

SECURITIES AND EXCHANGE COMMISSION  
(Release No. 34-71945; File No. SR-NSCC-2014-802)

April 15, 2014

Self-Regulatory Organizations; National Securities Clearing Corporation; Notice of Filing of Advance Notice to Enhance NSCC's Existing Parametric Value-at-Risk Margining Model

Pursuant to Section 806(e)(1) of the Payment, Clearing, and Settlement Supervision Act of 2010 ("Clearing Supervision Act")<sup>1</sup> and Rule 19b-4(n)(1)(i)<sup>2</sup> thereunder, notice is hereby given that on March 28, 2014, National Securities Clearing Corporation ("NSCC") filed with the Securities and Exchange Commission ("Commission") advance notice SR-NSCC-2014-802 ("Advance Notice") as described in Item I, II and III below, which Items have been prepared primarily by NSCC. The Commission is publishing this notice to solicit comments on the Advance Notice from interested persons.

I. Clearing Agency's Statement of the Terms of Substance of the Advance Notice

The Advance Notice is filed by NSCC in connection with a proposed adjustment to NSCC's existing parametric Value-at-Risk ("VaR") margining model, as more fully described below.

II. Clearing Agency's Statement of the Purpose of, and Statutory Basis for, the Advance Notice

In its filing with the Commission, NSCC included statements concerning the purpose of and basis for the Advance Notice and discussed any comments it received on the Advance Notice. The text of these statements may be examined at the places specified in Item IV below.

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<sup>1</sup> 12 U.S.C. 5465(e)(1).

<sup>2</sup> 17 CFR 240.19b-4(n)(i).

NSCC has prepared summaries, set forth in sections (A), (B), and (C) below, of the most significant aspects of such statements.

(A) Clearing Agency's Statement of the Purpose of, and Statutory Basis for, the Advance Notice

1. Purpose

In connection with its on-going assessment of the performance of its margining models, NSCC is proposing to enhance its existing parametric VaR model by supplementing the assumption of normal distribution underlying the current model with a family of Student's t-distributions. Currently, NSCC's parametric VaR methodology is based on the assumption that the underlying securities portfolio return distribution is normal. In an effort to enhance its parametric VaR model, NSCC has reviewed prevalent academic research and data analyses which show that the empirical distributions of securities portfolio returns in the equities markets have "fatter tails" than what the normal distribution implies, and VaR margin computed based only on the normality assumption may underestimate the tail risk that is observed during market volatility ("fat-tail" risk).

NSCC has evaluated a number of possible approaches to enhance its parametric VaR model in order to better accommodate fat-tail risks, and is proposing to apply an approach that is most appropriate for NSCC and its circumstances. As such, the proposed enhancement would utilize NSCC's existing parametric VaR model, and would supplement the normal distribution underlying the model with a factor that utilizes the degrees of freedom ("DOF") derived from a family of Student's t-distributions. The factor will help adjust the normal-based VaR model to better reflect the distribution of actual observed historical returns. Further, the existing normal distribution in the parametric VaR model will operate as a floor to the proposed adjustments.

## 2. Statutory Basis

The proposed change is being filed pursuant to Section 806(e)(1) of the Clearing Supervision Act, and is consistent with Rule 17Ad-22(b)(2), promulgated thereunder, which requires a registered clearing agency to “use margin requirements to limit its credit exposures to participants under normal market conditions and use risk-based models and parameters to set margin requirements.”<sup>3</sup> Specifically, the adjustment is expected to allow NSCC’s parametric VaR model to remain above its 99% coverage target during market volatility, and to more appropriately calculate and collect margin, which better enables NSCC to respond in the event that a Member defaults and minimizes potential losses to NSCC and its non-defaulting Members. As such, NSCC believes that the proposal promotes robust risk management and the safety and soundness of NSCC’s operations, which reduce systemic risk and support the stability of the broader financial system, consistent with the requirements of Rule 17Ad-22(b)(2), cited above.

### (B) Clearing Agency’s Statement on Comments on the Advance Notice Received from Members, Participants, or Others

In November 2013, NSCC distributed a White Paper to its Members that described the proposed enhancement to the parametric VaR model and the results of an impact study showing the potential impact of this proposal on Members’ Clearing Fund required deposits. NSCC did not receive any written comments relating to the enhancement to the parametric VaR model in response to this White Paper. NSCC will notify the Commission of any written comments received by NSCC.

### (C) Advance Notice Filed Pursuant to Section 806(e) of the Payment, Clearing and Settlement Supervision Act

#### 1. Description of Change

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<sup>3</sup> 17 CFR 240.17Ad-22(b)(2).

(i) Overview

A primary objective of NSCC's Clearing Fund is to have on deposit from each applicable Member assets sufficient to satisfy losses that may otherwise be incurred by NSCC as the result of the default of the Member and the resultant close out of that Member's unsettled positions under NSCC's trade guaranty. Each Member's Clearing Fund required deposit is calculated daily pursuant to a formula set forth in Procedure XV of the NSCC's Rules and Procedures ("Rules") designed to provide sufficient funds to cover this risk of loss. The Clearing Fund formula accounts for a variety of risk factors through the application of a number of components, each described in Procedure XV. The VaR component is a core component of this formula and is designed to calculate the amount of money that may be lost on a portfolio over a given period of time assumed necessary to liquidate the portfolio, within a given level of confidence.

Parametric VaR models utilized in the equities markets have historically computed risk on the assumption that the underlying securities portfolio return distribution is normal. The increased frequency of market volatility in recent years has stressed the performance of parametric VaR models throughout the financial services industry. Analyses of these events and VaR models have shown that "fat-tail" risk may not be properly addressed by parametric VaR models that are based only on the normal distribution assumption. As such, it has become market practice to move away from the use of normal distribution assumptions in parametric VaR models and to instead use distributions, such as Student's t-distributions, that better accommodate these fat-tail risk events.

NSCC conducts back tests to measure the performance of Members' portfolios against the calculated VaR margin requirements for those portfolios. Over the past few years, these back tests have shown that, while NSCC's VaR margin component has remained mostly above its

99% coverage target when tested over a longer time horizon (a 12-month rolling window), coverage fell below the 99% target in a few instances in which back tests were conducted over shorter time frames (1-month windows). Therefore, and in connection with its on-going assessment of the performance of its margining models, NSCC has evaluated various possible approaches to enhance its parametric VaR model, and is proposing to apply an approach that incorporates Student's t-distributions into that model in a way that is appropriate for NSCC and its circumstances.

The proposal would enhance NSCC's existing parametric VaR model, which is used as part of the calculation of the VaR component, by supplementing the assumption of normal distribution underlying the current model with a factor that utilizes the DOF derived from a family of Student's t-distributions. The proposal is expected to improve NSCC's back-testing performance over shorter time horizons, particularly during more volatile market environments, and should enable the model to better account for the higher degree of fat-tail risk observed in equities markets.

(ii) Adjustment to Existing Parametric VaR Model

The proposed enhancement would utilize NSCC's current parametric VaR model, and would supplement the current normal distribution underlying the parametric VaR model with a factor that utilizes the DOF derived from a family of Student's t-distributions, which are more representative of the historically observed distributions in the equities markets. The Student's t-distributions would introduce an additional statistical parameter, the DOF factor, to the model. Following this enhancement, NSCC would estimate the DOF factor of the empirical t-distribution in the model periodically by using daily return data from the S&P 500 over a historical window no shorter than 12-months. NSCC would then compute a multiplication factor

that represents the magnitude of increase of t-distribution-based parametric VaR from the normal-based parametric VaR. This multiplication factor would be applied to Members' VaR margin requirement.

NSCC has considered various alternatives to enhance its parametric VaR model, and its internal studies have shown that this proposed enhancement is an appropriate approach to addressing tail risks at NSCC, and may be a more effective enhancement to the model than other possible adjustments, including the augmented volatility model (AVM), which NSCC has also considered. In 2012, NSCC designed AVM to protect NSCC from elevated levels of volatility that were not captured in historical data by incorporating the CBOE VIX, a forward-looking measure of volatility, into the model. While both this proposal and AVM would improve NSCC's ability to meet its back-testing coverage target, the proposed enhancement to NSCC's parametric VaR model described in this filing is expected to be a more stable adjustment to Members' VaR margin components than AVM, while still improving the model's back-test performances.

## 2. Anticipated Effect on and Management of Risks

NSCC believes that the proposed enhancement to its current parametric VaR model would improve NSCC's risk management by enabling the model to remain above its 99% coverage target during market volatility, and to more appropriately calculate and collect margin, which better enables NSCC to respond in the event that a Member defaults. Further, incorporation of the DOF factor into NSCC's existing parametric VaR model should more accurately capture the fat-tail characteristics of stock market return distributions.

Additionally, NSCC has conducted extended outreach with its Members regarding the proposed enhancement, describing the proposed change, the reasoning for the change, and the

potential impact of the change – both the expected impact on Members’ Clearing Fund required deposits as well as the improvement to NSCC’s risk management. This outreach included the publication of a White Paper to impacted Members in November 2013 as well as individual outreach to Members to discuss the results of impact studies. The proposed enhancement is expected to have a relatively low impact on Members’ VaR margin components and thus a minimal impact on Members’ overall Clearing Fund required deposits. NSCC did not receive any objections to the proposed change from Members in response to this outreach.

NSCC believes that the proposed change should allow it to collect margin that covers to a greater degree of certainty the risk that it may face during market volatility or even extreme market environments. While this change would impact NSCC’s Members’ Clearing Fund requirements, as stated above, NSCC’s Members are aware of the proposed change and the potential impact on their Clearing Fund required deposits. Further, prior to implementation of the proposed changes, NSCC will run a parallel period during which Members would be able to further review the possible impact.

### III. Date of Effectiveness of the Advance Notice, and Timing for Commission Action

The proposed change may be implemented if the Commission does not object to the proposed change within 60 days of the later of (i) the date that the proposed change was filed with the Commission or (ii) the date that any additional information requested by the Commission is received. NSCC shall not implement the proposed change if the Commission has any objection to the proposed change.

The Commission may extend the period for review by an additional 60 days if the proposed change raises novel or complex issues, subject to the Commission or the Board of Governors of the Federal Reserve System providing NSCC with prompt written notice of the

extension. A proposed change may be implemented in less than 60 days from the date the advance notice is filed, or the date further information requested by the Commission is received, if the Commission notifies NSCC in writing that it does not object to the proposed change and authorizes NSCC to implement the proposed change on an earlier date, subject to any conditions imposed by the Commission.

NSCC shall post notice on its website of proposed changes that are implemented.

#### IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the Advance Notice is consistent with the Clearing Supervision Act. Comments may be submitted by any of the following methods:

##### Electronic Comments:

- Use the Commission's Internet comment form (<http://www.sec.gov/rules/sro.shtml>); or
- Send an e-mail to [rule-comments@sec.gov](mailto:rule-comments@sec.gov). Please include File No. SR-NSCC-2014-802 on the subject line.

##### Paper Comments:

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street, NE, Washington, DC 20549-1090.

All submissions should refer to File No. SR-NSCC-2014-802. This file number should be included on the subject line if e-mail is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet website (<http://www.sec.gov/rules/sro.shtml>). Copies of the submission, all subsequent amendments, all written statements with respect to the Advance Notice that are filed with the Commission, and all written communications relating to



the Advance Notice between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street, NE, Washington, DC 20549, on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of the filing also will be available for inspection and copying at the principal office of NSCC and on NSCC's website (<http://dtcc.com/legal/sec-rule-filings.aspx>). All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File No. SR-NSCC-2014-802 and should be submitted on or before [insert date 21 days from publication in the Federal Register].

By the Commission.

Kevin M. O'Neill  
Deputy Secretary