

Fed Modeling of the Balance Sheet and Risk Weighted Assets

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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

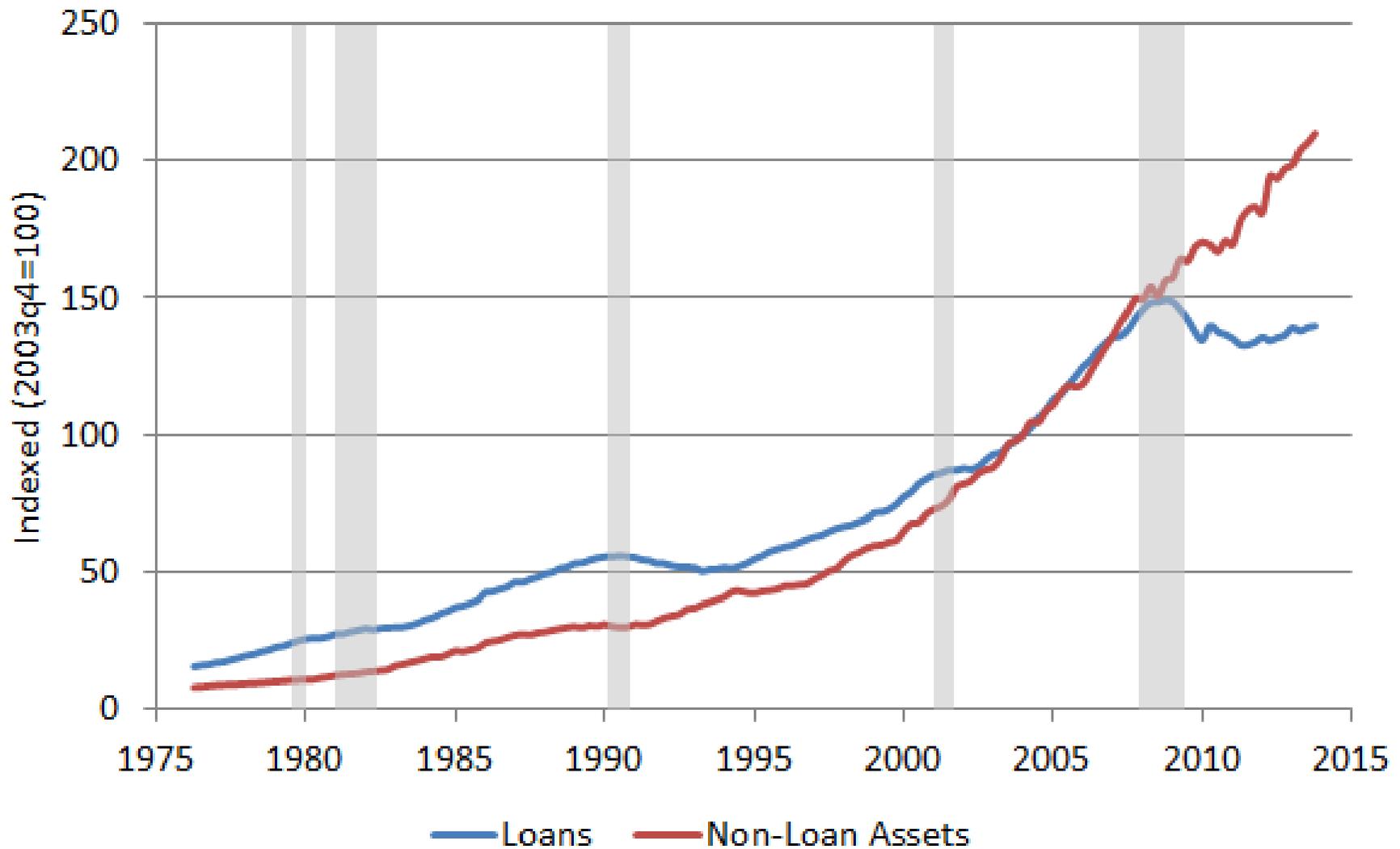
Motivation – Why Should the Fed Model the Balance Sheet?

- 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

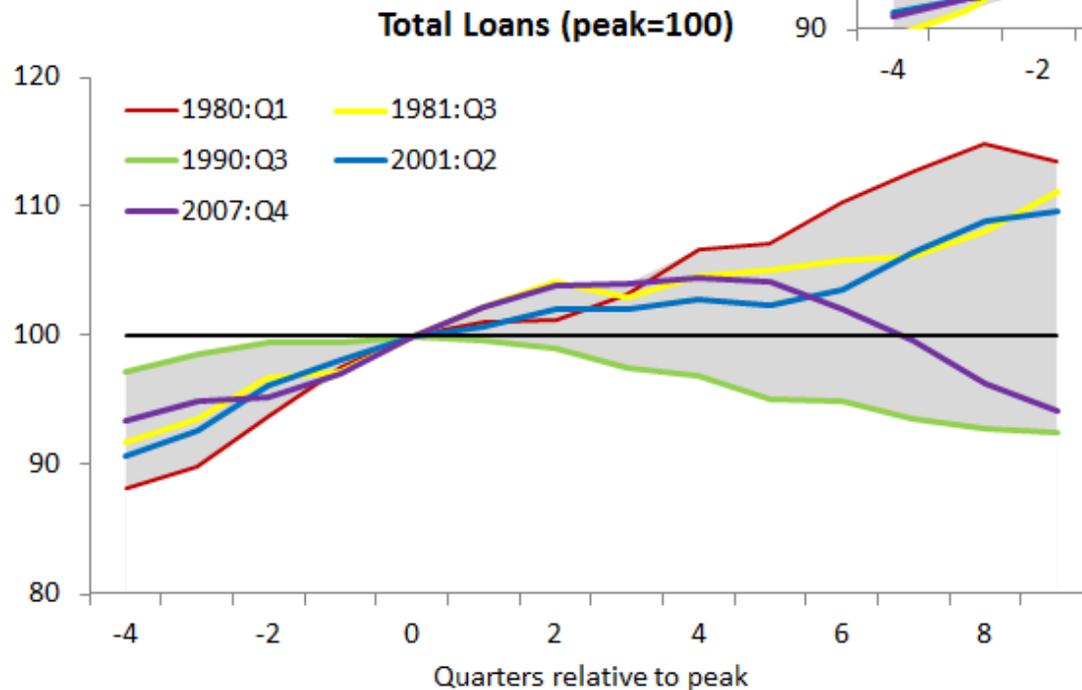
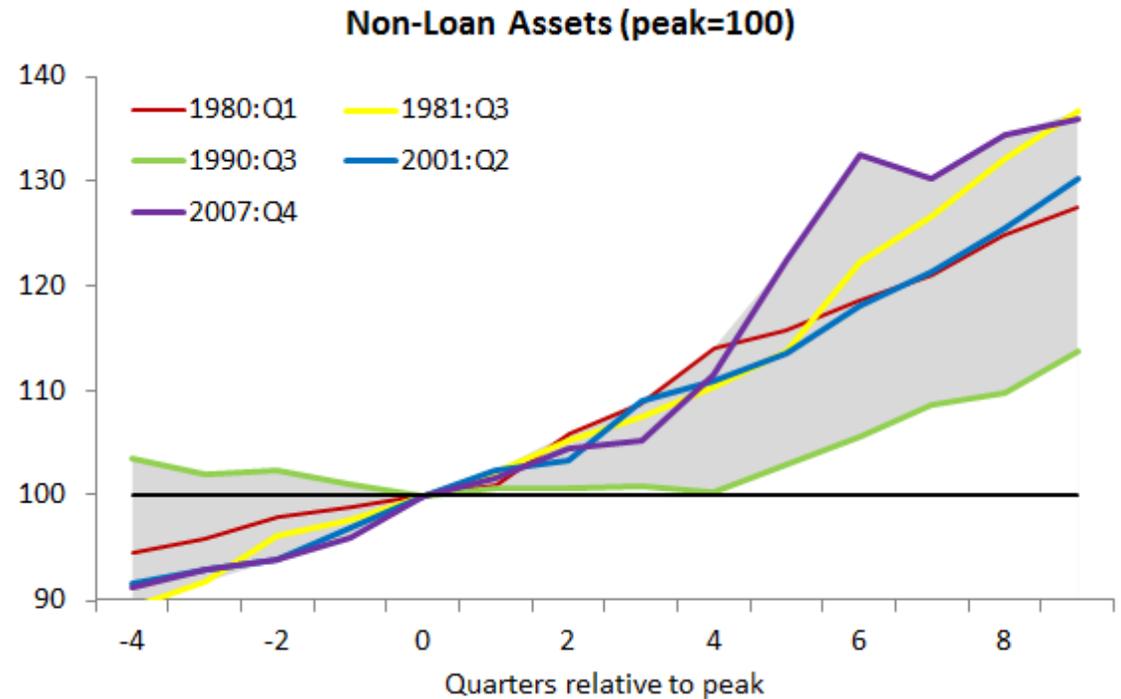
- Modeling process needs to be:
 - Simple, transparent, flexible
 - Projections have to be convertible into RWA
- Industry aggregate measures of total loans and total non-loan assets
- Use a system of equations to achieve consistency and feedback between non-loan assets, loans, and macroeconomic variables :
 - 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)



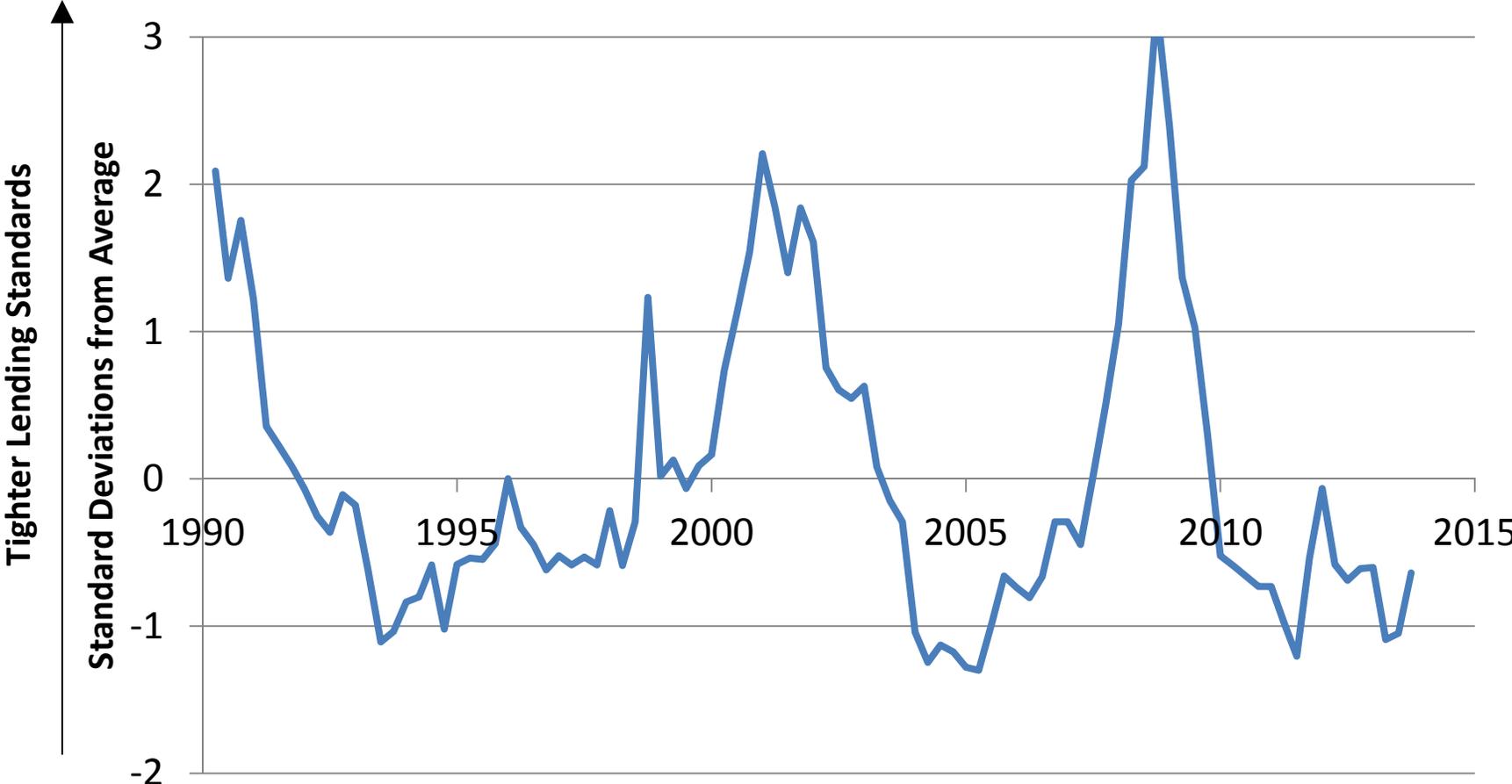
Loan volumes contracted, on net, nine quarters after the 1990:Q3 and 2007:Q4 peaks but increased after other peaks

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: $RWA = \text{balance} * \text{growth rate} * \text{risk weight}$
 - 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

