

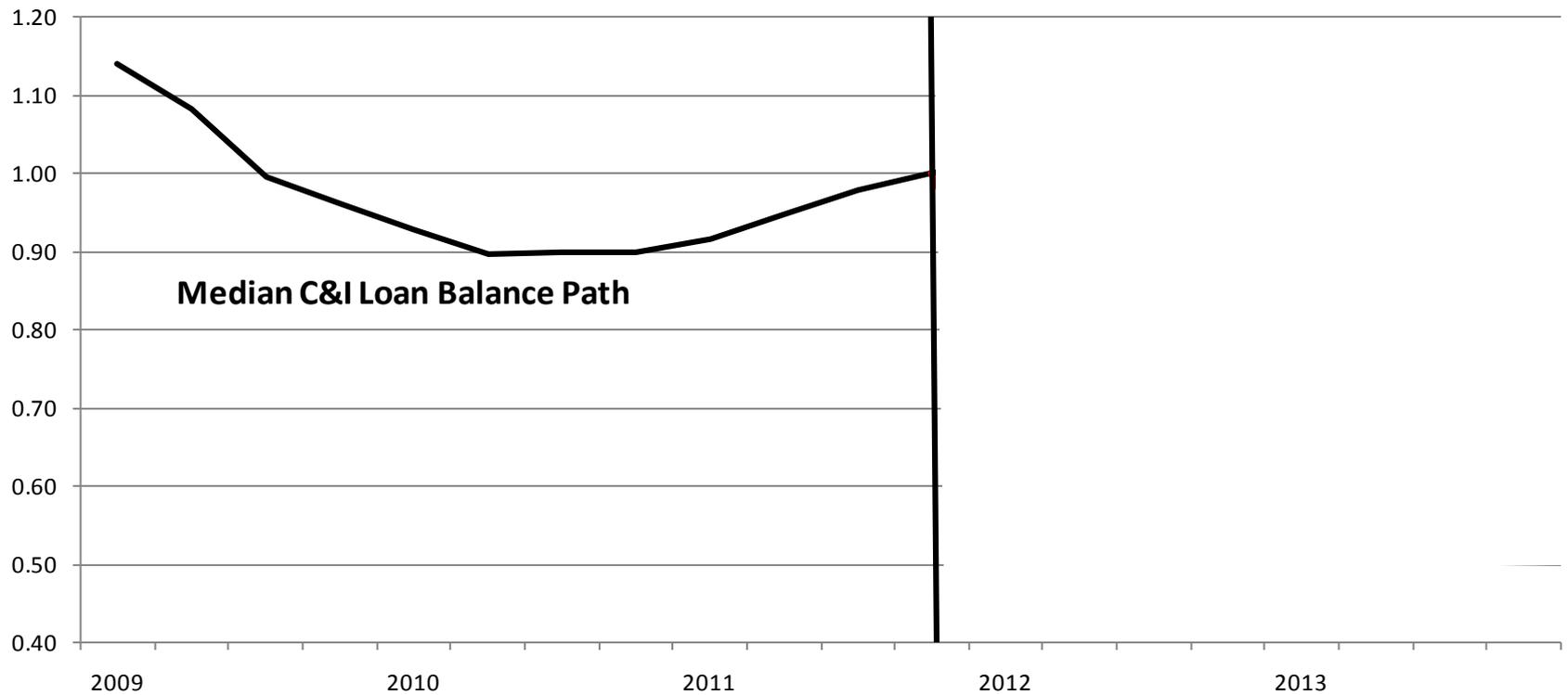
PPNR/Balance Sheet Modeling

Ken Heinecke

The opinions expressed herein are solely those of the author and do not necessarily represent those of the Federal Reserve System.

Example: C&I Loan Balances

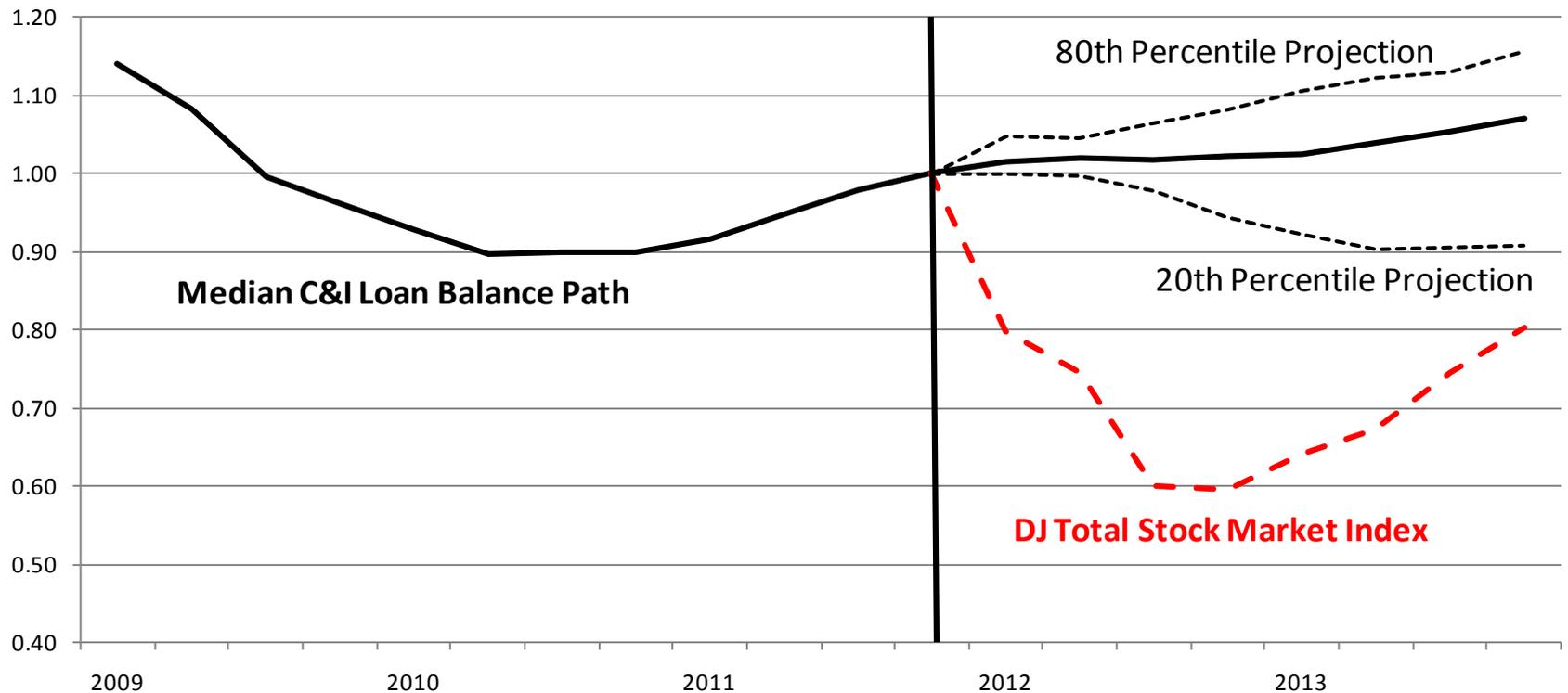
**C&I Loan Growth - Stress Scenario CCAR 2012
Indexed to Q4 2011**



Source: Y-14 and the Board of Governors of the Federal Reserve System

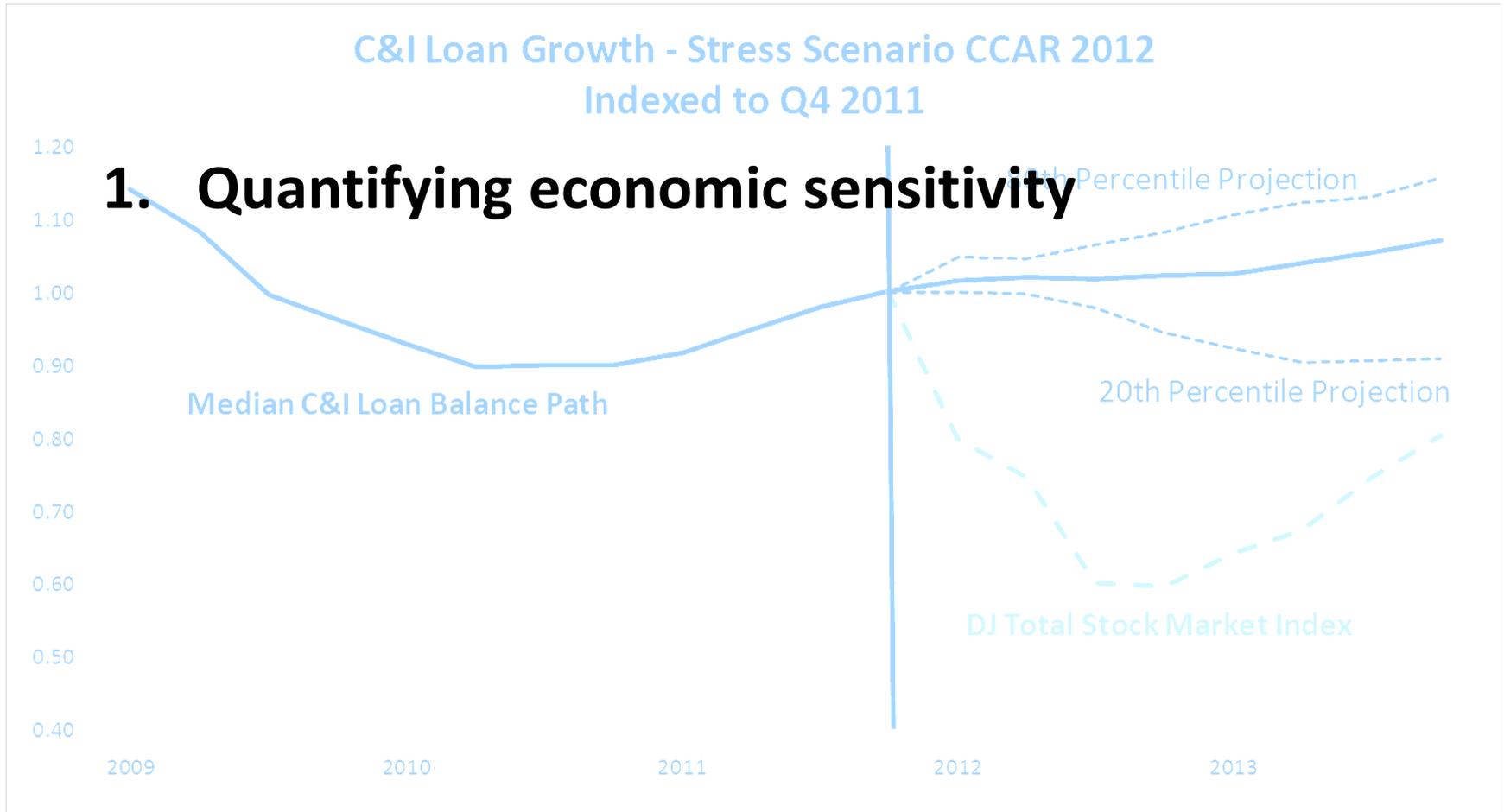
Example: C&I Loan Balances

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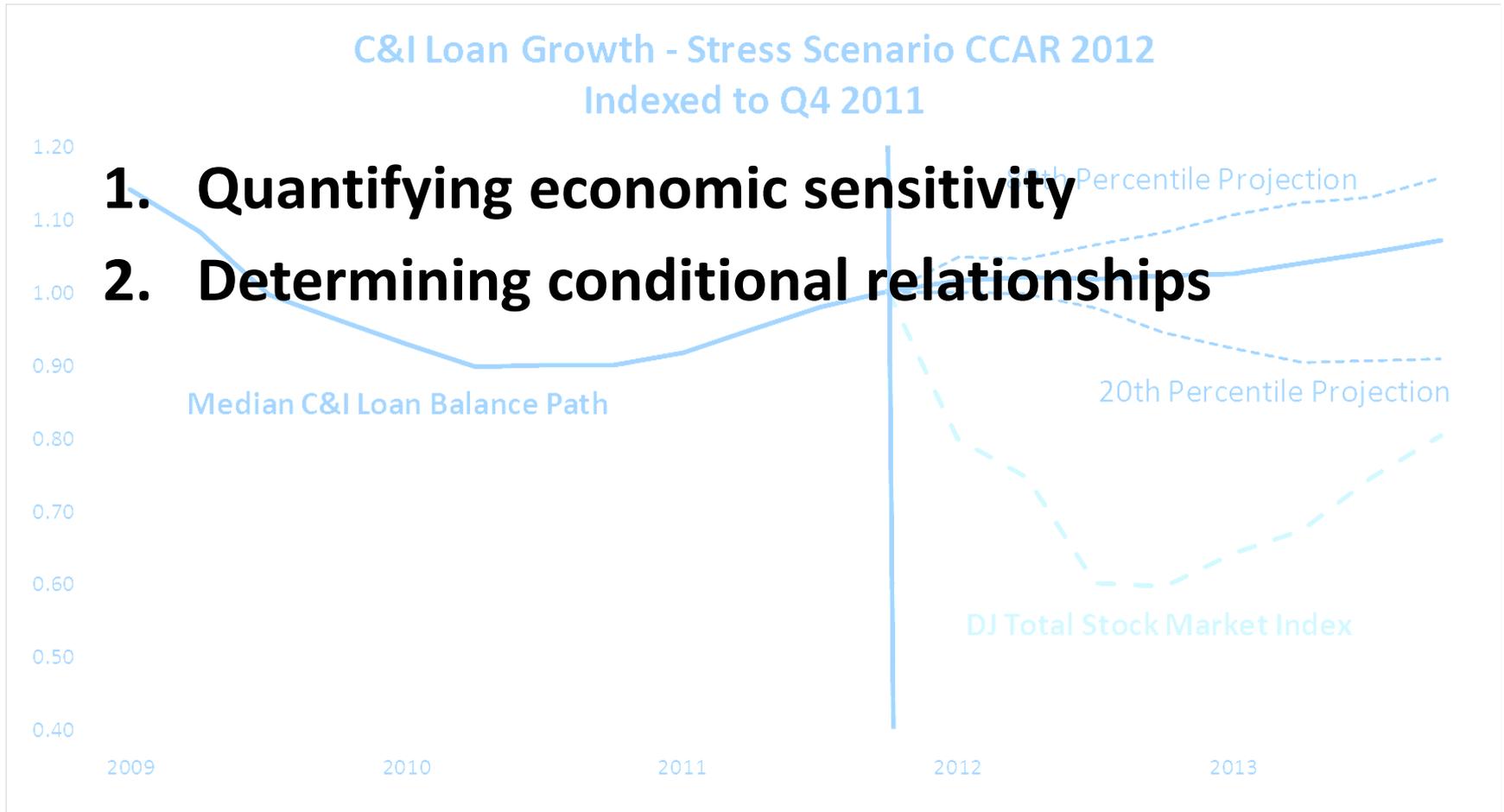


Source: Y-14 and the Board of Governors of the Federal Reserve System

Modeling Challenges

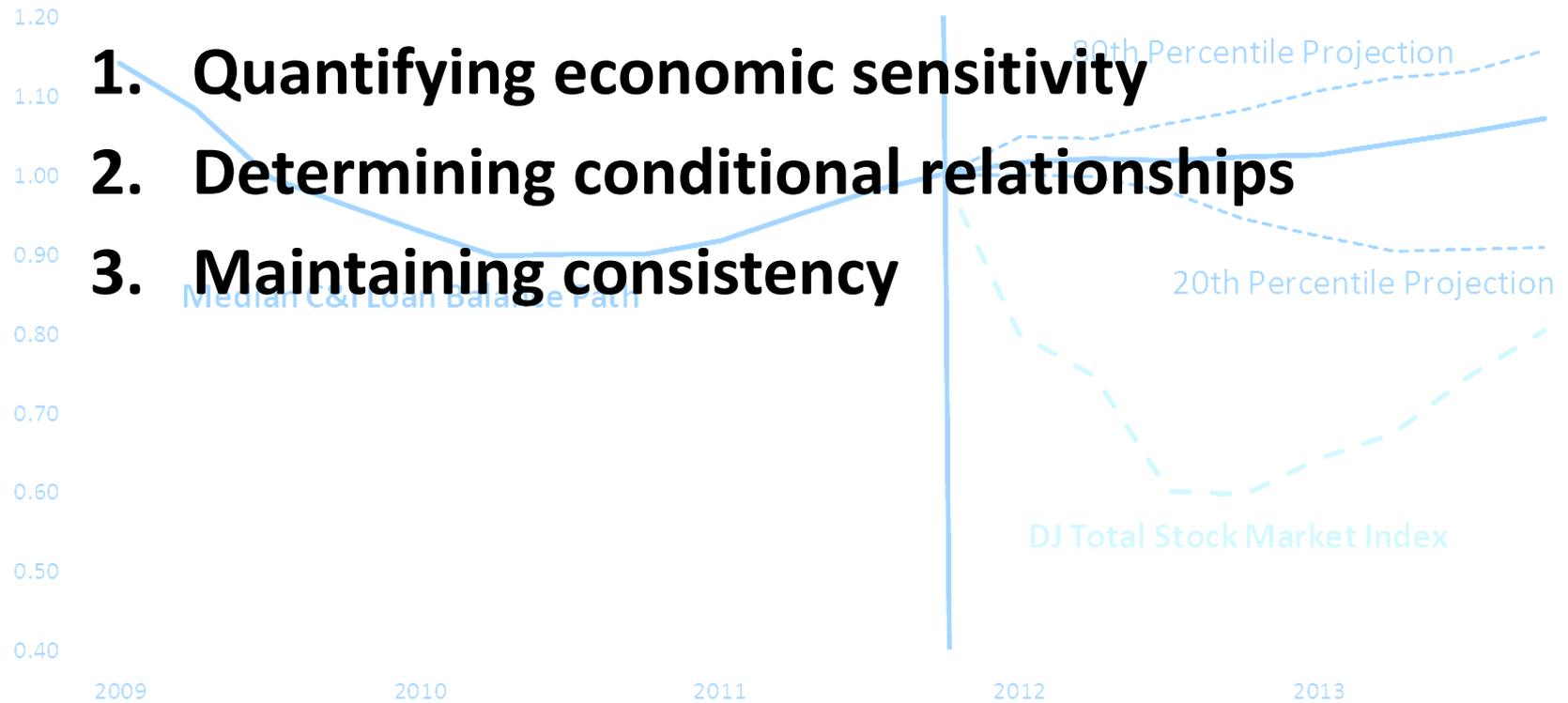


Modeling Challenges



Modeling Challenges

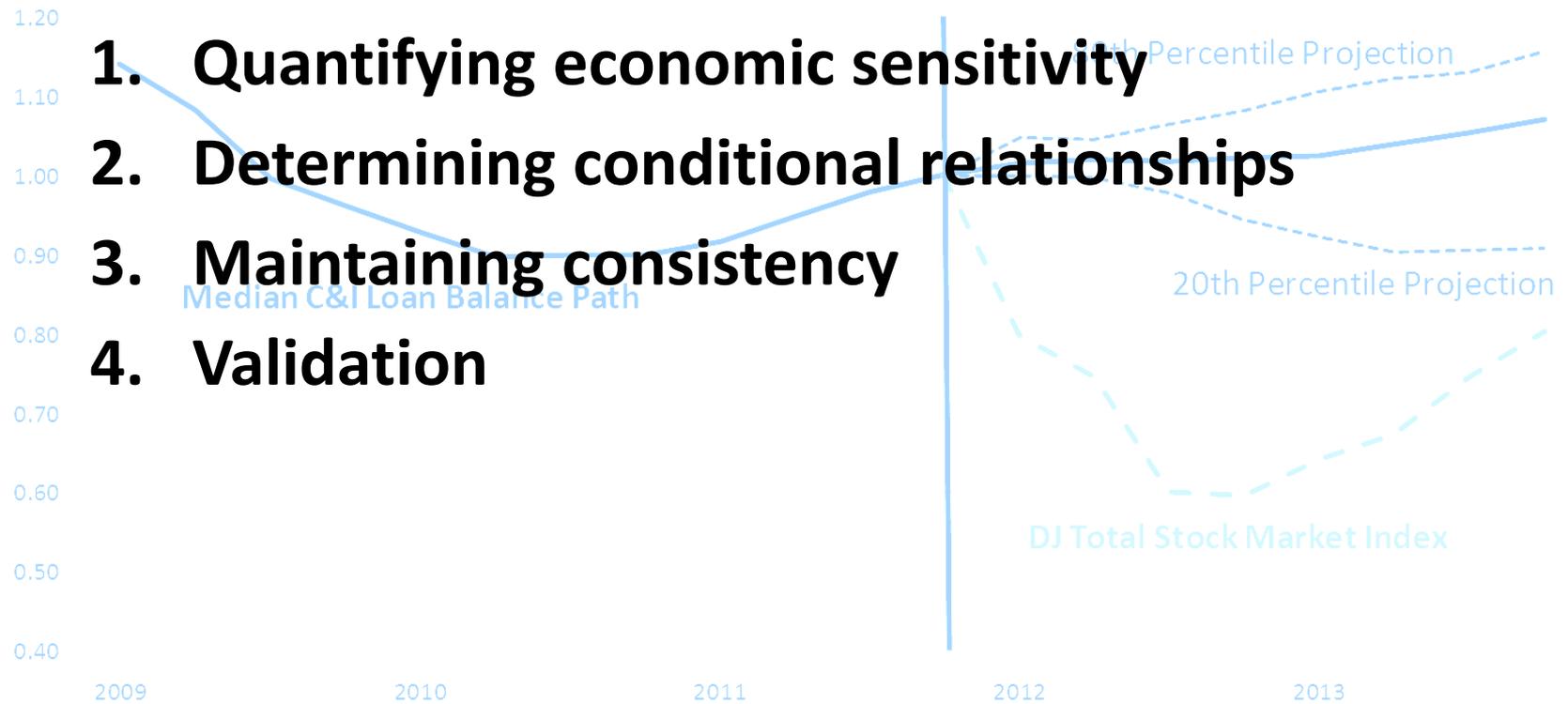
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1. Quantifying economic sensitivity
2. Determining conditional relationships
3. Maintaining consistency

Modeling Challenges

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Challenge: Economic Sensitivity

- Disaggregate
 - Model NIM by asset type
 - Model originations instead of balances
- Aggregate
- Transform variables
 - Taking natural logarithms or modeling growth rates may uncover relationships
- Alternative macro variables
 - May need to use variables that are not provided by the Fed

Challenges: Conditionality, Data

- Correlations change in stress periods
 - Pool stress periods to estimate relationships
 - Use nonlinear statistical techniques
- Firm data series may be flawed
 - Examine data outside the firm
 - Industry
 - International

Challenge: Consistency

- Internal
 - Paths of balances and revenues/expenses should be correlated
 - Originations, defaults, and loan balances are related
- External
 - Path of balance/revenue/expense should make sense given the macro scenario
 - Projecting share gains => relative outperformance

Challenge: Validation

- Operational
 - Run the exercise with different employees
- Out-of-sample testing; Benchmarking:
 - Make projections for 2008-2009 knowing only the information through 2007
 - Scenario analysis can be helpful
- Variable Selection:
 - Look for economic as well as statistical significance

Modeling Challenge Suggestions

