FRB Boston Stress Testing Symposium
Retail Modeling Panel - Cards

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Outline For Prepared Remarks

Where we are today

Macro sensitivity analysis and reliance on the Great Recession

Modeling considerations and solutions

Where We Are Today

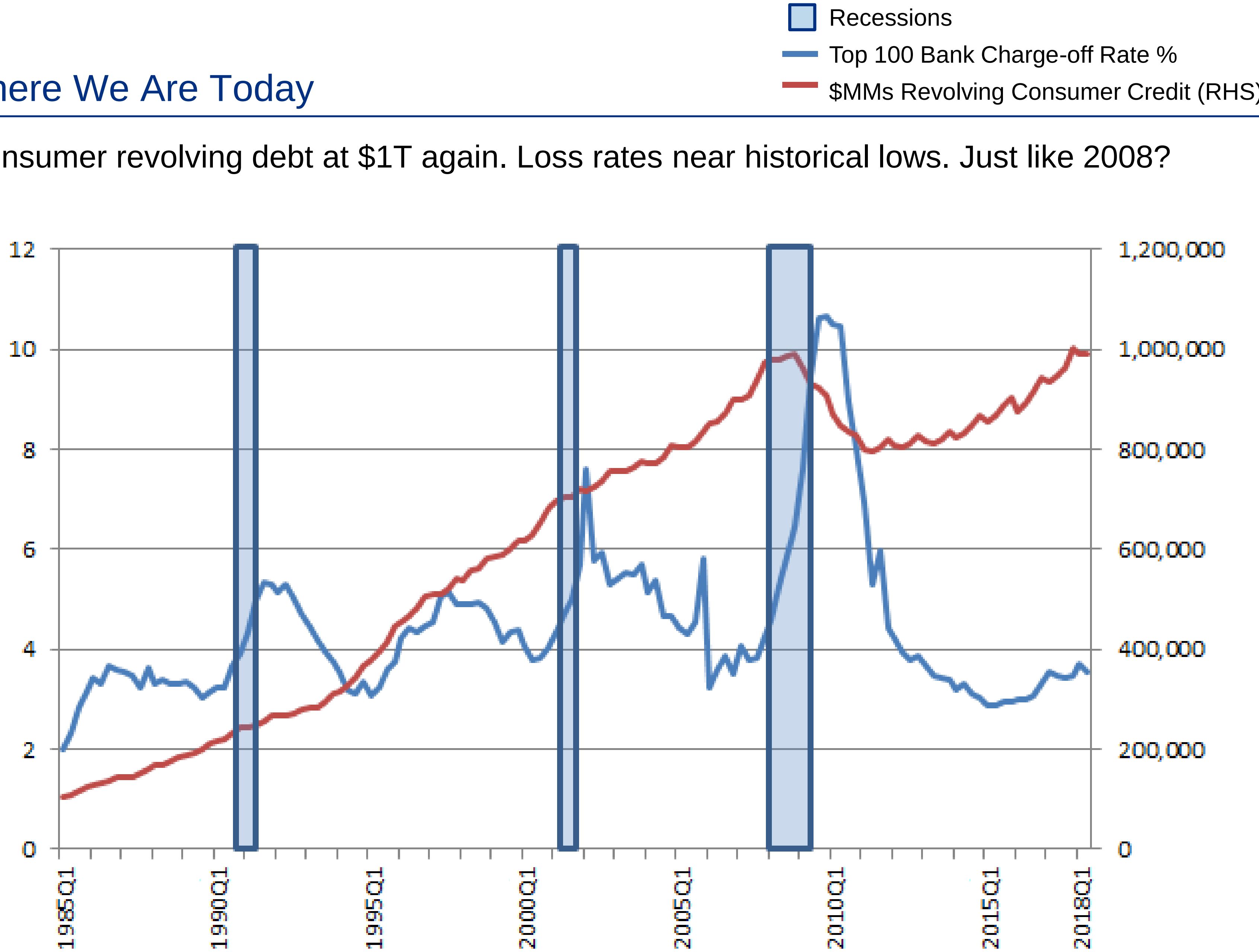
- What's different in 2018 vs. 2008?

CCAR!

- Establishment, enhancement of **model governance, model risk management**, other oversight processes
- Review/revision of **underwriting criteria, servicing, operations, compliance**
  - End-to-end process re-engineering
- **Data/infrastructure investment**
- **Dedicated R&D** especially on loss modeling and stress testing
  - Evolution of modeling approaches
  - Exploration of fundamental relationships between loan performance and predictors
  - Benchmarking practices
- **What else is different?**

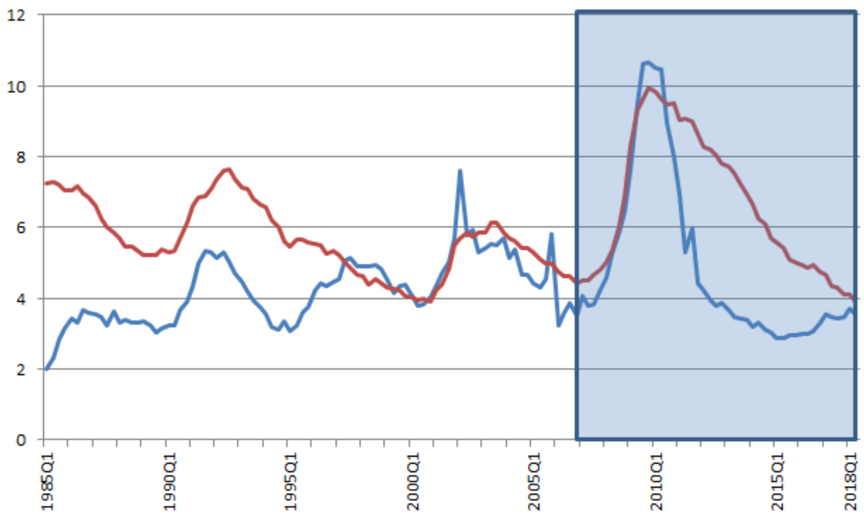
Where We Are Today

Consumer revolving debt at $1T again. Loss rates near historical lows. Just like 2008?

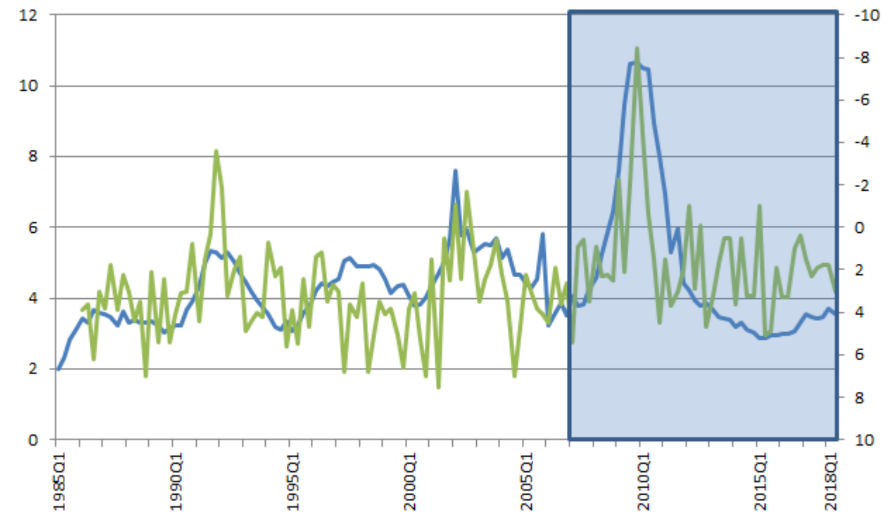


Macro Sensitivity Analysis: Variables With Complete Cycles Since 2008

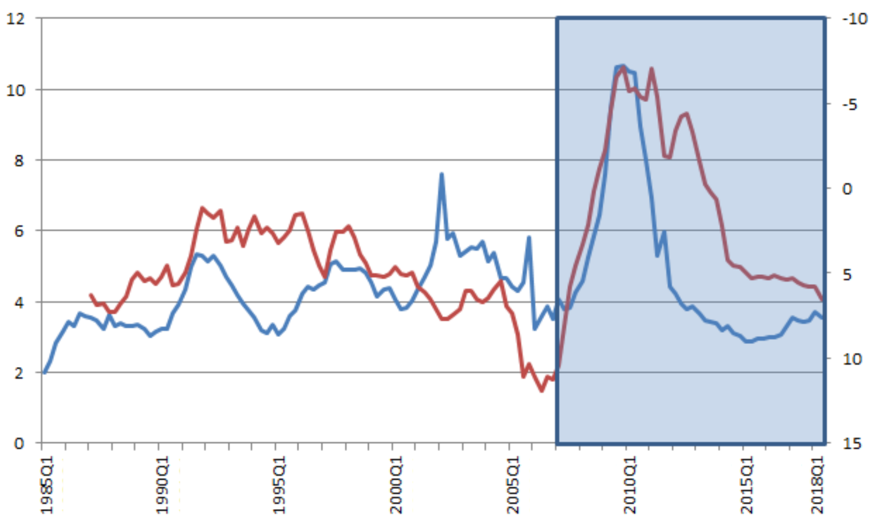
Charge-off Rate[1] vs. Unemployment Rate[2]



Charge-off Rate vs. YoY % GDP Growth L1Y[3]



Charge-off Rate vs. YoY % HPI Change L1Y[4]



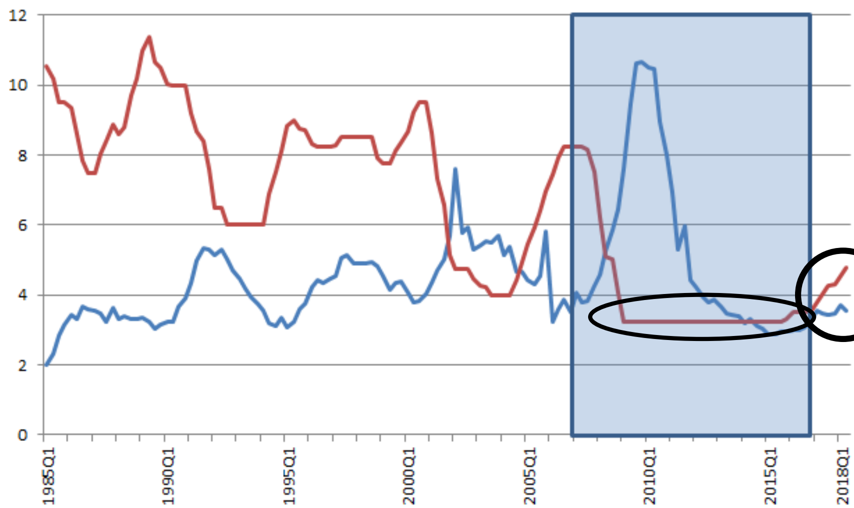
- Generally strong association between losses and these macros will produce reliable statistical relationships for stress test models
- Longer history should reinforce these relationships

1 Charge-Off Rate on Credit Card Loans, Top 100 Banks Ranked by Assets, Percent, Quarterly, Seasonally Adjusted
2 Civilian Unemployment Rate, Percent, Quarterly, Seasonally Adjusted
3 Real Gross Domestic Product, Percent Change from Preceding Period, Quarterly, Seasonally Adjusted Annual Rate
4 All-Transactions House Price Index for the United States, Index 1980:Q1=100, Quarterly, Not Seasonally Adjusted

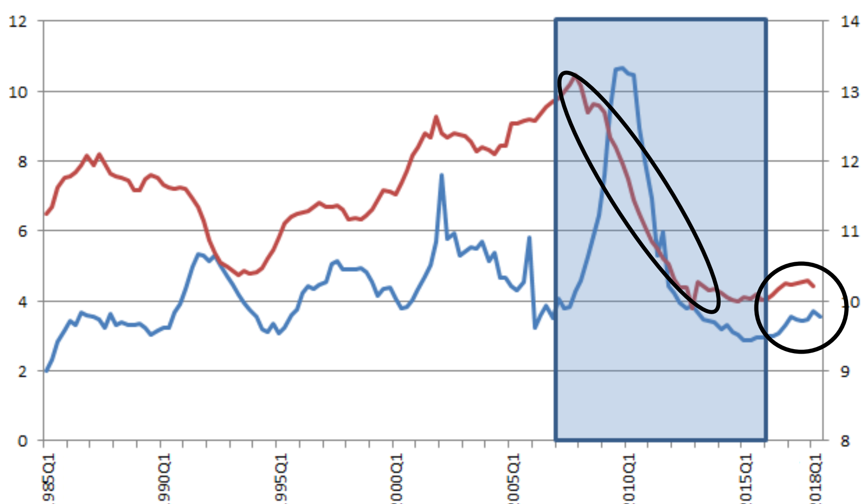
SOURCE: Economic Research Division, Federal Reserve Bank of St. Louis

Macro Sensitivity Analysis: Variables Without Complete Cycles Since 2008

Charge-off Rate[1] vs. Prime Rate[2]



Charge-off Rate[1] vs. Debt Service Ratio[3]



- Longer history with more macro cycle/variability would be needed to derive reliable statistical relationships for these macros
- Recent trends in these may point toward emerging risks that warrant attention
  - Interest rates
  - Consumer leverage
- What is different between 2018 and 2008?
  - Prime Rate ~170bps lower
  - TDSR ~300 bps lower

1 Charge-Off Rate on Credit Card Loans, Top 100 Banks Ranked by Assets, Percent, Quarterly, Seasonally Adjusted
2 Bank Prime Loan Rate, Percent, Quarterly, Not Seasonally Adjusted
3 Household Debt Service Payments as a Percent of Disposable Personal Income, Percent, Quarterly, Seasonally Adjusted

SOURCE: Economic Research Division, Federal Reserve Bank of St. Louis

Considerations and Solutions

- **What data is available?**
  - Aggregate portfolio charge-offs, cohort/vintage curves, account level data over time
    - For account-level models, is data sufficient to model defaults? Other competing risks?
    - Account characteristics – internal plus external (i.e. credit bureau)
    - Event history
    - Macro variables
    - What granularity is available (especially important for segment/account-level models)?
    - Is history long enough to measure valid correlations to macro variables?
    - Does history contain at least one downturn?
- **How are Risk ID/emerging risk and scenario design processes integrated into the modeling?**
- **Build vs. buy?** Do robust frameworks exist for model development and validation? What is the governance?
- **How will results be benchmarked?** What benchmarks are available?