

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



ERIC TYMOIGNE
LEWIS & CLARK COLLEGE
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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



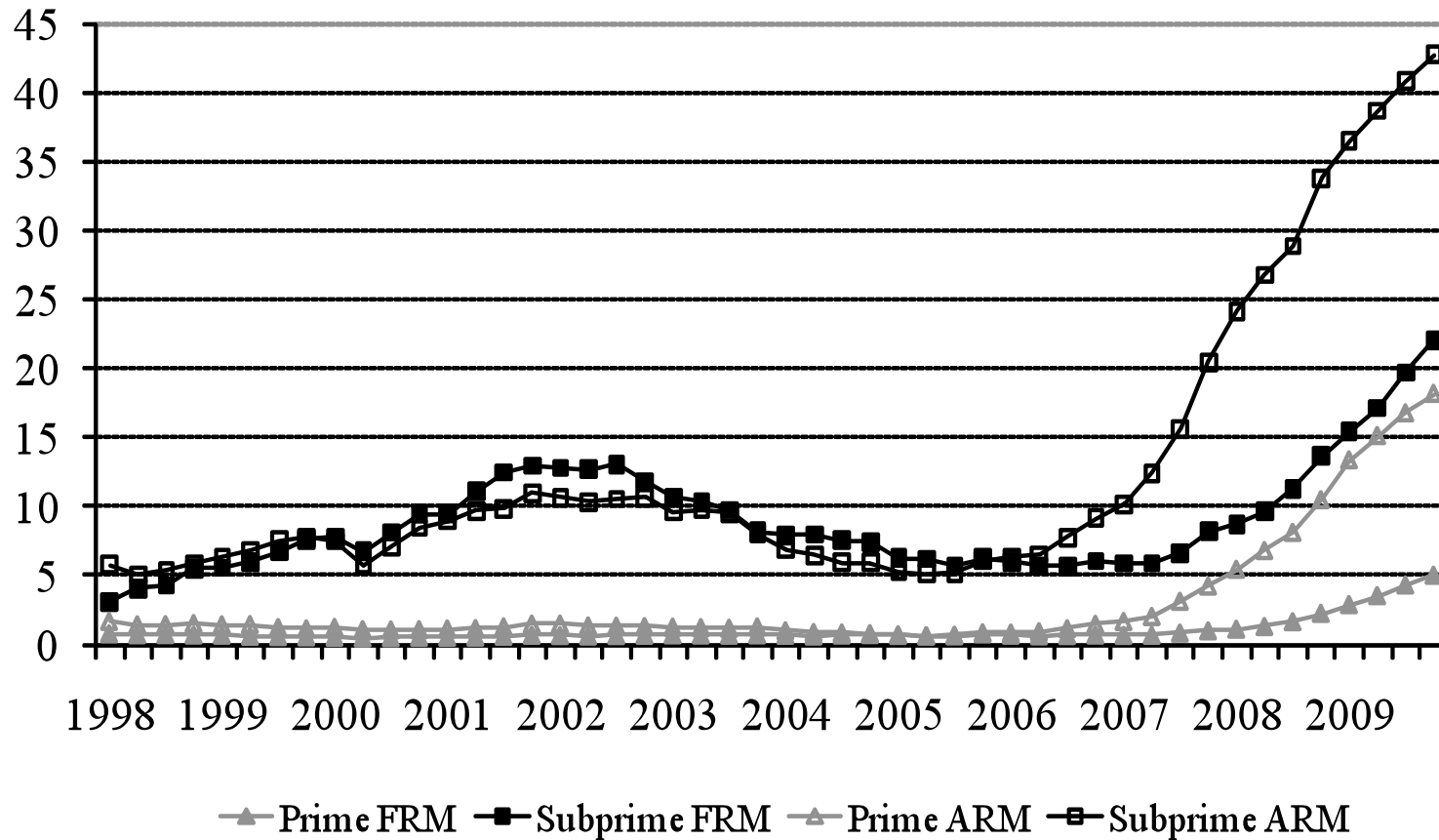
- Evolutionary view: Detecting change in funding practices and asset positions is important. What does it entail?
 - Checking underwriting procedures: collateral-based vs. income-based lending
 - Checking amount of refinancing, especially cash-out refinance
 - Checking cash-flow: operational net cash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

What is Ponzi Finance?

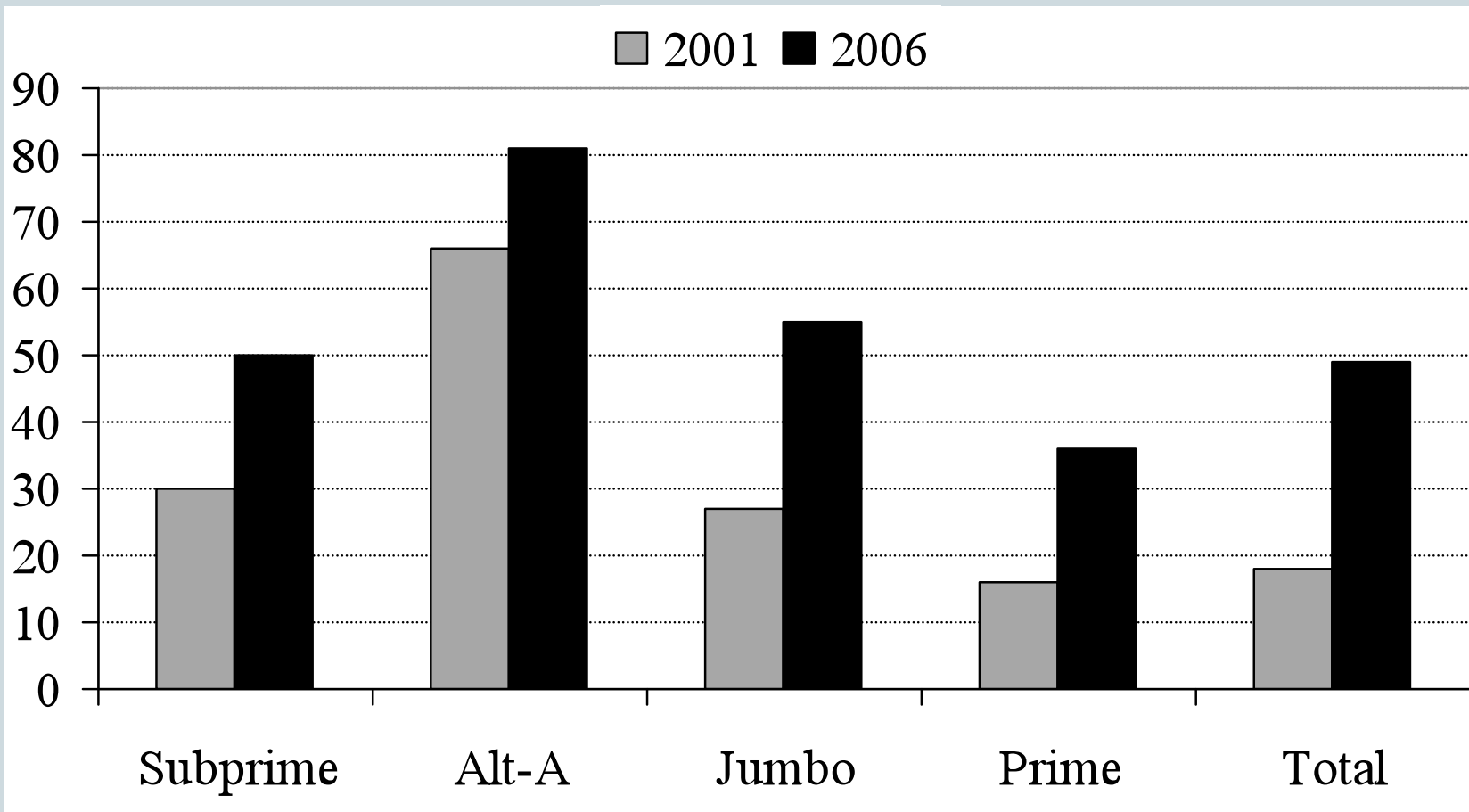


- Most common definition: Operating Net Cash Flows are expected to be too low to meet liability commitments: capitalization of interest payments.
- More precisely:
 - Growing refinancing needs to meet debt commitments
 - Liquidation of asset at rising price
 - Collateral-based lending, instead of income-based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

Housing Boom: Serious Delinquency



Housing Boom: Underwriting, Proportion of liar loans



Housing Boom



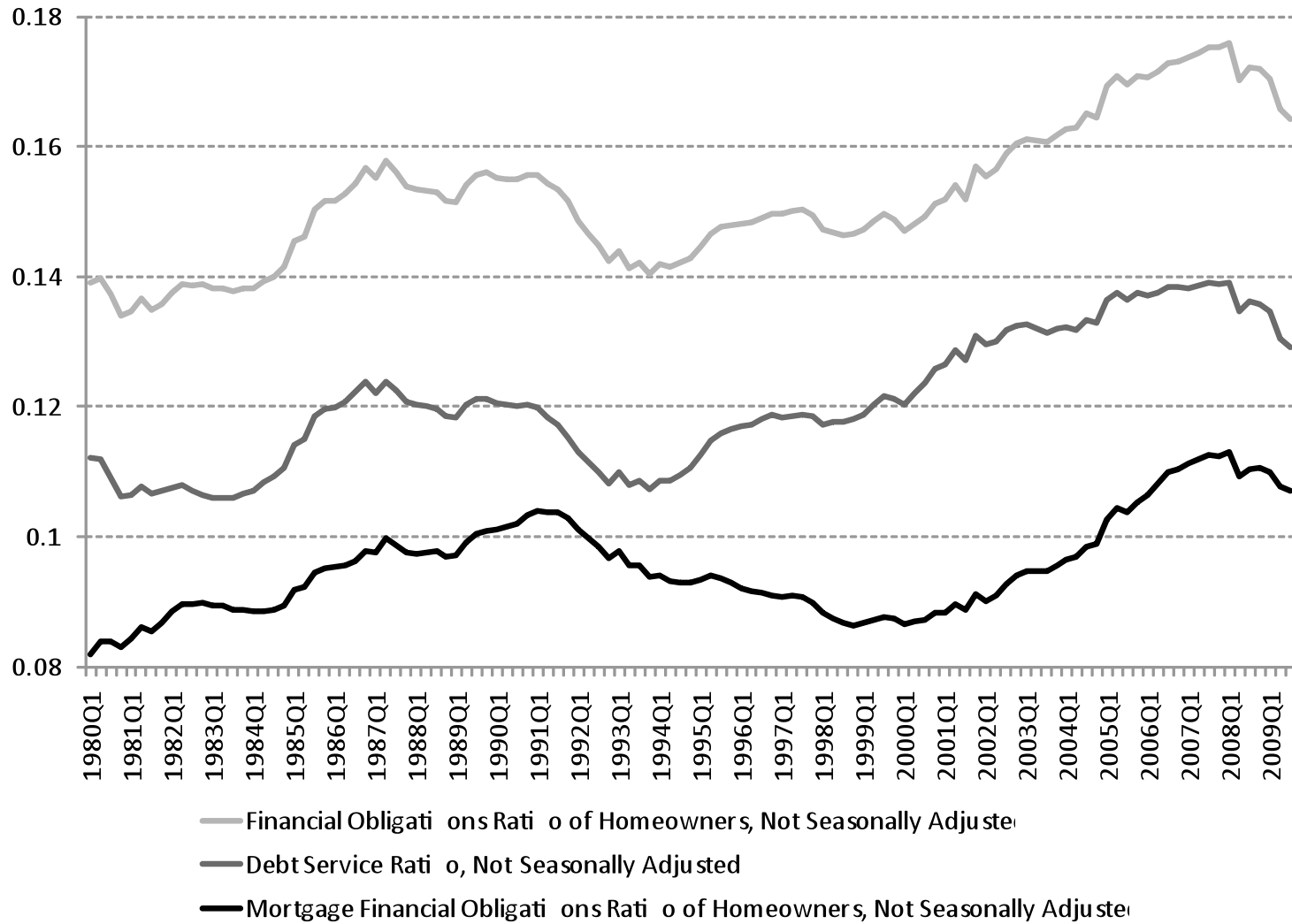
- Households are allowed to borrow without reference to their income generation capacity: Ponzi
- Rising net wealth become the main source of creditworthiness: Ponzi
- Lending based on the expectation that refinancing will be available to meet debt commitments: Ponzi.

Measuring Ponzi Finance in the Household Sector: Housing

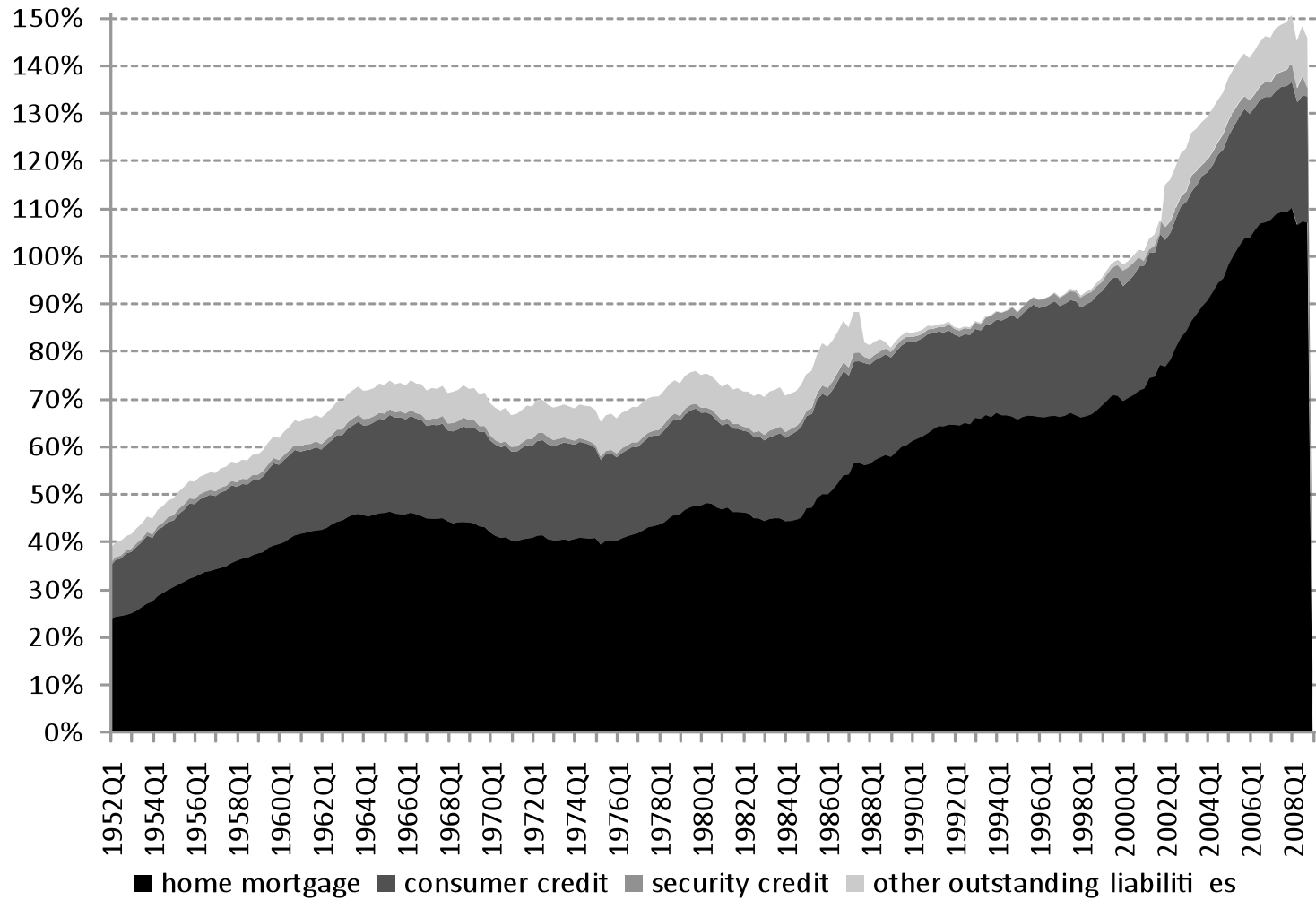


- **Variables used:**
 - Residential mortgage debt: rising
 - Home price: rising
 - Mortgage financial obligation ratio: rising
 - Cash-out refinance: rising
 - Liquid ratio: declining
- **Proposition:** If they all behave in the previous way simultaneous, then there is Ponzi finance.

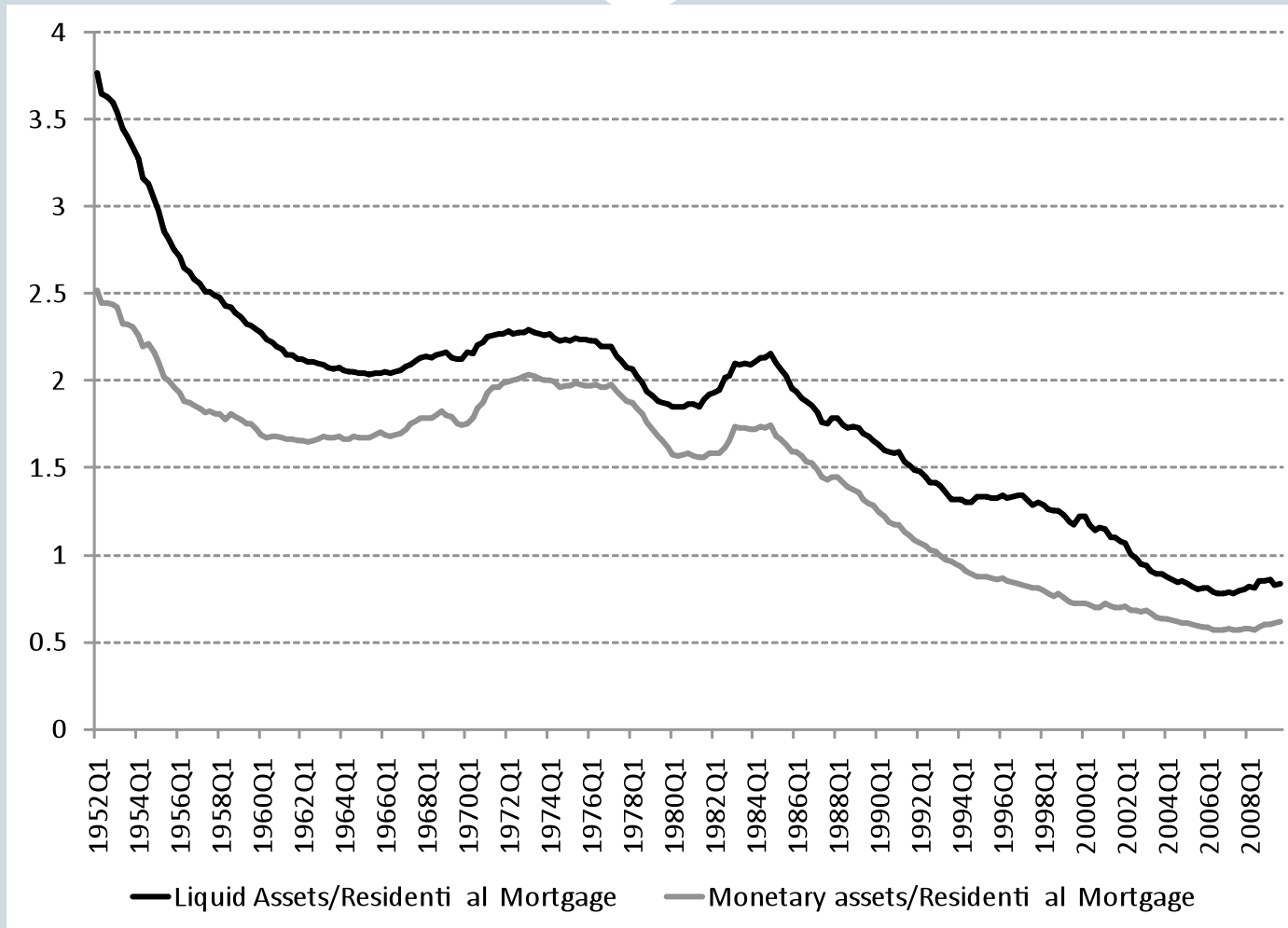
Financial Obligation Ratio



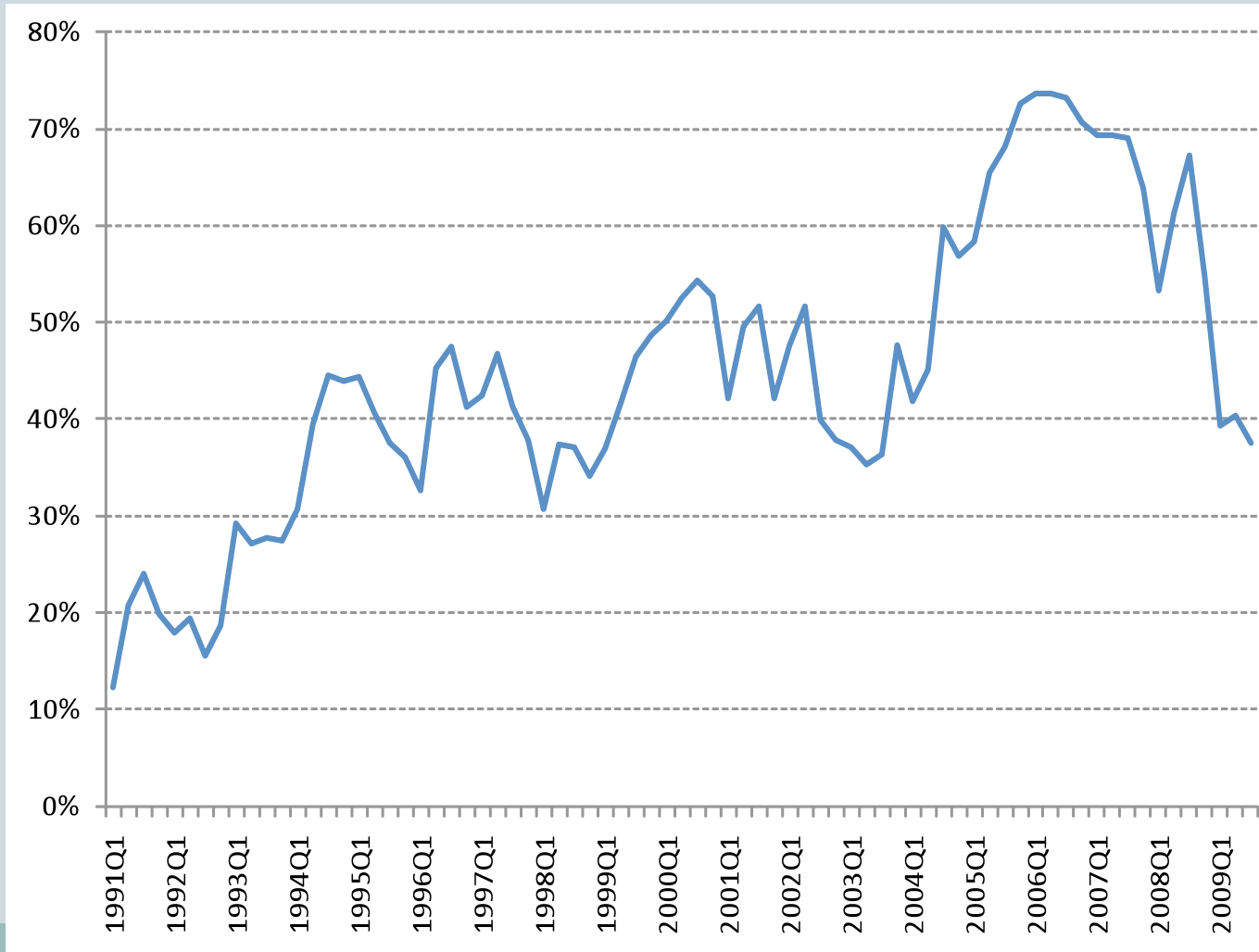
Debt-to-disposable income less income imputations



Liquidity relative to Residential Mortgages



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



Ponzi finance: Residential Housing

