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?