Discussion of "Are U.S. Banks Safer?" by A. Atkeson and A. d'Avernas

Harold Cole

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How Risky are Banks?

Key question that is at the center of economic policy.

But surprisingly hard to answer.

How Risky Are Banks Now? Leverage

- We could try and measure bank leverage ratios directly:
  - A = value of assets
  - L = value of liabilities
  - S = value of equity $\approx A - L$
  - So the Book Value (BV) ratio and the Market Value (MV) ratio of the firm is

$$BV = \frac{A - L}{L} \quad \text{and } MV = \frac{S}{L}$$

- The size of the negative shock that would generate bankruptcy is $\alpha : \alpha A < L$.
- So less leverage means banks can withstand more negative shocks.

How Risky Are Banks Now? Leverage

- In the figure we see that BV has gone up since the crisis and MV went down but bounced back. So 2 different answers on leverage.
- But the probability of bankruptcy depends upon the CDF of α.
- Even relative inferences means assuming assets are not more risky than before (incentive to increase risk).
- Paper seeks to carefully measure risk through CDF.
  - Uses returns on bond portfolios to measure bank asset risk.
  - Higher accounting returns assoc. with higher crisis risk.

How Risky Are Banks Now? CDS spread

- We could try to find a market in bank default risk and use that to estimate the risk.
- Credit default swaps are a promise to switch interest rate flows if default and hence provide insurance. Premium on swap is a measure of the price of this insurance.
- The spread is the expressed in terms of the annual fee as a percentage of the amount borrowed (i.e., the principal).
- That spread went from 20 basis points up over 200 basis points and is currently at 60 basis points.

How Risky Are Banks Now? CDS spread

- P = premium, I = interest payment, PR = principal, and π = probability of not going bankrupt, R = the discount rate, and X = the recovery rate, then

$$\sum_{t=1}^{T} \left(\frac{\pi}{R}\right)^t P = \sum_{t=1}^{T} \left\{ \pi^{t-1}(1-\pi)(1-X) \left[\sum_{j=t}^{T} \left(\frac{1}{R}\right)^t I + \frac{PR}{R^T} \right] \right\}$$

- Interest and discount rates are down.
- We could try and plug in plausible values and solve for π.
- Seems P should rise slightly, so *roughly* at pre-crisis π.

How Risky Are Banks Now? CDS spread

Market must be doing the same type of analysis this paper.

Market did a poor job before.

Paper might actually be better or at least alternative estimate.

But everything hangs on estimated leverage and riskiness of assets.

Estimate that we are back to pre-crisis risk levels does not seem crazy.

What went on with Banks?

View of paper's answer depends on what you think happened.

There are two competing Narratives which start the same:

- Banks, especially shadow banks, increased their leverage ratios and exposure to MBS.
- Housing prices fell and mortgage delinquency rates rose.
- Prices of MBS fell.
- Shadow banks were unable to issue short-term debt.
- Forced a costly government intervention.

What went on with Banks?

But differ on key details:

Narrative 1:

- The high level of exposure to a bad bet on MBS and high leverage was to blame.
- So we need to better regulate banks to avoid this sort of black swan event.

Narrative 2:

- High leverage meant they could not ride out the storm.
- This led to a fire sale which drove down prices (temporarily).
- MBS ultimately proved a good investments.

Narrative 1 vs. 2

Narrative 1:

- suggests that we need to do a better job of evaluating tail risk in asset positions. Use historical data to do so.
- We also need to adjust leverage in the face of estimated risk.

Narrative 2:

- event itself was due to rollover or liquidity crisis for the banks.
- Over-the-counter MBS market lent itself to fire sale
- past lower leverage ratios and better asset markets prevented crises.
- history may not be a good guide.

Rollover Risk and Sovereign Debt Crisis

- Debt crises (as in the Tequila crisis) seem to involve rollover risk.
- Rollover crises seem to be self-fulfilling so state of investor confidence seems important component of equilibrium selection.
  - Worked on this here with Tim Kehoe in late 1990s.
- Maturity structure of the debt plays key role.
  - Mexico switched to dollar denominated 90 day debt.
  - Investment banks switched to overnight repos.
- Worry about both leverage and structure of liabilities.
- Worry also about the markets for assets, not just pure risk.
  - Tesobonos were aimed at NY financial institutions.

Rollover Risk and Sovereign Debt Crisis

- Models with multiple equilibria are tricky.
- In current work with Aguiar, Chatterjee and Stangebye trying to fit models with multiple equilbria.
- Means fitting the selection process to the data.
  - Can take a state-space approach where investor sentiment is unobserved state.
  - But can only have crisis if fundamentals allow it.
  - Government choice of debt can head off crisis.
- Hard to avoid this here if you believe narrative 2.
- In sovereign debt literature we had panel data and a lot more crises to work with.

Rollover Risk and Sovereign Debt Crisis

- In sovereign debt literature we see tranquil and turbulent periods.
- So with two states $\rho \in \{C, N\}$ where $C =$ investor confident, and $N =$ investors nervous
- Simple Markov process $a =$ prob. of C if C last period,
- $b =$ prob. of C if N last period, $(a >> b)$
- Then transition matrix is

$$Q(\rho', \rho) = \begin{bmatrix} a & 1-a \\ b & 1-b \end{bmatrix}$$

- Things look very benign for a long time with given set of fundamentals, and then they are not if in *crisis zone*.