



Risk, Uncertainty & Behavioral Finance

*Presented by Bridget C. Balesky, VP
Brick & Associates, Inc.*

800-332-8188

bridget@brickinc.com www.brickinc.com

June 9, 2016 | 1:00 p.m.

Visit www.mculace.com to Access Handouts From Select Sessions

Interest rate risk can be measured and quantified when assumptions are reasonable and sensitivity tests are periodically performed. Human behavior adds another dimension to risk measurement and assessment. Research in Behavioral Economics began in the 1990s and is a growing field. No one knows how much or when market rates will change and the future behavior and pricing of products are uncertain. The behavior of so-called “surge deposits” resulting from low rates adds further complications in risk assessment.

I. Graphs

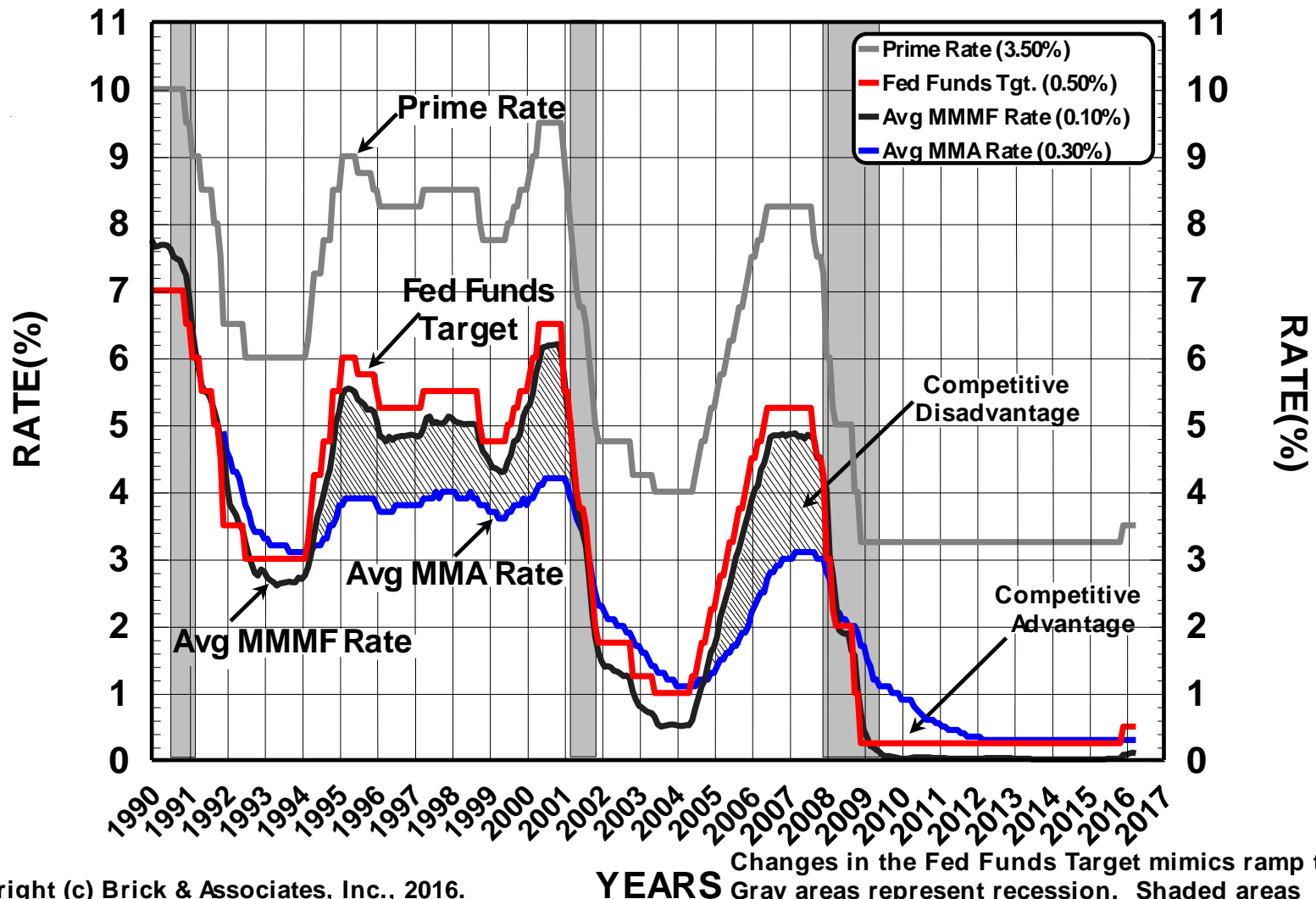
A. *Exhibit 1, HISTORICAL SHORT TERM RATES*

B. *Exhibit 2, THE FED’S RECENT DOT PLOT*

C. *Exhibit 3, FED FUNDS FUTURES (How has that track record been?)*

SHORT-TERM INTEREST RATES

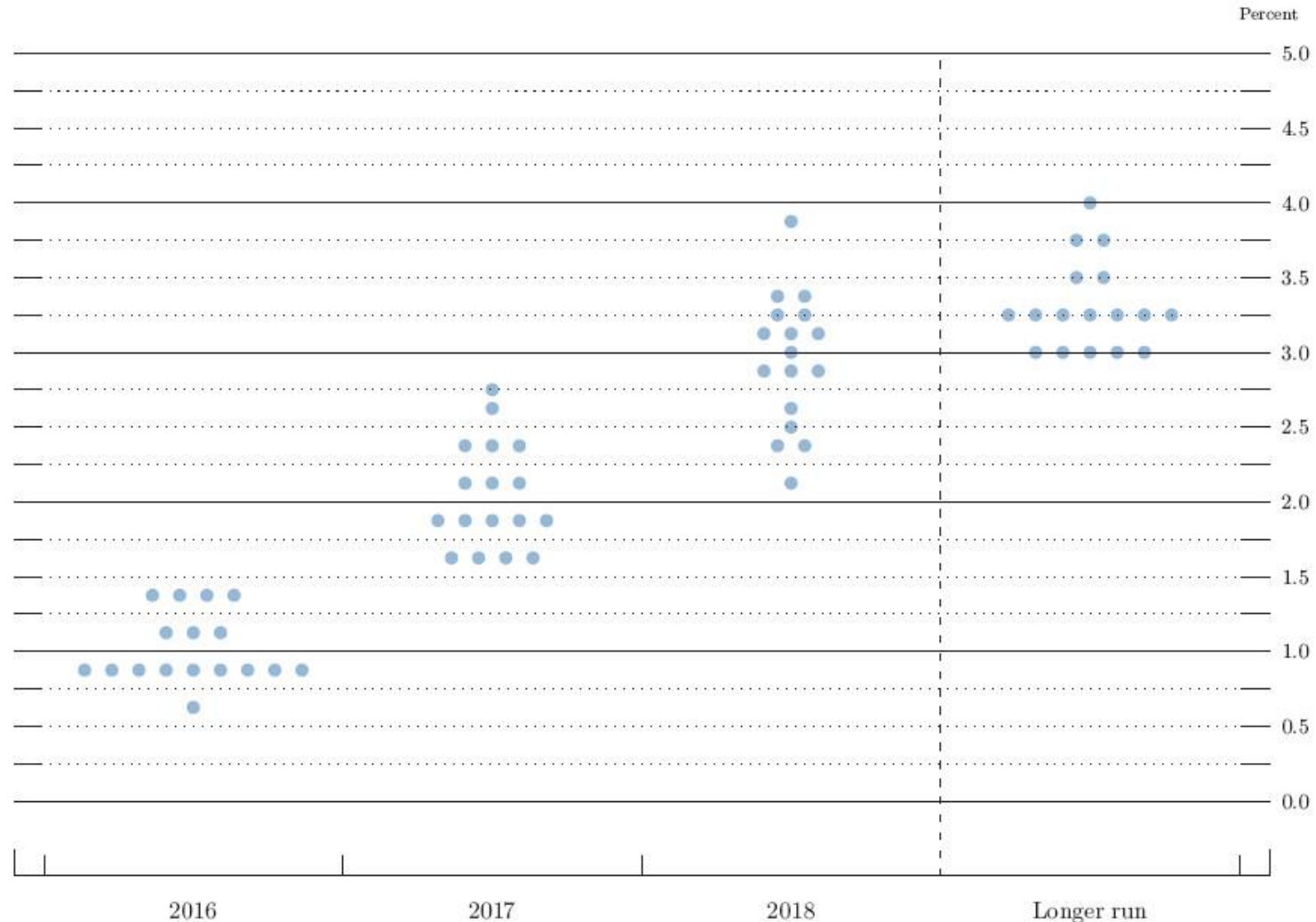
Exhibit 1



Copyright (c) Brick & Associates, Inc., 2016.
All rights reserved.

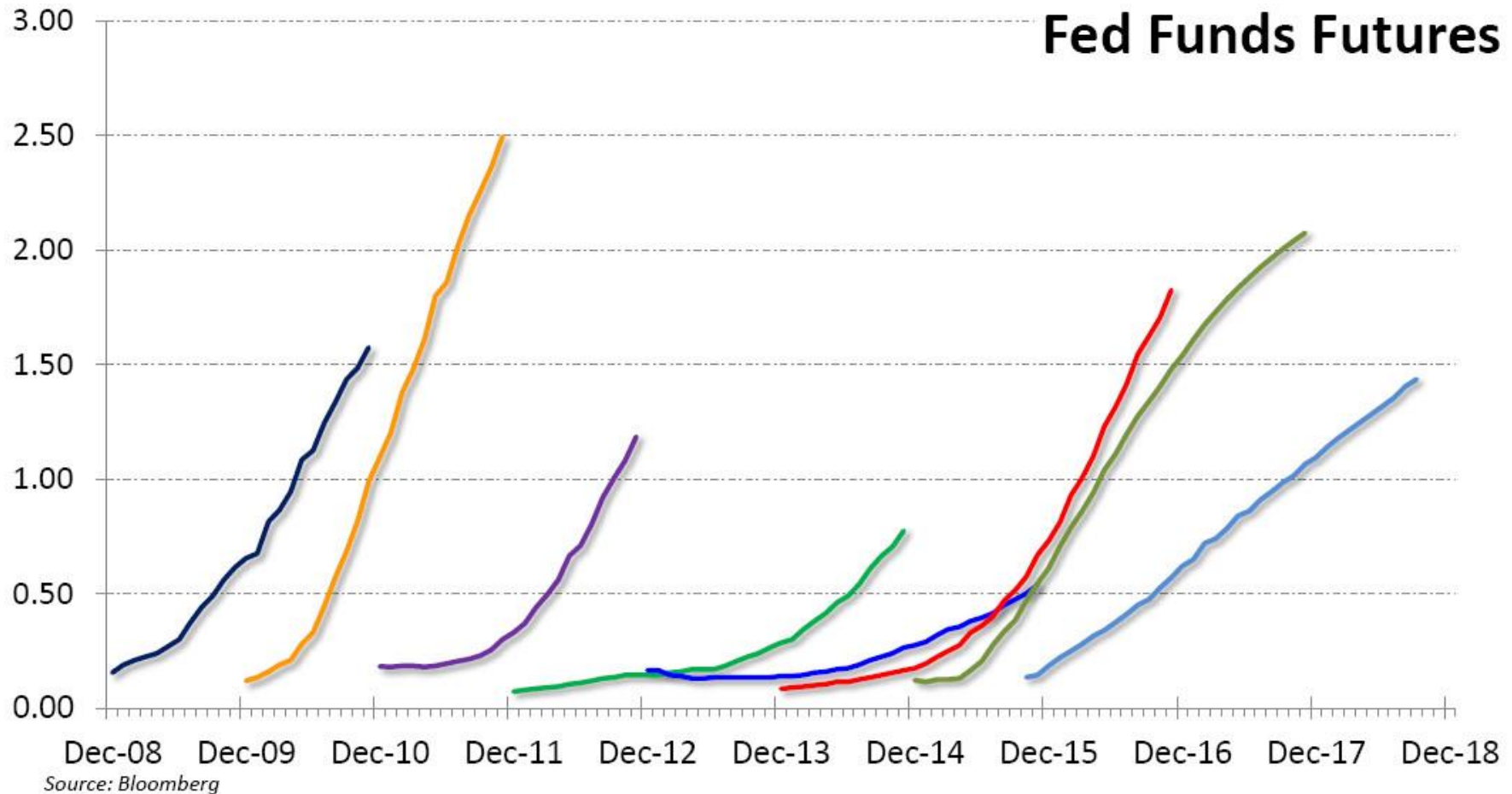
Changes in the Fed Funds Target mimics ramp testir
Gray areas represent recession. Shaded areas
represent periods when CUs are at a competitive
disadvantage relative to MMMFs.

THE FED'S "DOT PLOT" as of MARCH 2016 Exhibit 2



Note: There were 17 Fed members as of March 2016.

FED FUNDS FUTURES (Track Record?)



II. What is risk?

- A. Elroy Dimson of London Business School said *“Risk means more things can happen than will happen.”*
- B. ALM analyses assist CUs in assessing the balance sheet’s Interest Rate Risk (IRR) in hypothetical rate shocks.
 - 1. Assumptions: responsiveness in rate-setting, reinvestment rates, discount rates, prepayments & average maturities of Non-Maturity Deposits (NMDs which are shares, drafts and MMAs).
 - 2. ALM systems should reflect premature withdrawals of CDs, changing prepayments on loans & amortizing investments & behavior of callables depending on direction & severity of shock tests.
 - 3. Hypothetical stress testing on liquidity may include shock tests, future loan volume, deposit outflows, other sources & uses.
 - 4. Assumptions might be reasonable or unreasonable and influence IRR and liquidity stress tests.

C. Jack Brick, President of Brick & Associates said: *“In financial markets analysts often treat what amounts to opinions as scientific facts. We all think we’re objective and highly analytical when in fact everyone is biased. Overconfidence results in people thinking they know more than they know. ALCOs and Boards can be overconfident in assessing risk.”*

- 1. Many factors will make the future different from the past.**
 - a. Changes in regulations, economic and interest rate conditions, competition & pricing strategies affect risk.**
 - b. Historical studies about Non-Maturity Deposits are interesting but...**
 - 1. Future behavior and forces are unknown!**
 - 2. Examiners frequently discourage CUs from using long historical average maturities on NMDs in an NEV analysis.**

3. Jack Brick wrote in Asset-Liability Management: Theory, Practice, Implementation and the Role of Judgment, “There is no uniformity in estimating procedures, nor is there a regulatory safe harbor in making NMD assumptions. Therefore, NEV results can vary considerably from one institution to another even if they have identical balance sheets and IRR.” (Available at www.brickinc.com)
2. John Kenneth Galbraith said: *“There are two classes of forecasters: those who don’t know--and those who don’t know they don’t know.”*
- D. American Banker 6-27-13 article “The Side Effects of Strong Risk Management” by J.V. Rizzi had 8 interesting comments:
 1. *“Sophisticated risk management systems failed banks during the financial crisis...”*
 2. *“...models, like value at risk, neglect the human element inherent in their use. They tend to downplay uncertainty with their mechanical attachment to history. Regulatory efforts reinforce the problem. They have converted risk management into a check-the-box compliance function.”*

3. ***“...risk management success encourages unintended, offsetting risky behavior.”***
 4. ***“...the black boxes became black holes.”***
 5. ***“...it is easy to assume the future will look like the past after an extended period of success.”***
 6. ***“The biggest model risk in banking is incentive compensation. It is hard to see something when you are paid not to see it.”***
 7. ***“Risk is managed by people exercising judgment.”***
 8. ***“Faith in risk management motivates bankers to take more risk than they otherwise assume.”***
- E. IRR can be modeled, measured, and quantified but care is required.**
1. **In a rising rate environment, IRR is caused by liability costs rising faster than asset returns.**

2. Projected NII volatility in shock tests is measured. Study the depths of projected declines in NII and speed of recovery in multi-year Income Simulations.
3. A severe imbalance between assets and liabilities can cause issues in liquidity, income & net worth.
4. Set policy limits for maximum % declines in NII & NEV limits.
5. But avoiding all IRR causes the risk of foregone income.
6. Understand your ALCO's IRR tolerance.
7. To reach for yield and make more interest income, some risk must be accepted. ALM is about tradeoffs.
8. Retired NHL player Wayne Gretzky said *"You miss 100% of the shots that you don't take."*
9. In the book The Little Book of Behavioral Investing, *"When given a number we tend to cling to it, even subconsciously—a trait known as anchoring."*

F. Avoid clinging to ALM results as if they are factual.

- 1. ALM analyses are estimates of results in hypothetical environments and they are assumption-based. What-ifs are important.**
- 2. Howard Marks of Oaktree Capital said *“You can’t predict, you can prepare.”***
- 3. Liquidity Risk is the flip side of the IRR coin and should be estimated as well.**
 - a. If IRR is high in rising rate tests, CU may not be able to sufficiently raise liability rates thus causing outflows.**
 - b. Tight liquidity exacerbates IRR since sufficiently high Rate Sensitivity Factors (RSFs) may be needed on Shares & MMAs. (RSF represents the portion of the shock test that is expected to filter through to a change in the CU’s offering rate.)**

- G. “Sensitivity analyses” can show the IRR impact of changes in strategies.**
- 1. Assumptions that have the most impact on IRR should be studied to determine their reasonableness.**
 - 2. Some examiners ask CUs to reflect in What-Ifs...**
 - a. Double the Rate Sensitivity Factor on Regular Shares;**
 - b. Cut the average maturity on drafts & shares in half (or double the decay rate) in an NEV analysis;**
 - c. Cut discount rates on drafts & shares in half in an NEV analysis.**
 - d. Move a portion of Shares to MMA categories;**
 - e. Value NMDs at par in an NEV analysis. (Understand that this overstates IRR); or**

- III. Unlike risk, and in particular IRR, “uncertainty” cannot be measured, modeled or quantified**
 - A. No dimensions or boundaries of the problem due to unknowns.**
 - 1. No history or observable market response.**
 - 2. Can’t be compared to a past event.**
 - B. Black Swan events are unpredictable with profound & unknowable consequences.**
 - 1. September 11, 2001, a world-changing Black Swan event that caused an immediate spike in uncertainty.**
 - 2. ‘08 Financial Crisis & Great Recession were Black Swan events.**
 - 3. RE crash devastated Commercial RE and housing market for years.**

C. Uncertainty can be caused by a CU's decisions

- 1. A CU decided to forego raising VR HELOC or VR credit card rates when the Prime Rate increased.**
- 2. Will they reprice if Prime increases further? IRR & profitability would be affected.**

D. Largest FIs must perform Stress Tests to understand ability to withstand severe credit risk losses.

E. Concentration Risk increases losses when negative events hit.

F. Uncertainty affects our economy.

- 1. Employers don't want to hire.**
- 2. Loan demand is lower.**

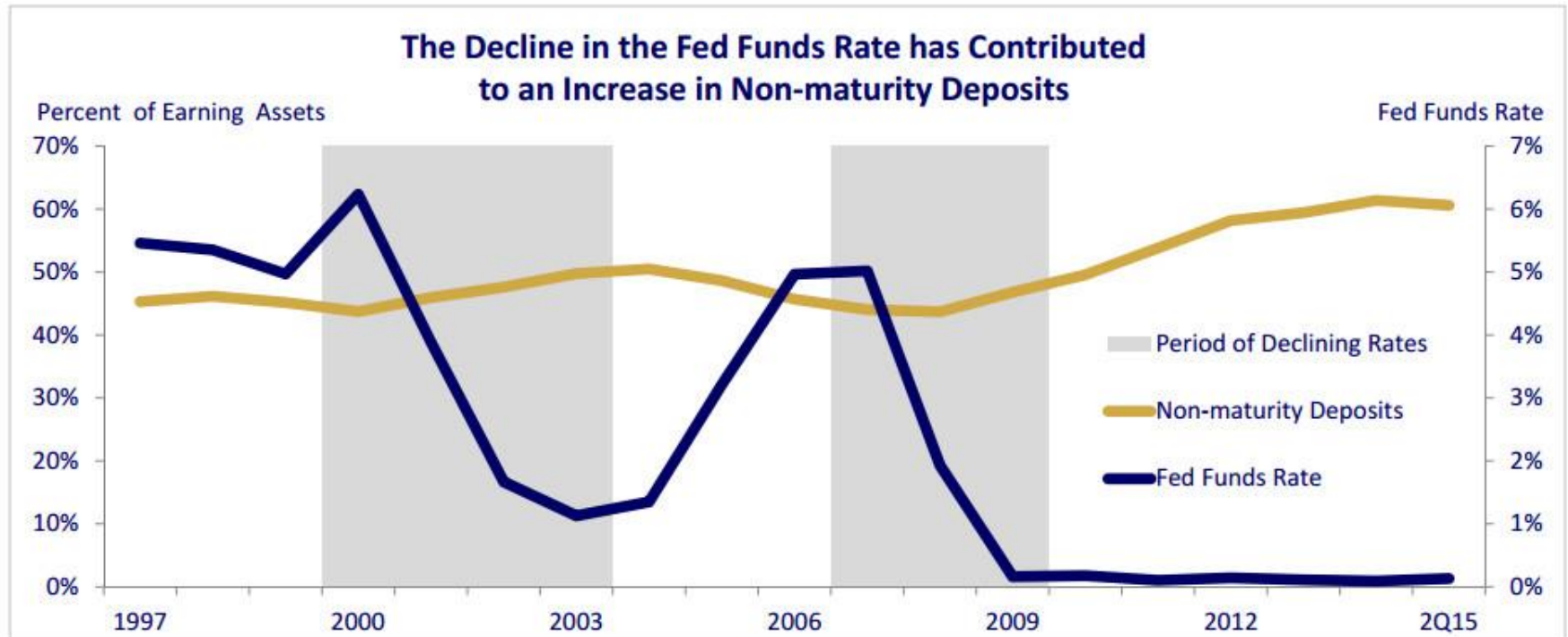
G. Federal Reserve Bank of Kansas City article entitled “The Asymmetric Effects of Uncertainty” by Andrew Foerster:

“Economic theory suggests that when uncertainty increases, firms and consumers postpone their decisions, lowering economic activity. When uncertainty decreases, economic activity may rebound, but not necessarily immediately.”

IV. “Surge Deposits” are complicating risk measurement

- A. Regulators are concerned about surge deposits. These deposits may be very rate sensitive but not modeled as such.**
- B. Since the Financial Crisis, CUs have had strong asset growth caused by flight to safety, loss aversion and near zero rates in Money Market Mutual Funds.**
- C. The book Misbehaving: The Making of Behavioral Economics by Richard Thaler stated: “Investors dislike losses more than they like gains.”**
- D. *Exhibit 4, FDIC GRAPH of SURGE DEPOSITS***

Surge Deposits & Parked Funds



Source: Federal Reserve Board / FDIC.
Based on median figures of all banks under \$1B in assets.

FEDERAL DEPOSIT INSURANCE CORPORATION

- E. Economic downturns bring lower rates and surge deposits.**
- F. \$ came to Main Street rather than Wall Street.**
- G. The more frequently an investor looks at his/her portfolio, there is more of a tendency to become risk averse.**
 - 1. If you look at your portfolio just annually, you tend to be more comfortable with risk.**
 - 2. If CU members looked at portfolio frequently during recession, this could help explain why more shares came into CUs.**
- H. Savers love liquidity and don't like illiquidity.**
- I. Contingency Funding Stress Testing can help assess the impact of severe, hypothetical liquidity events.**

- V. Behavioral Economics brought together Psychologists and reluctant Economists**
 - A. Behavioral Economics considers how humans behave**
 - B. In the Misbehaving book, the author explained that economic theories assume humans behave rationally. Psychologists know this is not the case.**
 - C. In '96, Fed Chair Greenspan said the stock market was exhibiting “irrational exuberance.” This continued until 2000.**
 - D. Behavioral Economics affects decisions.**
 - 1. Loss Aversion causes some CUs to not want to hold any fixed-rate mortgage loans at low rates. Yet some of those CUs hold very long callables that have higher IRR.**
 - 2. Loss Aversion can cause CU to have a fear of fixed-rate investments at low rates. Leads to foregone income.**
 - 3. Loss Aversion leads some CUs to only write loans to high FICO score borrowers.**

- 4. Loss Aversion may be to the CU's advantage in the case of member CDs after interest rates rise. CD holders can pay a penalty, withdraw \$ before maturity and reinvest at higher rates but loss aversion is a powerful deterrent. Paying a penalty is usually thought of as a loss.**
- 5. The Endowment Effect may deter some premature withdrawals of CDs. Humans like to stick with an initial decision.**
- 6. Fear of missing out affects decisions, has negative consequences.**
- 7. Optimism makes risk managers believe saver behavior will be similar to past.**
- 8. Anchoring uses the past to frame what will happen in the future. Leads risk analysts to think savers will behave same in future.**

VI. Conclusion