Fed Modeling of the Balance Sheet and Risk Weighted Assets

Jason Schmidt

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Outline

• Motivation
• Fed modeling process – loans & non-loan assets
• Separation of supply and demand
• Fed modeling process – trading assets
• Risk weighted assets
Motivation – Why Should the Fed Model the Balance Sheet?

• Information generated from stress tests is extremely useful and important

• Fed projections allow for more consistent horizontal analysis

• Independent projections support the credibility of the test
The Fed Modeling Process: Loans and Non-Loan Assets

• Modeling process needs to be:
  – Simple, transparent, flexible
  – Projections have to be convertible into RWA

• Industry aggregate measures of total loans and total non-loan assets

• Use a system of equations to achieve consistency and feedback between non-loan assets, loans, and macroeconomic variables:
  – Parsimony
  – Capture key relationships

• Control for credit supply shocks
Industry Aggregates Used in the Fed Model
What Happened During Previous Recessions?

Note that nine quarters after each NBER business cycle peak, non-loan assets had increased on net (also true for total assets).

Loan volumes contracted, on net, nine quarters after the 1990:Q3 and 2007:Q4 peaks but increased after other peaks.
Separation of Credit Supply and Demand

• “The Federal Reserve expects large, complex BHCs to have sufficient capital to continue lending to support real economic activity...” (Executive Summary of the DFAST 2014 Methodology & Results)

• Loans can change because of both demand & supply shocks

• Want to control for reductions in credit due to supply shocks (avoid negative feedback loop)

• Example—willingness of a bank to extend a loan is fixed at an average historical level
Separation of Credit Supply and Demand

C&I Lending Standards (SLOOS)
The Fed Modeling Process: Trading Assets

• Unique balance sheet category

• Projection of trading assets depends on two pieces
  – One is derived from changes in the overall size of the firm
  – One reflects changes in market value due to changing market prices

• Market value adjustment is straightforward
  – Estimate historical relationships between the returns of different types of financial assets and relevant macroeconomic variables
  – Use the scenario data to determine projected returns
  – Combine the exposures (weights) and projected returns to get a market value adjustment
Translation of Industry Aggregates to Firm Level & Balance Sheet Specific Items

• Industry growth rates: loans, non-loan assets, trading assets, and total assets

• Assume each firm maintains a constant share of the industry total

• Assume each firm maintains a constant mix within the loan & trading asset portfolio

• Short-term risk-free securities serve as a residual category
Risk Weighted Assets

- Banking book – credit RWA
  - Generalized approach (Basel I)
    - “Risk weights” measured at PQ 0 for high-level categories
    - Calculation: \( \text{RWA} = \text{balance} \times \text{growth rate} \times \text{risk weight} \)
  - Standardized approach (Basel III)
    - Different risk weights for certain categories

- Trading book – market RWA
  - Volatility “sensitive” portion
    - Value-at-risk calculation
    - Volatility is modeled as a function of the VIX projection
  - Volatility “insensitive” portion – function of total trading assets