How Vulnerable Are Agriculturally Concentrated Banks to a Fall in Agricultural Land Values?

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Disclaimer

- Our views
- Not necessarily those of anyone else in the Federal Reserve
- Stress test results presented today come with significant uncertainty

Bottom Lines

- How might a big fall in farmland values impact commercial banks?
- At the majority of agricultural banks, loan losses would be moderate and capital little changed.
- A subset of agricultural banks would be subject to heavy losses and impact on capital.

MPLS Ag Bank Stress Test Features

- Built models that estimate ag bank loan losses upon land value changes
  - Benchmark: What happens to the "average" bank?
  - Distributional: What happens to the most "sensitive" ag banks?

- Ran three "what-if" scenarios through models
  - Severe = Worst two years of the Farm Crisis

Model Variables to Predict Loan Losses

- Bank variables
  - Previous years' net charge-off rate
  - Idiosyncratic factors specific to a bank
  - Indicator of loan portfolio vulnerability
- Ag condition variables
  - Change in state ag land values
  - Changes in national farm debt-to-equity ratio
- Economic variables
  - Proxy for the interest rate charged on loans

Bank Data Used to Make Forecasts

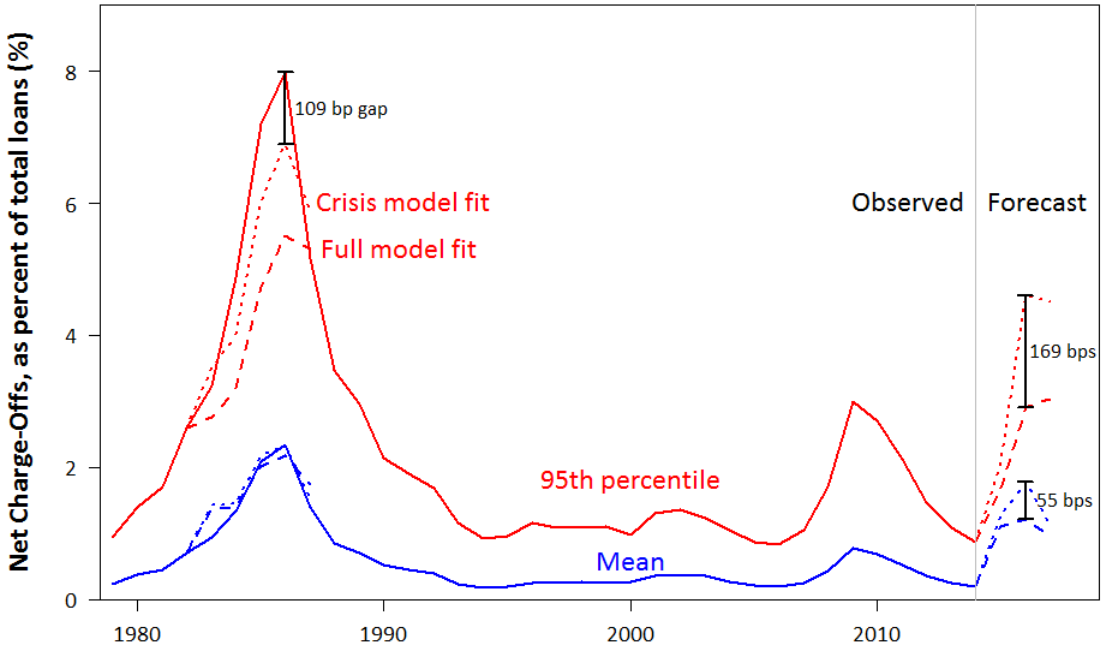
- Included banks in existence for at least three years at any point from 1980 to 2014 ("Full Sample")
  - Current and Farm Crisis-era banks
  - 4,594 banks

- Restricted the sample above to the 1980 to 1987 period ("Crisis Sample")
  - Banks with known sensitivity to a fall in land prices
  - 3,592 banks

Examples of Data Limitations

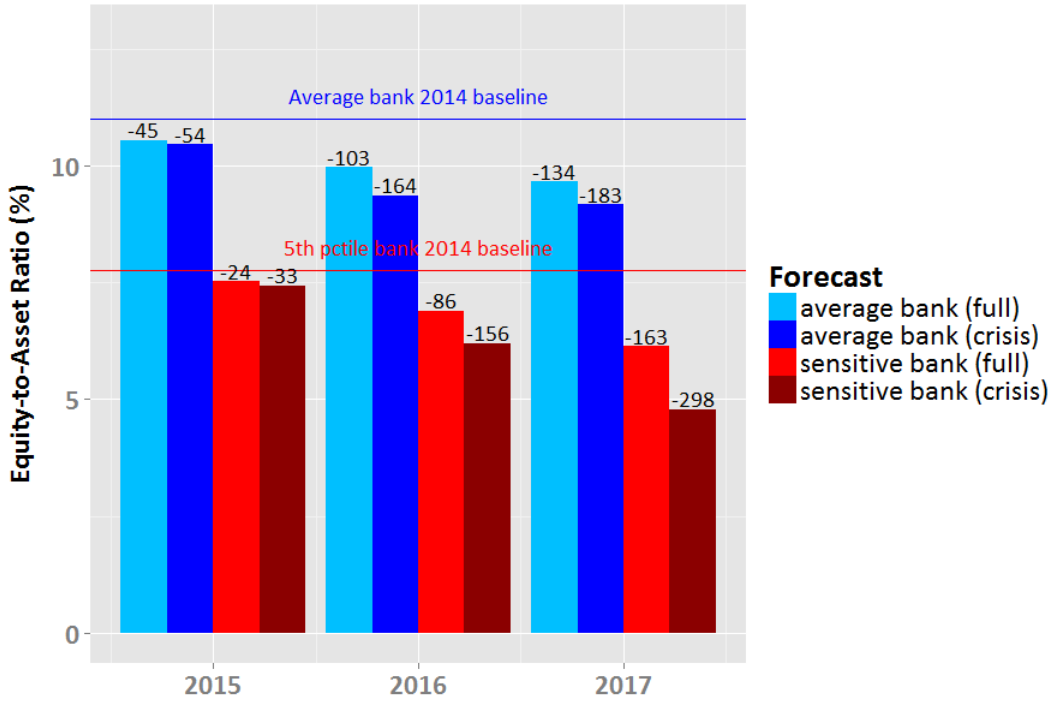
- Land values are self-reported and limited to annual state series.
- Bank exposure are mapped to states.
- Portfolio vulnerability and farmer leverage are national variables.

Loan Losses: Historical, Back-Fit, and Forecast



Note: Full model estimated over the period 1980–2014. Crisis model estimated over the period 1980–1987. Forecast is for the severe scenario. Mean back-fit and forecast come from benchmark model. 95th percentile back-fit and forecast come from distributional model.

Capital Forecast in Severe Scenario



Note: Figures above bars indicate the basis point decline from the 2014 baseline.

Questions?