MEMORANDUM

To: Use of Derivatives by Registered Investment Companies and Business Development Companies Proposal File

From: James Maclean
Attorney-Adviser, Division of Investment Management ("IM")

Date: July 8, 2016

Re: Meeting with Representatives of AlphaSimplex Group, LLC ("AlphaSimplex")

On June 30, 2016, Diane Blizzard (Associate Director, IM), Brian McLaughlin Johnson (Senior Special Counsel, IM), Penelope Saltzman (Senior Special Counsel, IM), Roberta Ufford (Senior Special Counsel, IM), Jamie Lynn Walter (Senior Counsel, IM), James Maclean (Attorney-Adviser, IM), Christof Stahel (Assistant Director, Division of Economic and Risk Analysis ("DERA")), John Cook (Senior Special Counsel, DERA) and Yue Tang (Economist, DERA) met with the following representatives of AlphaSimplex:

- Andrew W. Lo (Chairman and Chief Investment Strategist);
- Duncan B.E. Wilkinson (Chief Executive Officer); and
- Christopher J. Dahlberg (Vice President, Compliance).

Among other things, the participants discussed the Commission's proposal relating to the use of derivatives by registered investment companies and business development companies. Information provided by AlphaSimplex in connection with this meeting is set forth in Annex A.

# Annex A

AlphaSimplex

Creating long-term investors in short-term markets

# Use of Derivatives by Registered Investment Companies and Business Development Companies

Proposed Rule 18f-4

# Key Messages

1. It is important to apply some sort of Risk Adjustment to gross notional of derivatives.

2. There are several ways to adjust notional of a derivative to account for risk that we believe could work.

3. Regardless of the approach used, there needs to be a sorting mechanism to separate "concentrated high risk" use of derivatives from "diversifying appropriate risk" use of derivatives. Absolute VaR can be that mechanism.

4. VaR effectiveness can be monitored through actual performance.

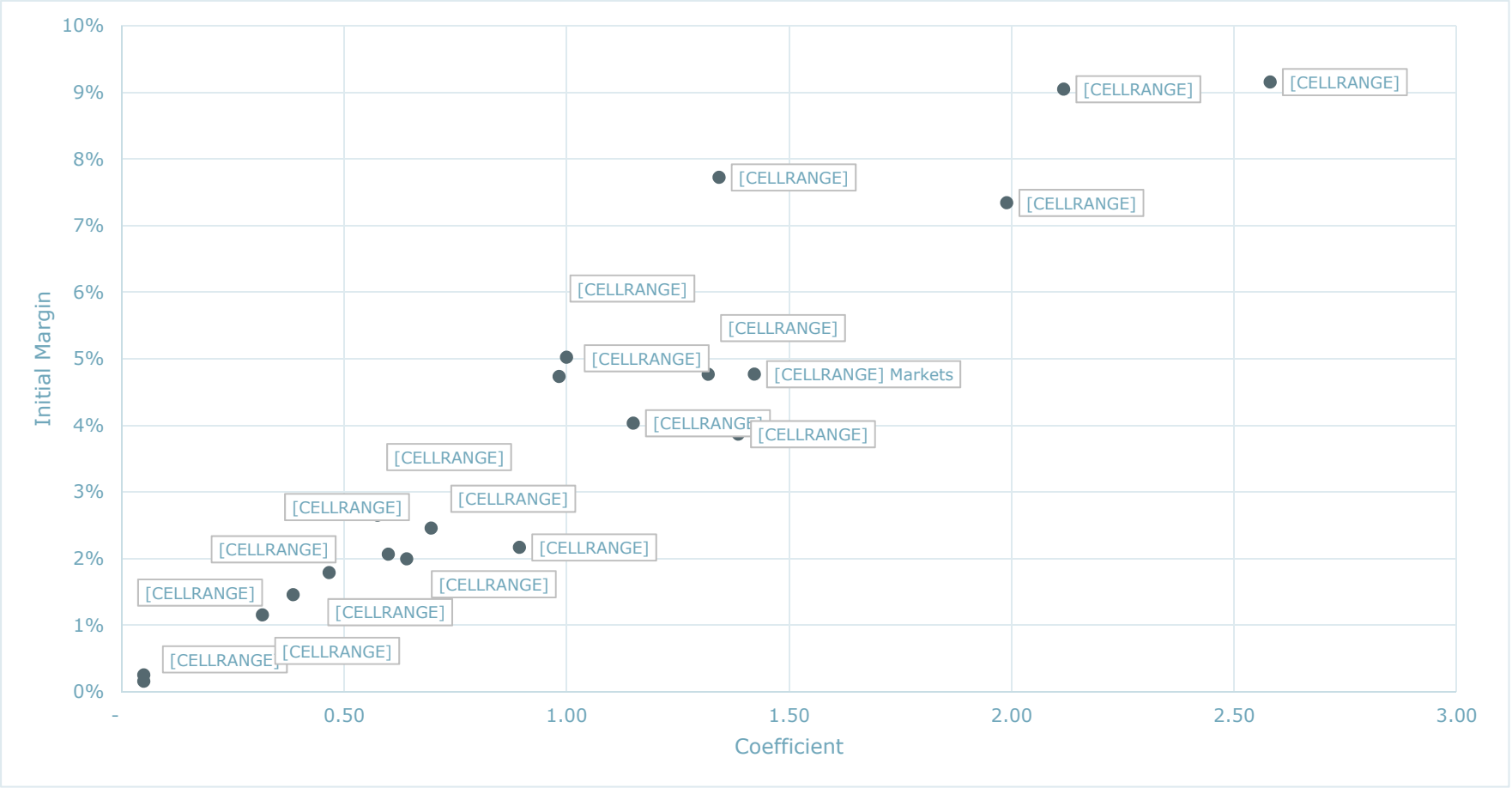
# Three ways to measure risk exposure

- AlphaSimplex risk coefficients
  - Adjust notional either down or up depending on the level of risk, using the S&P as reference point.
  - Key benefit: the approach scales all derivatives against a well known level of risk.

- Margin
  - Bottom-up approach that adjusts for risk.
  - Key benefit: uses existing market rules and infrastructure.

- Risk-adjustment table
  - Top-down approach that categorizes derivatives into categories.
  - Key benefit: grounded in existing regulation, easy to interpret.

# Risk coefficients and margin are correlated




Risk coefficients of various standardized derivatives contracts relative to initial margin requirements as set by exchanges as of December 31, 2015.

# The Role of Absolute VaR

- We believe that any of the ways to adjust notional of a derivative to account for risk could work and would be an important part of the Rule.

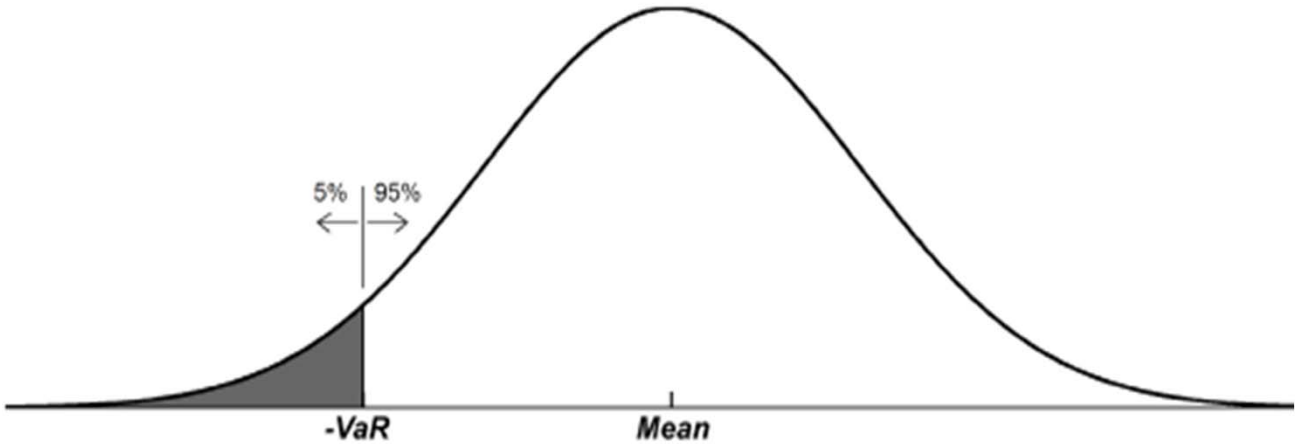
- Regardless of the approach used, there needs to be a sorting mechanism to separate "concentrated high risk" use of derivatives from "diversifying appropriate risk" use of derivatives.
  - I.e., a way to distinguish between the 150% bucket and the 300% bucket.

- Absolute VaR can be that mechanism.

# What is VaR?

- VaR estimates how often, over a specified time period, a specific loss level will be exceeded.

- For example, a 10-day, 10% loss at a 95% confidence interval means that a fund should expect to have a loss of more than 10% over 10 days approximately 5% of the time.



# VaR Example

- Three assets:
  - U.S. Stocks (S&P 500); U.S. Bonds (US 10-Year Note); Natural Gas

- Standalone 95% Value-at-Risk of each asset:
  - U.S. Stocks: Low (less than 5%) Probability of a 10-day loss worse than −5.1% or **−7.6%** (at 150% exposure)
  - U.S. Bonds: Low Probability of a 10-day loss worse than −1.6%, or **−2.5%** (at 150% exposure)
  - Natural Gas: Low Probability of a 10-day loss worse than −13.1% or **−19.6%** (at 150% exposure

- What about a portfolio with 50% stocks + 50% bonds + 50% natural gas?
  - 50-50-50 Portfolio:
    - Naively: 0.5 x **−5.1%** + 0.5 x **−1.6%** + 0.5 x **−13.1%** = **−9.9%**
    - But this assumes 100% correlation; in reality, assets are diversifying (low correlation).
    - Actual 95% VaR: **−6.9%**
    - "Diversification impact": **+3.0%**

VaR was estimated using daily data from 2011 to 2015 with a parametric model assuming normally-distributed returns.

# Is a portfolio of derivatives diversified or concentrated?

- Same three assets:
  - U.S. Stocks (S&P 500); U.S. Bonds (US 10-Year Note); Natural Gas

- Two portfolios
  - Portfolio 1: 200% U.S. Stocks
    - 2 x **−5.1%** + **0%** = **−10.2%**
    - "Diversification impact": **0%**
  - Portfolio 2: 50% Stocks, 100% Bonds, and 50% Natural Gas:
    - 0.5 x **−5.1%** + 1 x **−1.6%** + 0.5 x **−13.1%** + **3.8%** = **−6.9%**
    - "Diversification impact": **+3.8%**

- A VaR cap of 10-day 10% loss at a 95% confidence internal would prevent the concentrated Portfolio 1 (over 150%) while allowing the diversified Portfolio 2 (under 300%).

VaR was estimated using daily data from 2011 to 2015 with a parametric model assuming normally-distributed returns.

# Recommended key VaR assumptions

**Example A**

- Confidence level (95%)
- Loss limit (10%)
- Horizon over which loss is measured (10-day)
- Look back window (5 years)

**Example B**

- Confidence level (99%)
- Loss limit (20%)
- Horizon over which loss is measured (20-day)
- Look back window (5 years)

- With these key assumptions established by the Rule, there would be less opportunity to game the calculation.

- More importantly, there would be a way to monitor using actual performance, not a model.

# Constructing an Effective VaR Test

- If the Commission sets the key parameters, the Loss Limit (e.g. 10%) would be defined, and therefore testable.

- The actual performance of the fund tests the accuracy of the estimation.
  - If fund losses exceed the Loss Limit (e.g. 10%) at a higher rate than estimated by the VaR model it would be a red flag to the fund's risk manager, CCO and board that the VaR model may not be reflecting market conditions (an example would be during a crisis period).

- In fact the Commission could set up an automated monitoring system of actual performance and the SEC analytic teams could identify "bad actors" who may be attempting to game VaR to exceed the cap.

# Conclusion

- It is important to apply some sort of Risk Adjustment to gross notional of derivatives.

- There are several ways to adjust notional of a derivative to account for risk that we believe could work.

- Regardless of the approach used, there needs to be a sorting mechanism to separate "concentrated high risk" use of derivatives from "diversifying appropriate risk" use of derivatives. Absolute VaR can be that mechanism.