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

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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.
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: Underwriting, Proportion of liar loans

- Subprime
- Alt-A
- Jumbo
- Prime
- Total
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.
• **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