

**Meeting between Federal Reserve Board Staff
and Representatives of Custody Banks
January 9, 2013**

Participants: Jordan Bleicher, Sean Campbell, Christine Graham, Anna Harrington, Anna Lee Hewko, Molly Mahar, Pam Nardolilli, Rodney Ramcharan, Laurie Schaffer, Steven Spurry, Mark Van der Weide, and Patricia Yeh (Federal Reserve Board)

Michael McAuley and Eli Peterson (BNY Mellon); Kelly Dibble and Kristin Missil (Northern Trust); Joseph Barry, Glenn Horner, Scott Olson, and Kenneth Sax (State Street)

Summary: Staff of the Federal Reserve Board met with representatives of BNY Mellon, Northern Trust, and State Street (collectively, the “Custody Banks”) to discuss the Board’s proposed rule to establish single-counterparty credit limits under section 165(e) of the Dodd-Frank Wall Street Reform and Consumer Protection Act.

The representatives of the Custody Banks discussed their views regarding an alternative approach to the proposed rule’s haircut methodology. In particular, the representatives proposed using “Regulatory VAR” for measuring credit exposure for purposes of the rule implementing section 165(e) as described in the attached presentation.

Attachment

Alternative Approach for DFA 165(e) Regulatory VaR

January 9, 2013

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Regulatory Value at Risk

- Objective of today's discussion is to review an alternative to the proposed haircut approach – "Regulatory Value at Risk"
- Under "Regulatory Value At Risk" the following parameters would need to be specified by regulators:
 - Haircuts (scaled to 5-days)
 - Correlations between positions (loan/collateral combinations and among loan and collateral asset classes)
 - Adjustments for flight to quality
- These parameters could be updated periodically depending on market conditions
- Industry participants would need to apply the haircuts, correlations, and associated adjustments to their portfolio positions to determine the credit exposure for indemnified securities lending transactions

Dodd-Frank Haircuts

- Haircuts based on asset class
- Applied to both loans and collateral
- Correlation between loans and collateral assumed to be -100%
- Correlation within loan or collateral portfolios assumed to be 100%

Asset Class	Haircuts (One-Sided)	Haircuts scaled to 5 day holding period
OECD 0-1 < 1yr	0.50%	0.35%
OECD 0-1 1-5 yr	2.00%	1.41%
OECD 0-1 > 5 yr	4.00%	2.83%
OECD 2-3 < 1yr	1.00%	0.71%
OECD 2-3 1-5 yr	3.00%	2.12%
OECD 2-3 > 5 yr	6.00%	4.24%
Corp/Muni < 1 yr	2.00%	1.41%
Corp/Muni 1-5 yr	6.00%	4.24%
Corp Muni > 5 yr	12.00%	8.49%
Equity	15.00%	10.61%

Example Step 1: Compute Worst-Case Index - Index Correlations

We computed 99% most positive / most negative index - index correlations using the following data and assumptions:

- Approximately 10-year historical index returns (2,450 trading days)
- US Treasury and BB corporate bond indices (1y, 5y,10y)
- Citigroup EMU Government Bond indices (1y , 5y, 10y)
- MSCI US equity index
- 60-trading day rolling window to capture transient correlation spikes

Example Step 2: Compute Worst-Case Security-Index Correlations

We computed 99% most positive / most negative security-index correlations using the following data and assumptions:

- Cross sectional percentiles over 21,000 securities
- 1.5 – 3-month period to match short time horizon of liquidation
- Capture scenario where loaned stocks go up, collateral stocks go down, although mapped to same index

Example Step 3: Combine Above to Obtain Worst-Case Loan Security – Collateral Security Correlations

Example: Lend IBM, Take UST

Corr (IBM, UST) =

Corr (IBM, Equity index) × Corr (Equity index, UST index) × Corr (UST index, UST)

Anti-correlation of loan security and collateral security can happen 4 ways:

- 1/ Loan asset class increases, collateral asset class decreases
Security on loan strongly correlated to its index → Loan Increases
Security on collateral strongly correlated to its index → Collateral Decreases
- 2/ Loan asset class increases, collateral asset class increases
Security on loan strongly correlated to its index → Loan Increases
Security on collateral strongly anti-correlated to its index → Collateral Decreases
- 3/ Loan asset class decreases, collateral asset class increases
Security on loan strongly anti-correlated to its index → Loan Increases
Security on collateral strongly anti-correlated to its index → Collateral Decreases
- 4/ Loan asset class decreases, collateral asset class decreases
Security on loan strongly anti-correlated to its index → Loan Increases
Security on collateral strongly correlated to its index → Collateral Decreases

Example Step 4: Compute Worst-Case Value at Risk

- We used a Variance-Covariance VaR calculation using the prescribed volatilities under DFA 165(e) and the worst case correlations from pages 8 and 12. Asset pairs that are both long or both short would use the highest correlations and long-short combinations would use the lowest correlations
- Calculation example OECD 0-1 1-year vs. Equity
- $\text{Sqrt}(-\text{OECD Vol}^2 + \text{Equity Vol}^2 + 2 * \text{OECD Vol} * \text{Equity Vol} * \text{Correlation})$ (from page 12))
- $\text{Sqrt}(-10.6^2 + 0.4^2 + 2 * -10.6 * 0.4 * -.58) = 10.8\%$
- Based on DFA haircuts but adjusted for loan-collateral offsetting
- Conservative (but replaces unrealistic assumption of -100% correlation by more accurate calibration of loan-collateral correlation)
- The Fed at its discretion could add further granularity by adding haircuts and correlations at more granular index levels (i.e. a different haircut may apply for S&P 500 vs. FTSE 100)

Example Step 5: Compute VaR Assuming Flight to Quality

- Calculate VaR (per page 13) minus the expected return of the portfolio
- Calculation Example #1: OECD 0-1 1-year loan vs. equity collateral

$$10.8\% \text{ (per page 10) - expected return } (-0.2\% + (-4.4\%))$$
$$10.8\% - (4.6\%) = 15.4\%$$

- Calculation Example #2 OECD 0-1 1-year collateral vs. equity loan

$$10.8\% - (0.2\% + 4.4\%) = 6.2\%$$

Example Portfolio Results

- Under Regulatory Haircut approach with 5-day holding period results in a net \$3.195B haircut and a net exposure of \$2.758B
- The proposed VaR method results in a VaR of \$2.349B (73.5% of haircut method) and a net exposure of \$1.911B (69.3% of haircut method)
- The proposed flight to quality adjustment results in a VaR of \$1.625B (50.9% of haircut method) and a net exposure of \$1.188 (43.1% haircut method)
- The direction of the flight to quality adjustment may result in higher net exposures for some loan/collateral portfolios. The example portfolio is weighted to a higher percentage of riskier assets on loan and contains a significant amount of cash collateral