results

- Uncertainty aversion reduces puzzle from 7.2% to 0.7%



Average Premium Gap: 0.08 (Canonical) ; 0.01 (Uncertainty)

Conclusion

- Mortgaged buyers pay an 11% premium over cash buyers
- Transaction frictions imply a "reasonable" premium of 3%
- Subjective beliefs and uncertainty aversion best explain the gap

Implications:

- Promoting homeownership requires a large subsidy

Thank You!