Detecting Ponzi Finance: An Evolutionary Approach to the Measure of Financial Fragility

ERIC TYMOIGNE
LEWIS & CLARK COLLEGE
MINSKY CONFERENCE, JUNE 2010

Conceptualizing Financial Fragility

- Evolutionary View: Financial fragility emerges during long periods of economic stability (possibly recording minor recessions).
- Imperfection View: Financial fragility is due to market imperfections and individual imperfections.

Imperfection View: Implications for Empirical Analysis

- Detect the occurrence of financial crises by using leading indicators that are supposed to reflect fragility:
  - Rising default rates
  - Rapid growth of credit
  - Decline in GDP growth
  - Rising real interest rate
  - Growing government deficit
  - Decline in business profit

Evolutionary View: Implications for Empirical Analysis

- Evolutionary view: Detecting changes in funding practices and asset positions is crucial. This is different from:
  - Detecting bubbles: Emergence of dangerous funding practices may become apparent independently (and usually before) bubbles (prime mortgage finance since 2001 at least)
  - Detecting financial crises: Financial fragility emerges long before crises occur
  - Detecting fraud: Perfectly legal funding processes may be highly dangerous (especially if fully collateral based).
  - Detecting if a business is profitable: highly profitable businesses involved in Ponzi finance are extremely fragile.

⇒ Rising profits of firms, rising net wealth of households, and declining default rates are not necessarily signs of strength.

⇒ Government deficit is not necessarily a weakness.

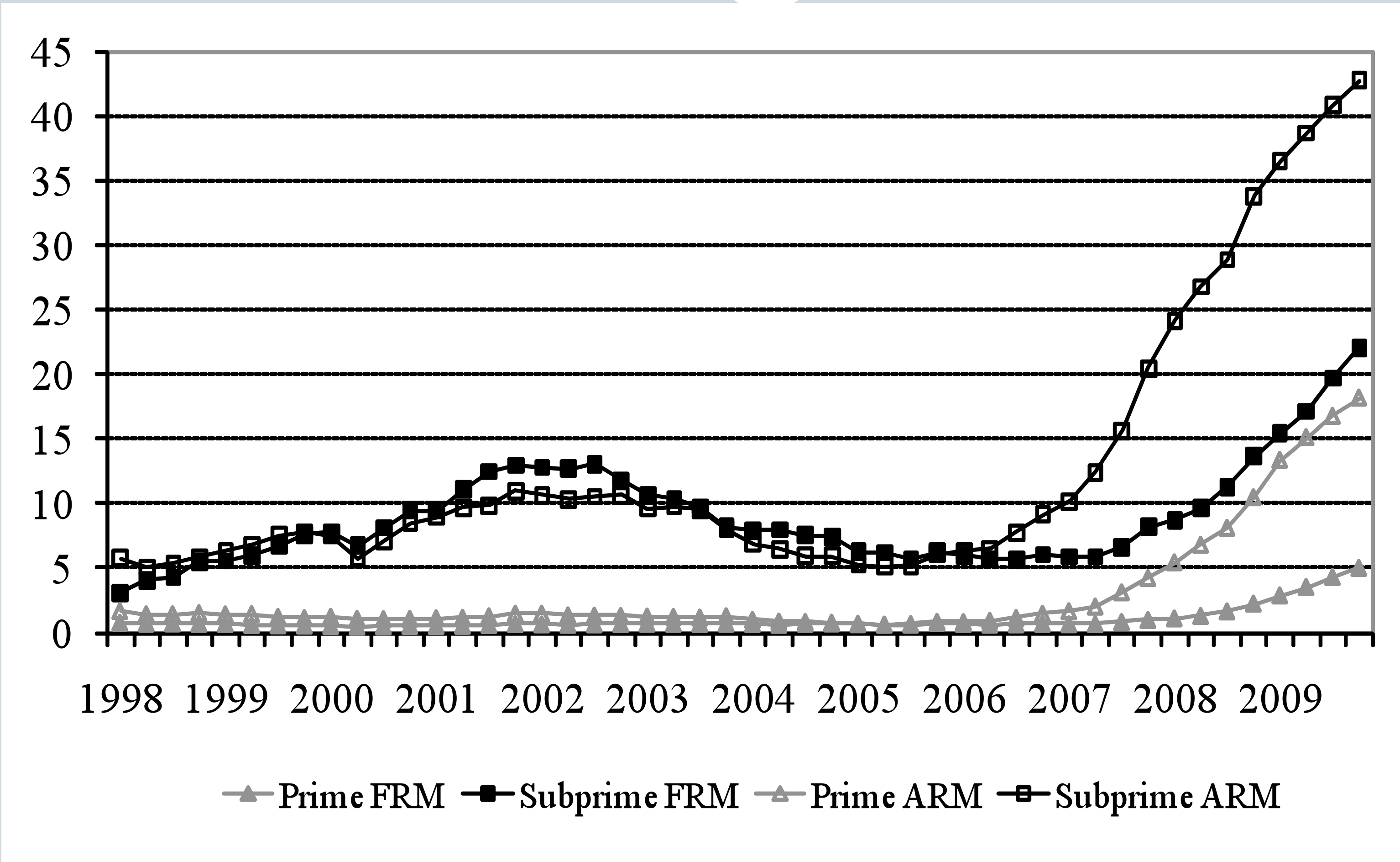
Evolutionary View: Implications for Empirical Analysis

- Evolutionary view: Detecting change in funding practices and asset positions is important. What does it entail?
  - Checking underwriting procedures: collateral-based vs. income-based lending
  - Checking amount of refinancing, especially cash-out refinance
  - Checking cash-flow: operational net cash inflows relative to cash outflows induced by (on- and off-) balance sheet liabilities

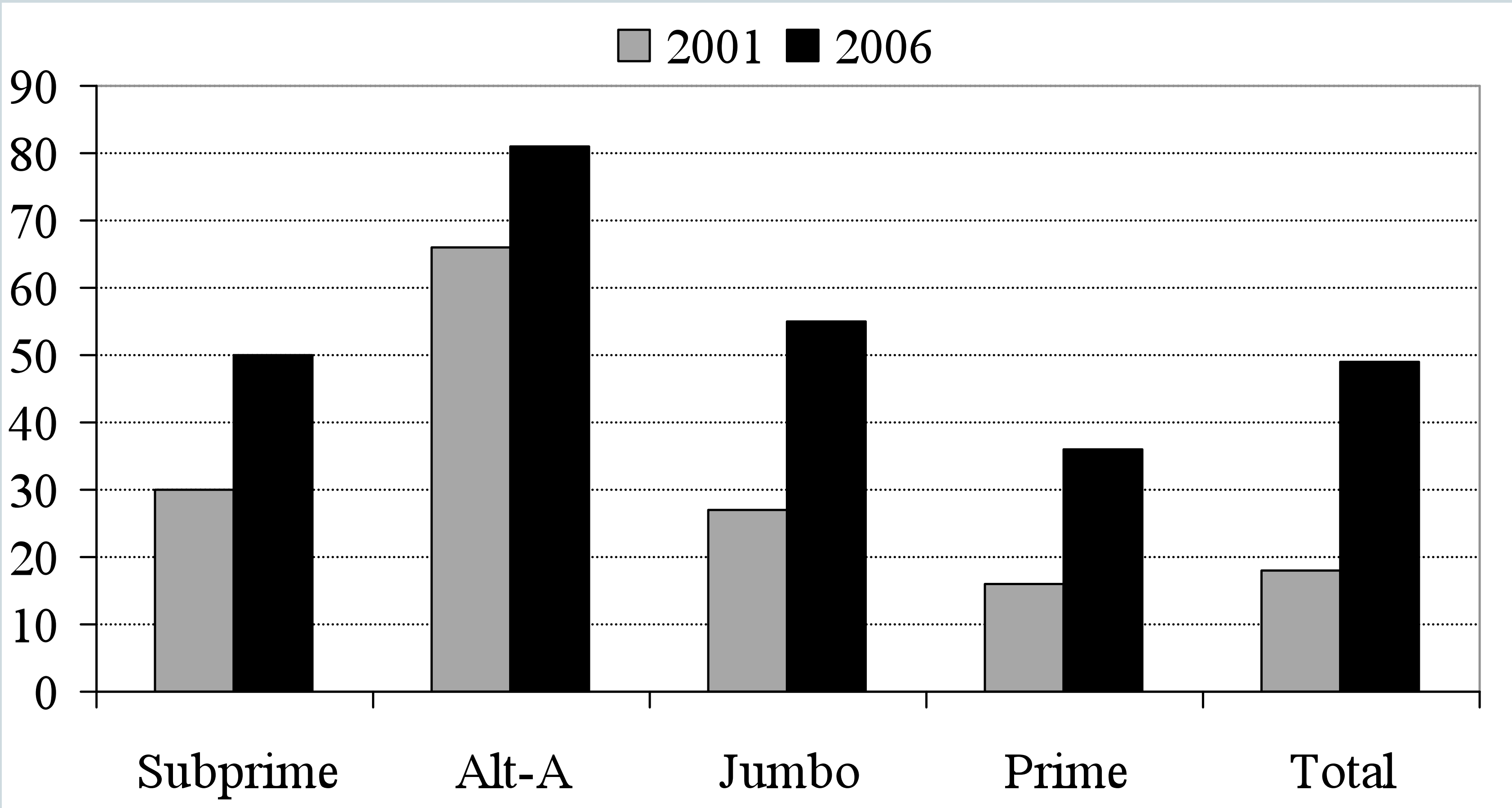
What is Ponzi Finance?

- Most common definition: Operating Net Cash Flows are expected to be too low to meet liability commitments: capitalization of interest payments.
- More precisely:
  - Growing refinancing needs to meet debt commitments
  - Liquidation of asset at rising price
  - Collateral-based lending, instead of income-based lending.

Housing Boom: Serious Delinquency



Housing Boom: Underwriting, Proportion of liar loans



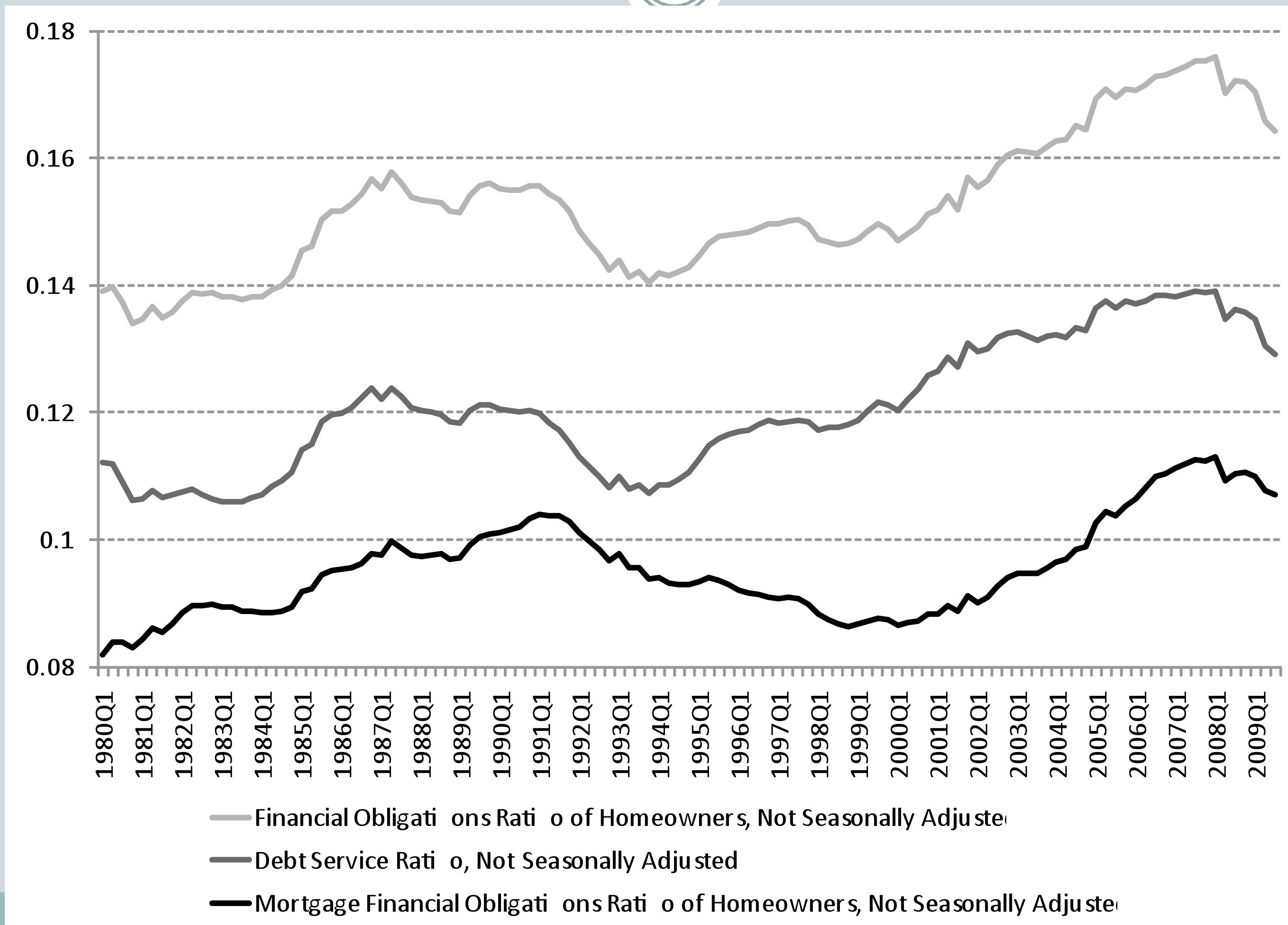
Housing Boom

- Households are allowed to borrow without reference to their income generation capacity: Ponzi
- Rising net wealth become the main source of creditworthiness: Ponzi
- Lending based on the expectation that refinancing will be available to meet debt commitments: Ponzi.

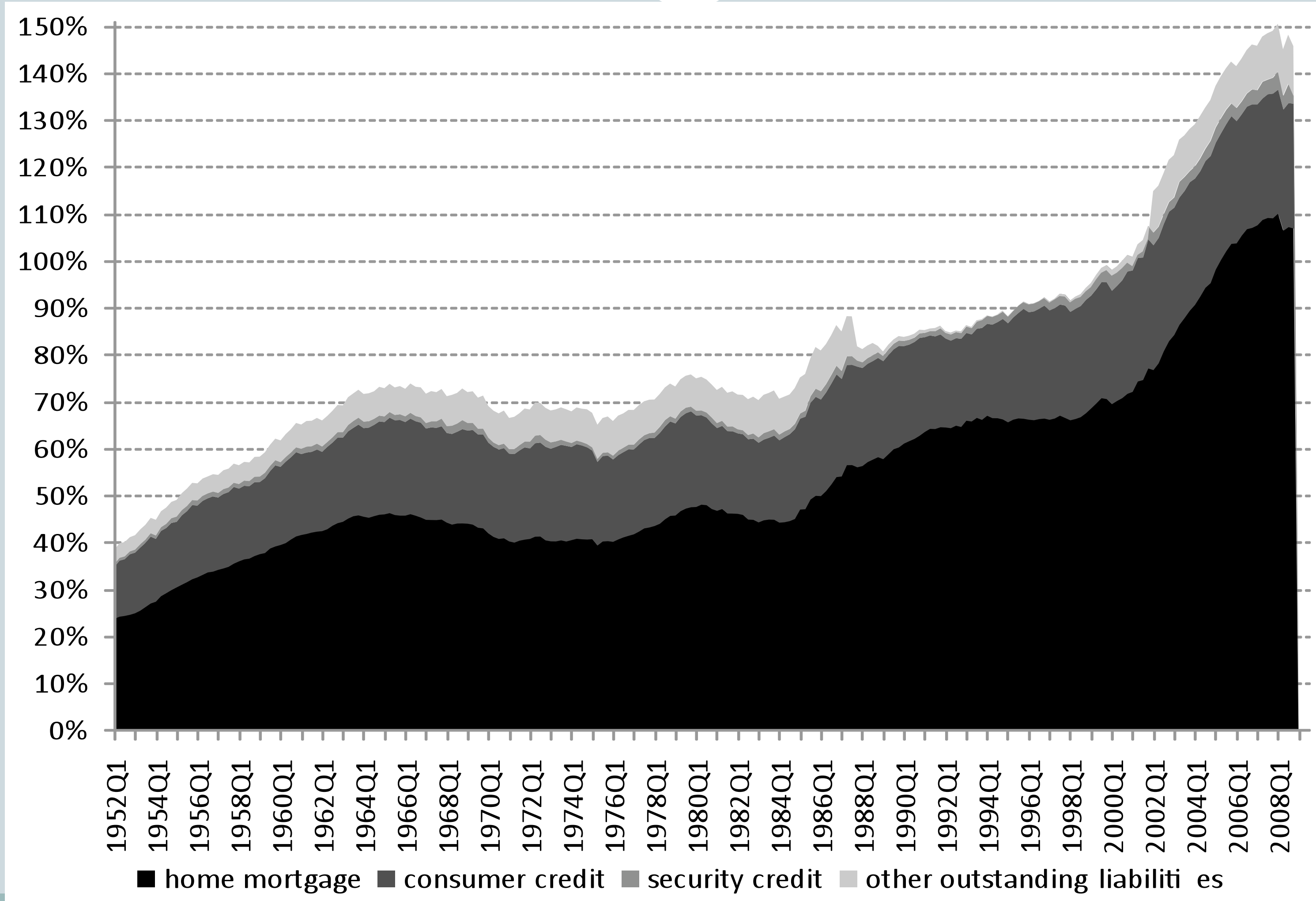
Measuring Ponzi Finance in the Household Sector: Housing

- Variables used:
  - Residential mortgage debt: rising
  - Home price: rising
  - Mortgage financial obligation ratio: rising
  - Cash-out refinance: rising
  - Liquid ratio: declining
- Proposition: If they all behave in the previous way simultaneous, then there is Ponzi finance.

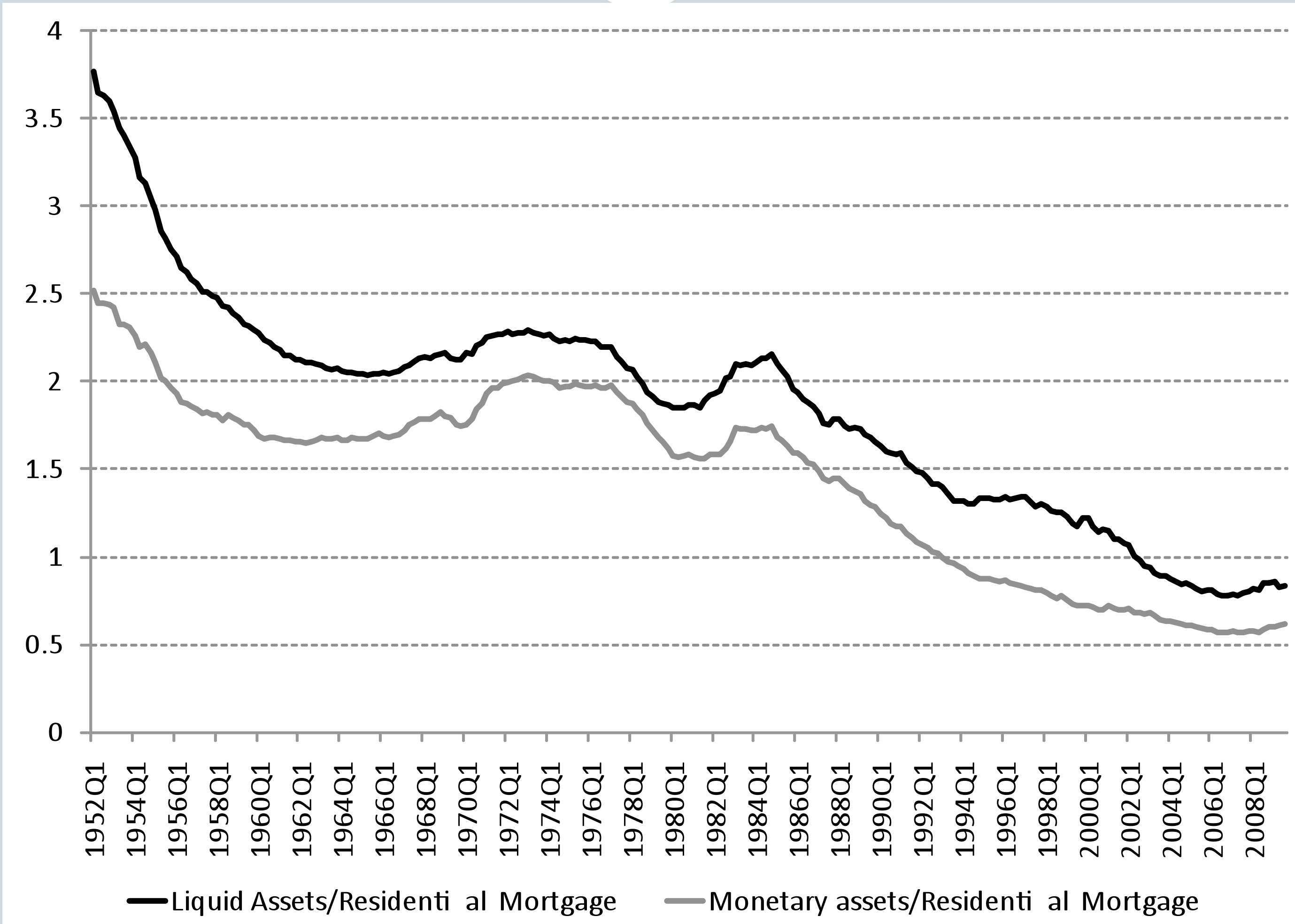
Financial Obligation Ratio



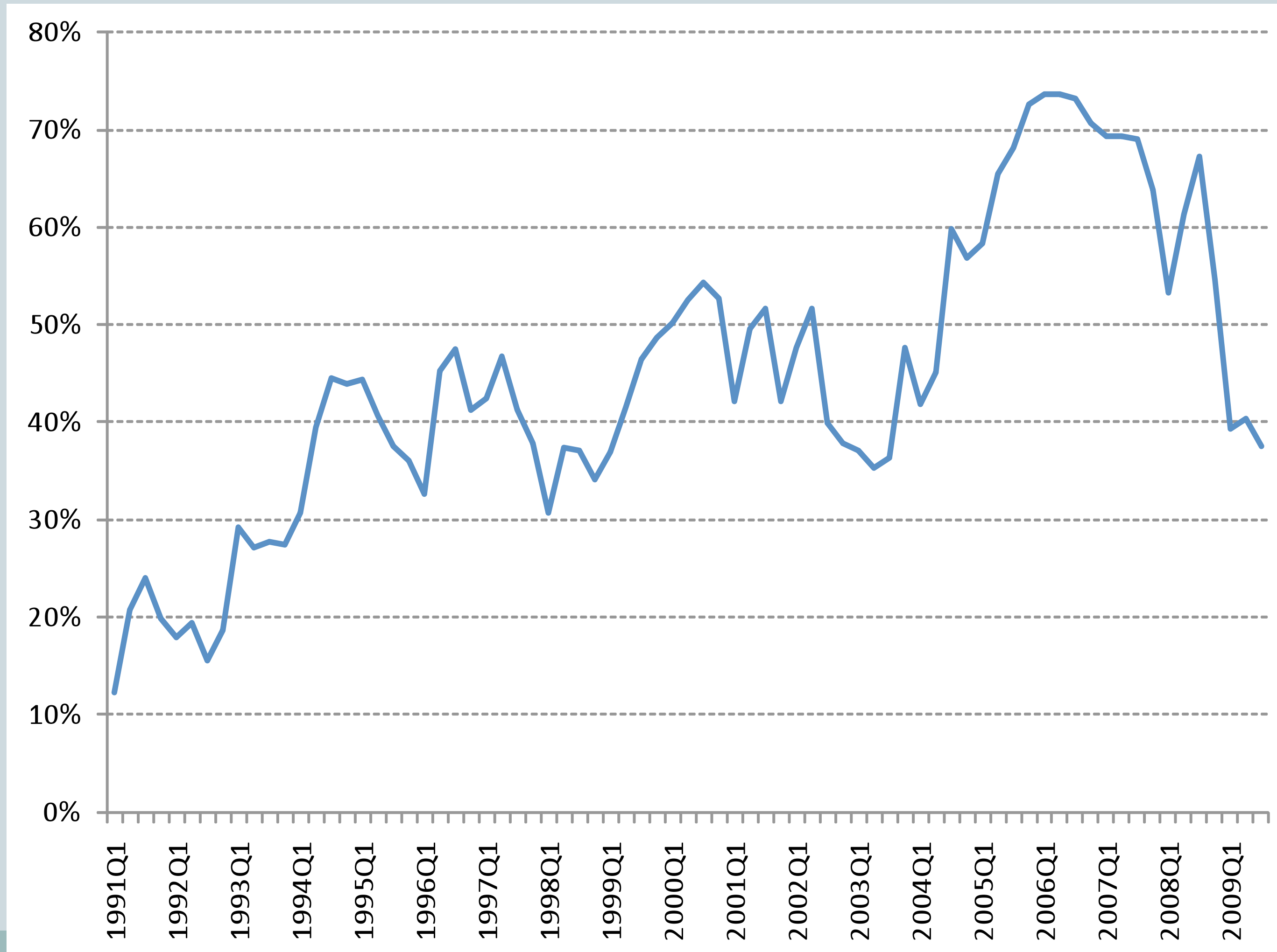
Debt-to-disposable income less income imputations



Liquidity relative to Residential Mortgages



Proportion of Cash-Out Refinance (data only for prime mortgages, Fannie and Freddie)



Ponzi finance: Residential Housing