INTEREST RATES AND EQUITY EXTRACTION

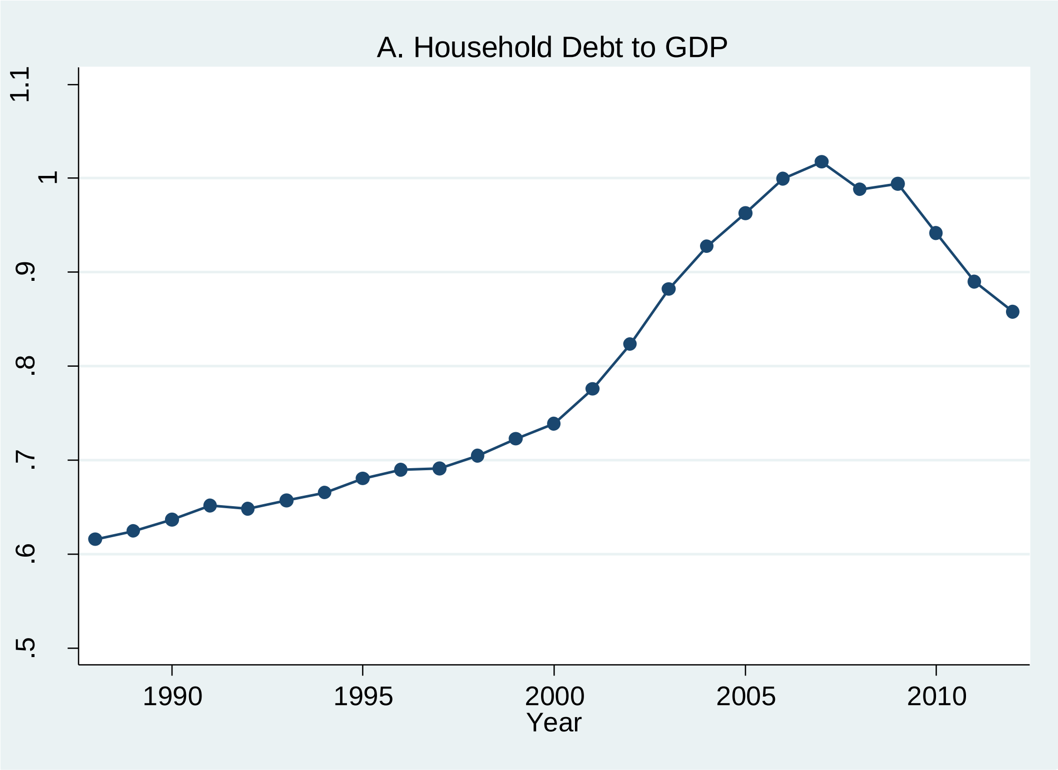
Neil Bhutta (Federal Reserve)*
Ben Keys (U. Chicago, Harris School)

***Views expressed do not necessarily represent those of the Federal Reserve Board**

Household leverage rose in 2000’s

Mortgage debt accounts for most of the rise

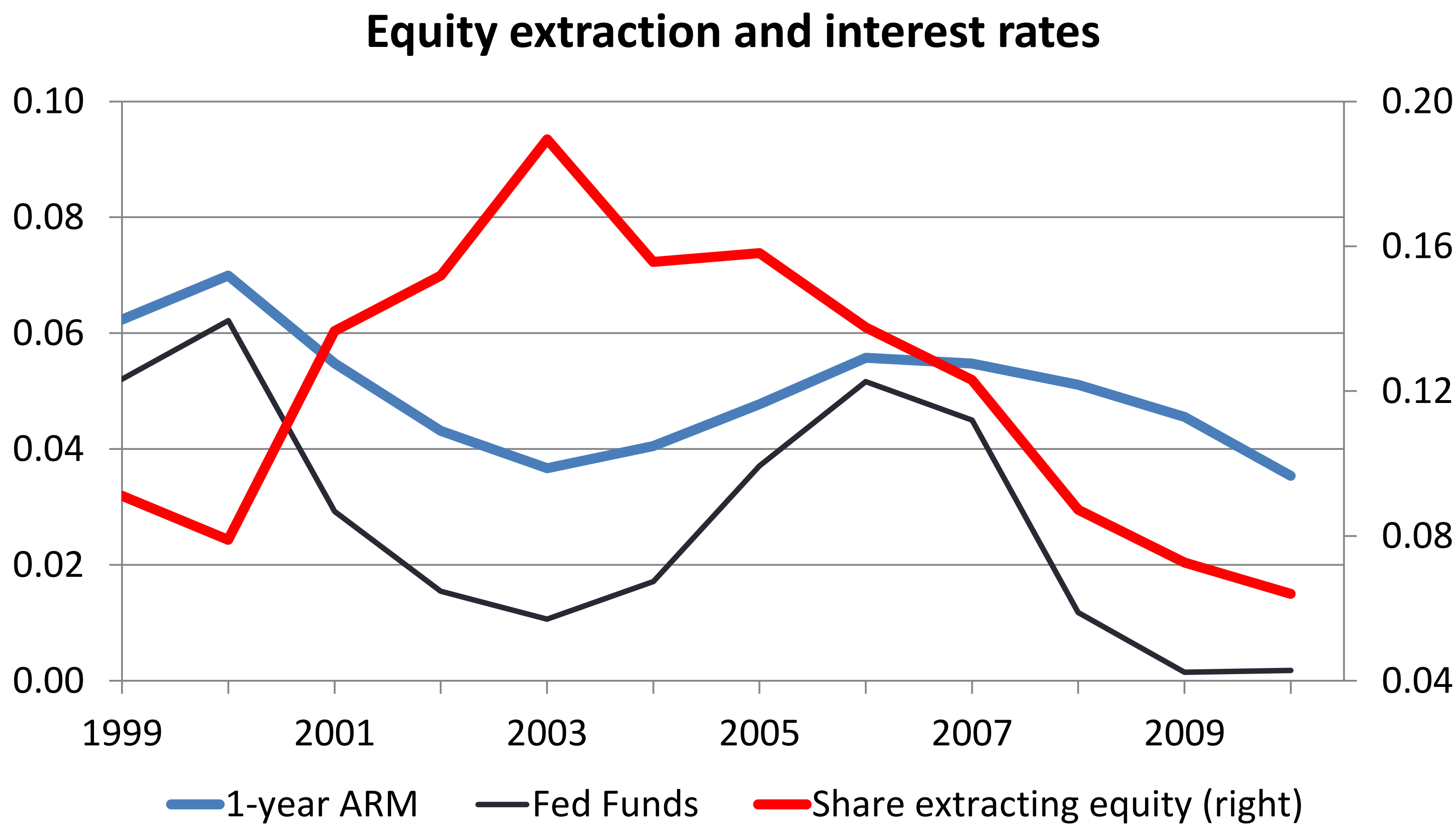
- More people buying (more expensive) houses
- Homeowners extracting equity (e.g. taking out a 2nd mortgage)



Primary research question

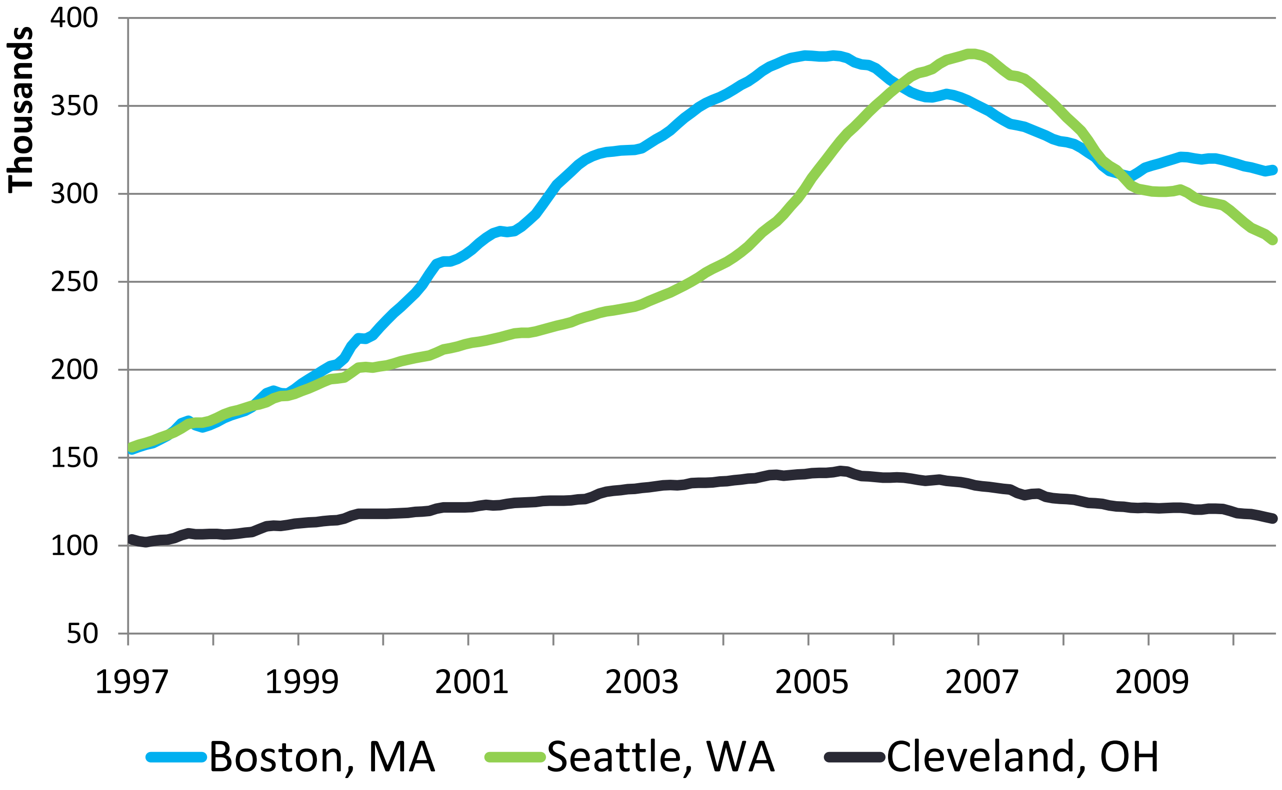
- The Fed eased from 2000-2003 and into 2004 to combat weak economy
- Did the drop in (short term) mortgage rates help spur equity extraction?

Preliminary evidence: likelihood of extraction peaks in 2003



What else could have helped cause spike in extraction?

- Rising home prices?



Contributions of paper

- Estimate response of equity extraction to mortgage rates
- Quantify importance of different methods of extraction
- What do people do with money?
- What's the effect of extraction on delinquency?

Data

- FRBNY Consumer Credit Panel/Equifax
  - 5% national sample of individuals with a credit record
  - Quarterly frequency, starting in 1999
  - Data on each mortgage account
  - Data on other debt, performance, credit scores, etc.
  - County, ZIP and census tract location of each individual → merge to:
    - CoreLogic ZIP house price indices
    - Employment data from BLS
    - Census tract demographic data

Sample design and identifying equity extractors

- Observe individuals at beginning and end of each year, 1999-2010

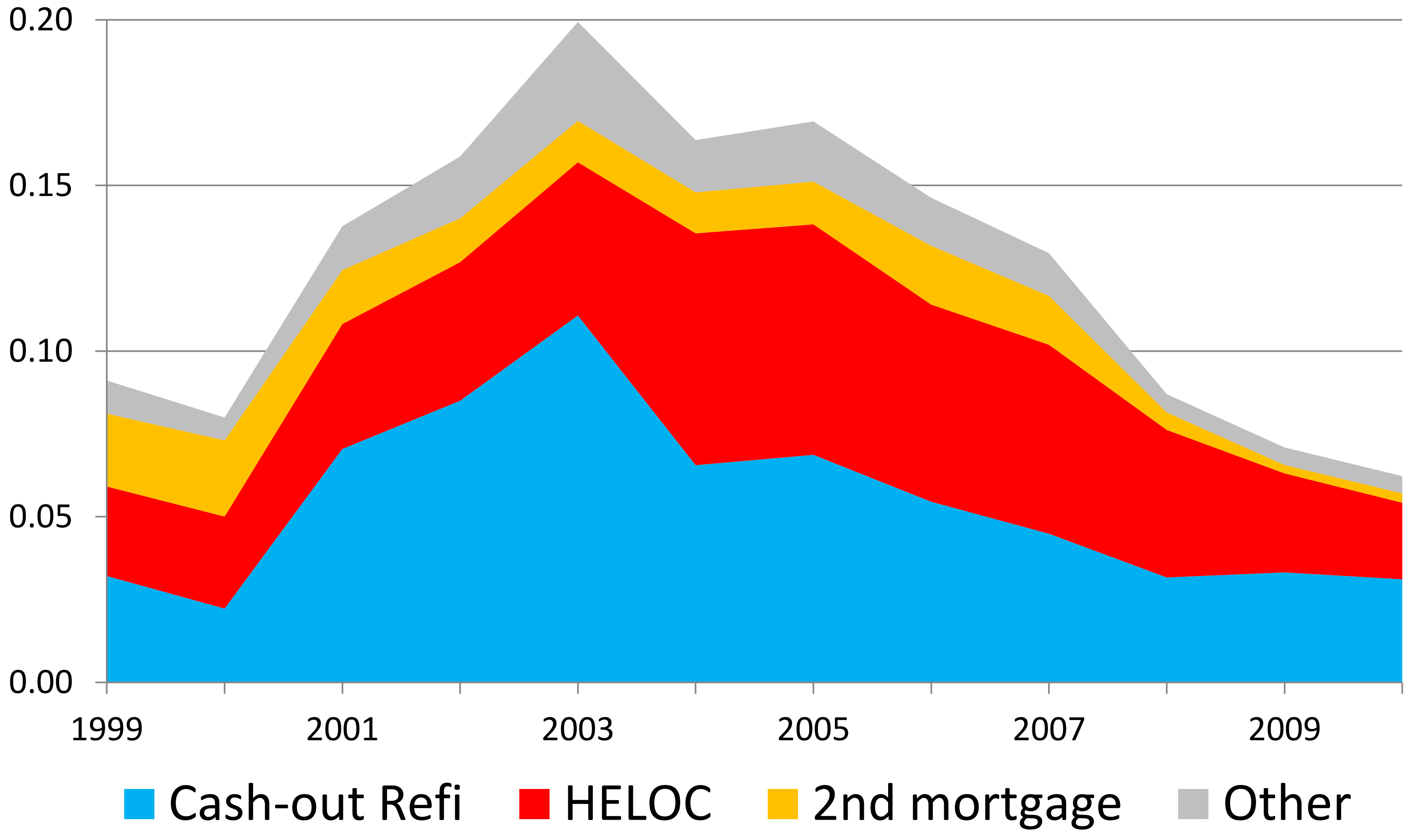
- Sample: individuals in year *t* with a mortgage who don't move (exclude those with multiple first lien mortgages)

- Extract: total mortgage balance increases by at least 5% by end of year

Sample size by year

Year	N	Fraction Who Extracts	Initial balance ($) (median)	% Change in balance (median)
1999	61,574	0.091	81,956	22.8%
2000	68,584	0.080	88,127	23.2%
2001	67,595	0.138	95,323	23.8%
2002	81,989	0.159	101,000	23.6%
2003	88,554	0.199	104,499	23.2%
2004	86,402	0.164	122,000	22.4%
2005	95,732	0.169	134,367	23.2%
2006	95,114	0.146	142,519	22.0%
2007	97,814	0.130	139,126	20.2%
2008	102,025	0.087	123,124	18.7%
2009	101,208	0.071	111,586	18.0%
2010	100,691	0.062	110,017	18.8%
All Years	1,047,282	0.124	114,872	22.1%

Several ways to extract equity

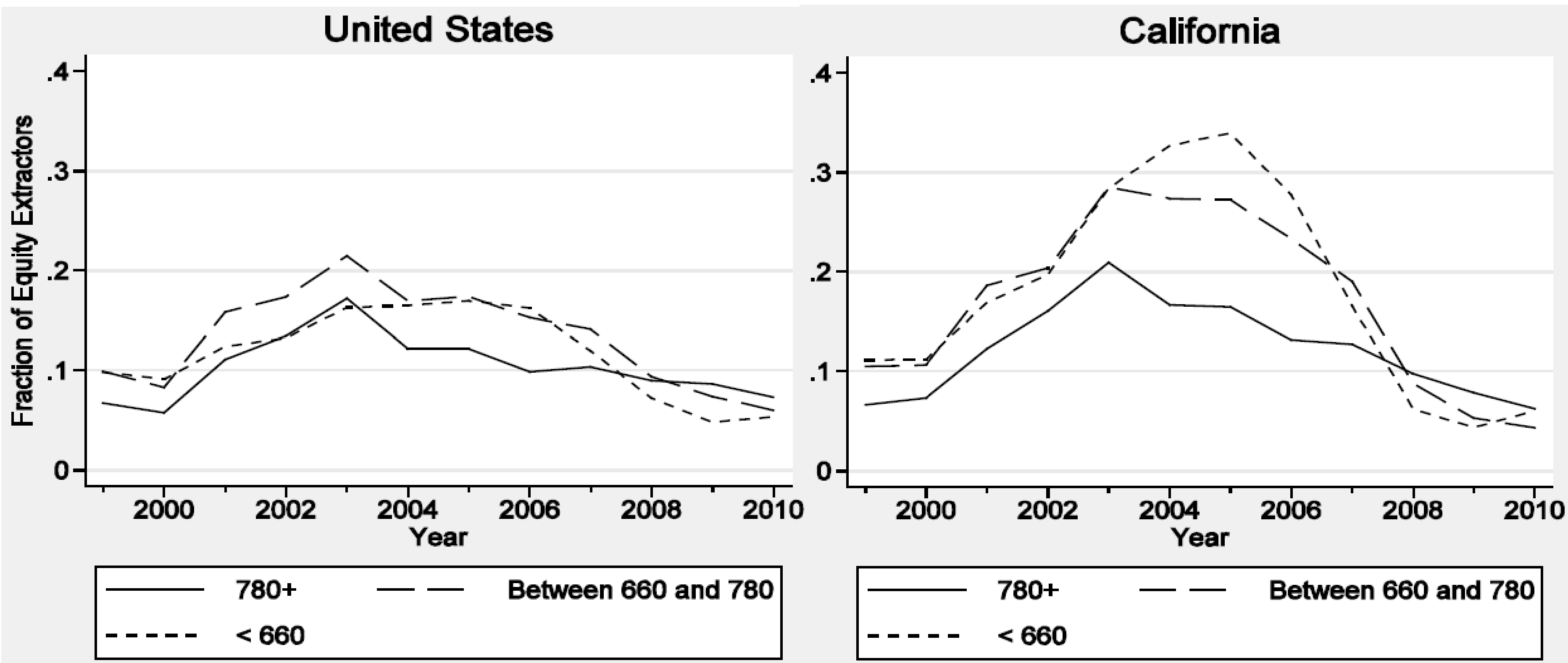


Results: regression estimates of the effect of interest rates on equity extraction

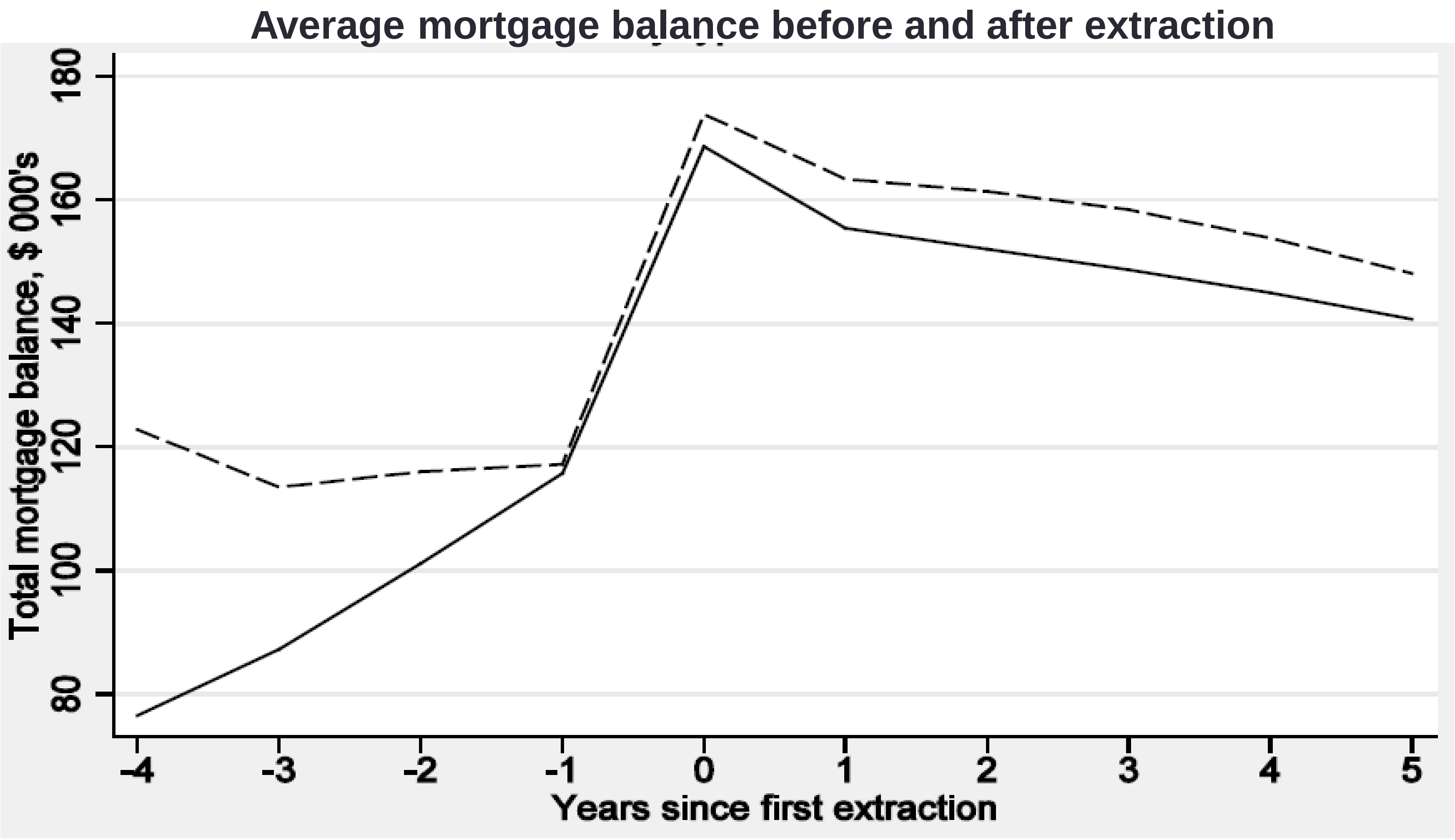
- 100 bp drop in short-term mortgage rate → 3 percentage point rise (25%) in likelihood of equity extraction, conditional on:
  - ZIP code house price appreciation
  - County economic conditions (unemployment, recent wage growth)
  - Credit availability (constructed)
  - State fixed effects

- Interest rate effect almost as big as house price effect

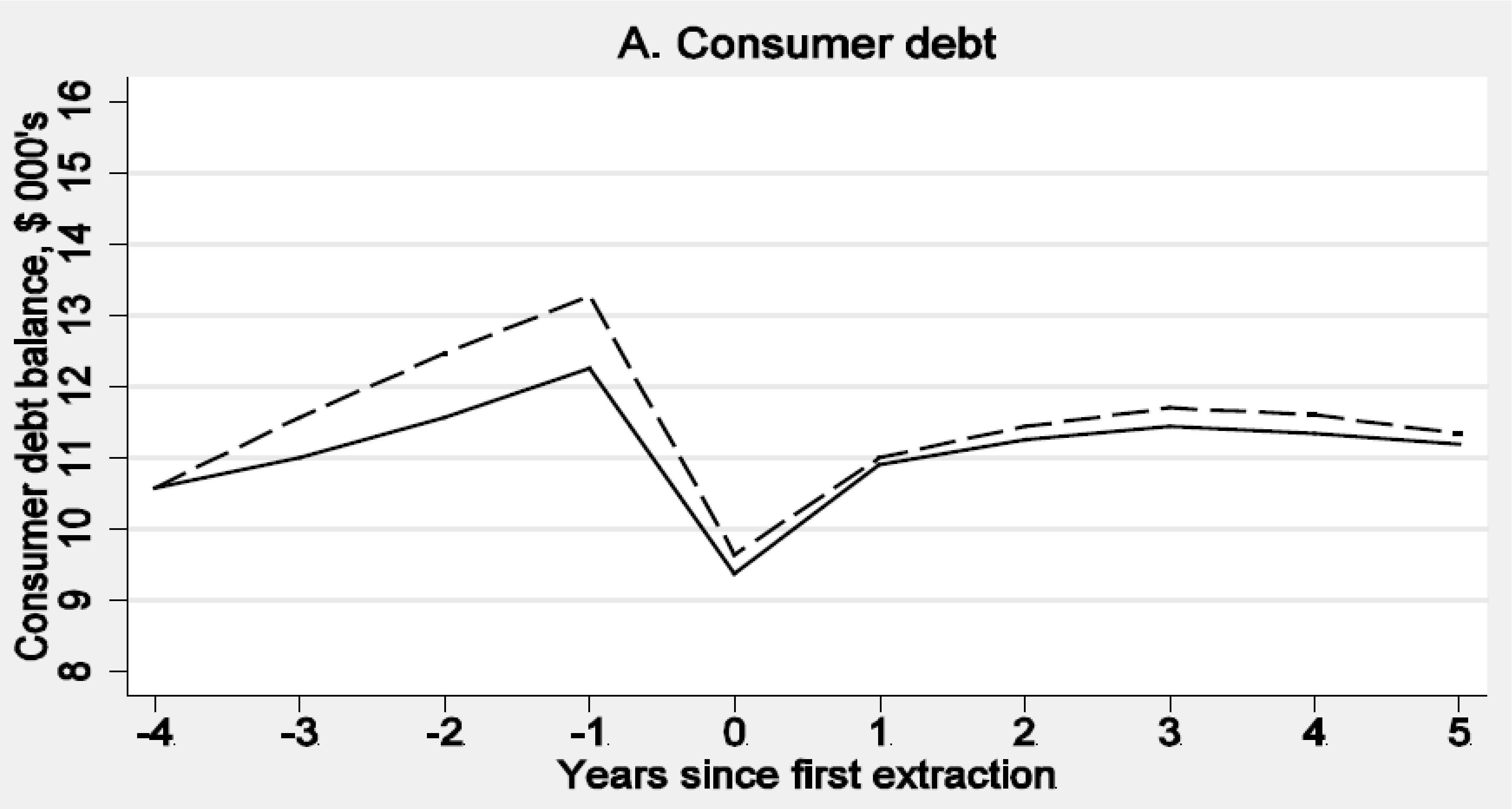
Heterogeneity in extraction



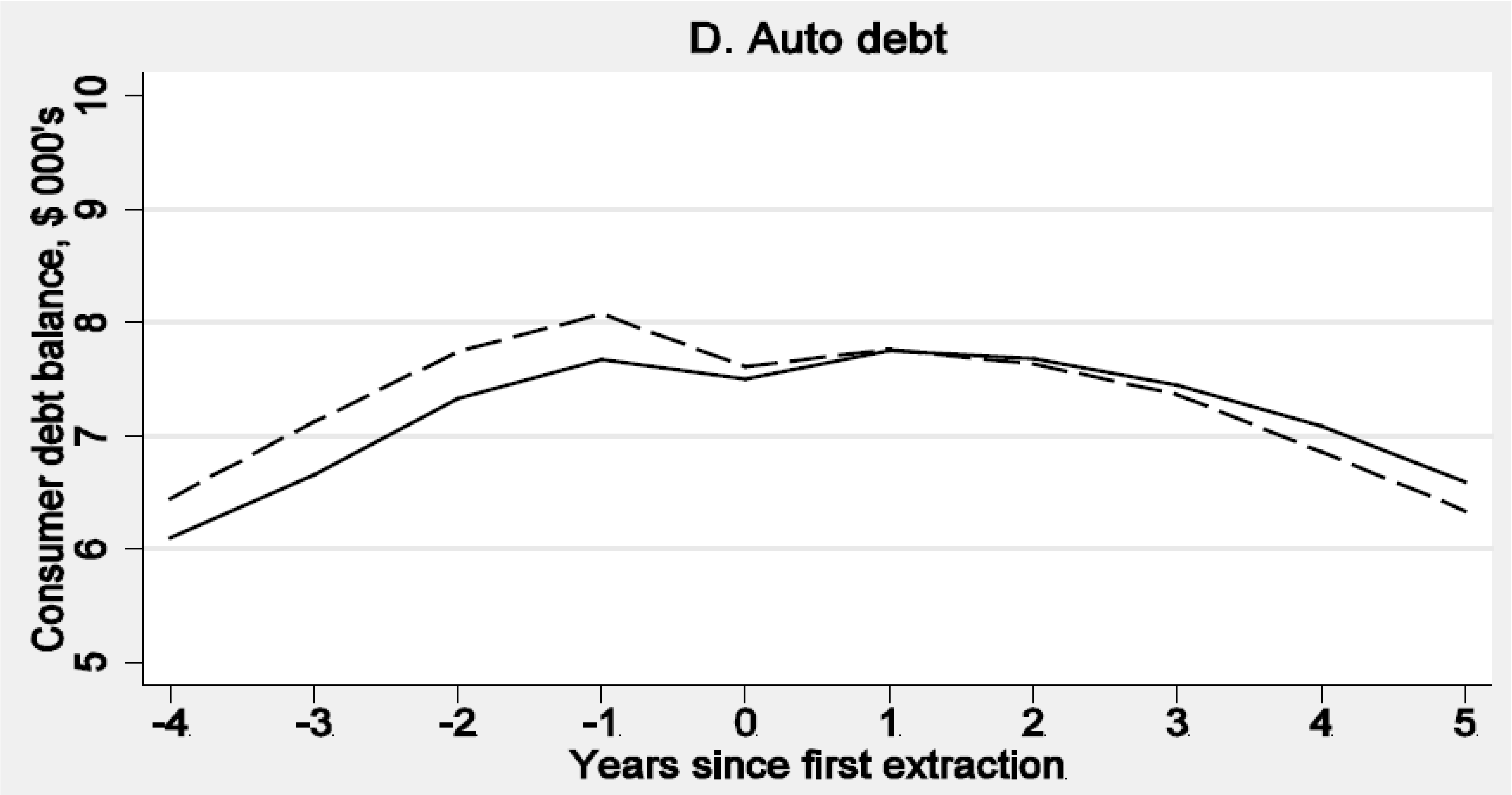
Extractors ratchet up mortgage debt



More expensive debt only partially paid down

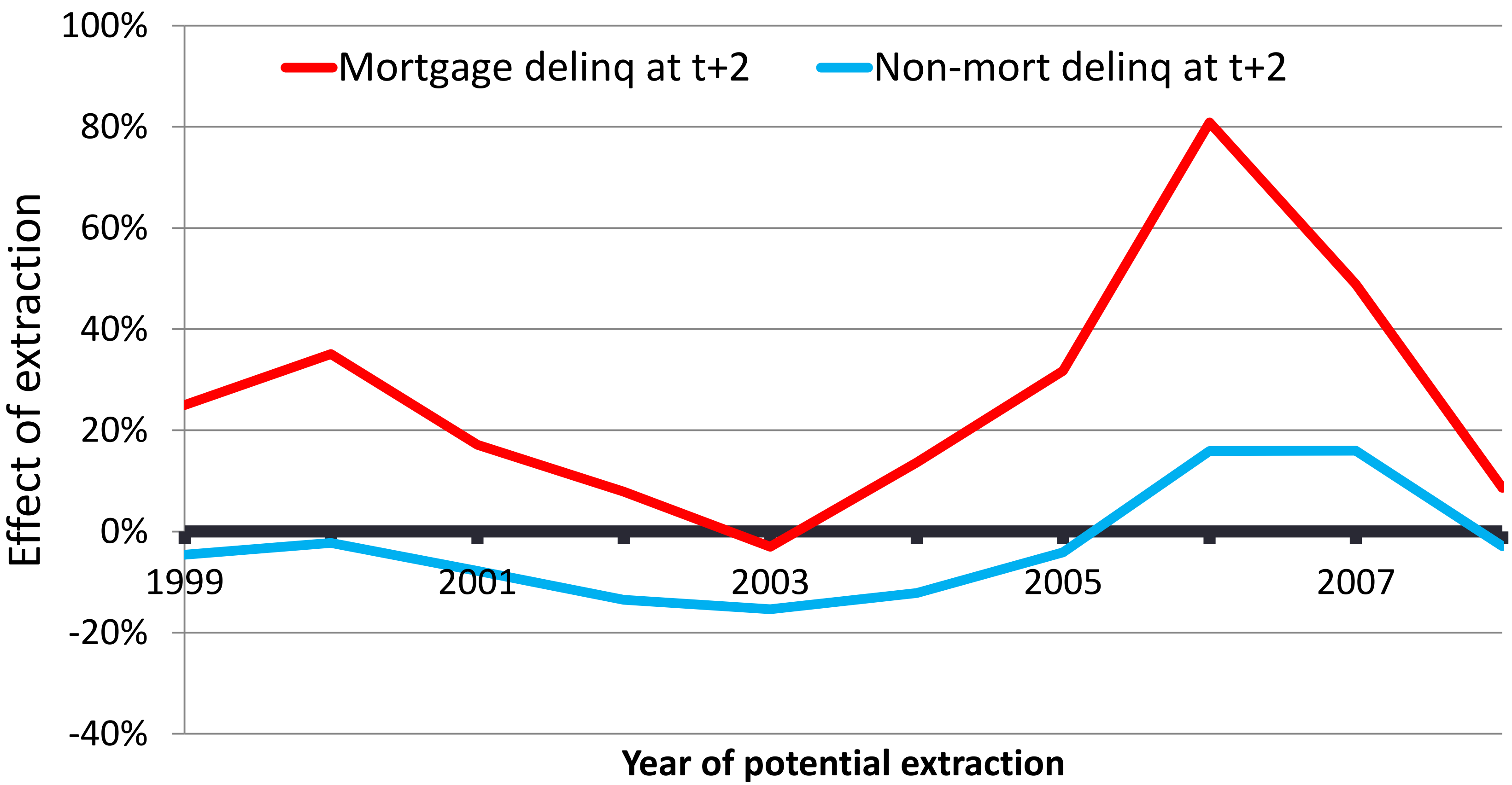


Auto debt hardly paid down



How risky is extracting equity?

- Estimate the relationship between extraction and delinquency within 2 years



Conclusions

- Low mortgage rates in early 2000s stimulated home equity extraction
  - Over $1 trillion extracted from 2002-2005; over one-third due to low rates
- Cash-out refi's provide incomplete picture of extraction
- Small fraction of extracted funds used for debt consolidation on average
- Extracting in 2006 nearly doubled risk of mortgage delinquency relative to those who didn't extract