

Required fields are shown with yellow backgrounds and asterisks.

Filing by Options Clearing Corporation
Pursuant to Rule 19b-4 under the Securities Exchange Act of 1934

Initial *	Amendment *	Withdrawal	Section 19(b)(2) *	Section 19(b)(3)(A) *	Section 19(b)(3)(B) *
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pilot <input type="checkbox"/>			Rule		
Extension of Time Period for Commission Action * <input type="checkbox"/>		Date Expires * <input type="text"/>	<input type="checkbox"/> 19b-4(f)(1)	<input type="checkbox"/> 19b-4(f)(4)	
			<input type="checkbox"/> 19b-4(f)(2)	<input type="checkbox"/> 19b-4(f)(5)	
			<input type="checkbox"/> 19b-4(f)(3)	<input type="checkbox"/> 19b-4(f)(6)	

Notice of proposed change pursuant to the Payment, Clearing, and Settlement Act of 2010	Security-Based Swap Submission pursuant to the Securities Exchange Act of 1934
Section 806(e)(1) * <input checked="" type="checkbox"/>	Section 806(e)(2) * <input type="checkbox"/>
	Section 3C(b)(2) * <input type="checkbox"/>

Exhibit 2 Sent As Paper Document <input type="checkbox"/>	Exhibit 3 Sent As Paper Document <input type="checkbox"/>
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Description

Provide a brief description of the action (limit 250 characters, required when Initial is checked *).

Advance Notice filing by The Options Clearing Corporation concerning its margin methodology for Volatility Index Futures.

Contact Information

Provide the name, telephone number, and e-mail address of the person on the staff of the self-regulatory organization prepared to respond to questions and comments on the action.

First Name * Justin	Last Name * Byrne
Title * Vice President, Regulatory Filings	
E-mail * jbyrne@theocc.com	
Telephone * (202) 971-7238	Fax (312) 322-6280

Signature

Pursuant to the requirements of the Securities Exchange Act of 1934,

has duly caused this filing to be signed on its behalf by the undersigned thereunto duly authorized.

(Title *)

Date 03/18/2019	Vice President, Regulatory Filings
By Justin W. Byrne	
(Name *)	

Justin Byrne, jbyrne@theocc.com

NOTE: Clicking the button at right will digitally sign and lock this form. A digital signature is as legally binding as a physical signature, and once signed, this form cannot be changed.

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

For complete Form 19b-4 instructions please refer to the EFFF website.

Form 19b-4 Information *

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The self-regulatory organization must provide all required information, presented in a clear and comprehensible manner, to enable the public to provide meaningful comment on the proposal and for the Commission to determine whether the proposal is consistent with the Act and applicable rules and regulations under the Act.

Exhibit 1 - Notice of Proposed Rule Change *

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The Notice section of this Form 19b-4 must comply with the guidelines for publication in the Federal Register as well as any requirements for electronic filing as published by the Commission (if applicable). The Office of the Federal Register (OFR) offers guidance on Federal Register publication requirements in the Federal Register Document Drafting Handbook, October 1998 Revision. For example, all references to the federal securities laws must include the corresponding cite to the United States Code in a footnote. All references to SEC rules must include the corresponding cite to the Code of Federal Regulations in a footnote. All references to Securities Exchange Act Releases must include the release number, release date, Federal Register cite, Federal Register date, and corresponding file number (e.g., SR-[SRO]-xx-xx). A material failure to comply with these guidelines will result in the proposed rule change being deemed not properly filed. See also Rule 0-3 under the Act (17 CFR 240.0-3)

Exhibit 1A- Notice of Proposed Rule Change, Security-Based Swap Submission, or Advance Notice by Clearing Agencies *

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The Notice section of this Form 19b-4 must comply with the guidelines for publication in the Federal Register as well as any requirements for electronic filing as published by the Commission (if applicable). The Office of the Federal Register (OFR) offers guidance on Federal Register publication requirements in the Federal Register Document Drafting Handbook, October 1998 Revision. For example, all references to the federal securities laws must include the corresponding cite to the United States Code in a footnote. All references to SEC rules must include the corresponding cite to the Code of Federal Regulations in a footnote. All references to Securities Exchange Act Releases must include the release number, release date, Federal Register cite, Federal Register date, and corresponding file number (e.g., SR-[SRO]-xx-xx). A material failure to comply with these guidelines will result in the proposed rule change, security-based swap submission, or advance notice being deemed not properly filed. See also Rule 0-3 under the Act (17 CFR 240.0-3)

Exhibit 2 - Notices, Written Comments, Transcripts, Other Communications

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Exhibit Sent As Paper Document

Copies of notices, written comments, transcripts, other communications. If such documents cannot be filed electronically in accordance with Instruction F, they shall be filed in accordance with Instruction G.

Exhibit 3 - Form, Report, or Questionnaire

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Exhibit Sent As Paper Document

Copies of any form, report, or questionnaire that the self-regulatory organization proposes to use to help implement or operate the proposed rule change, or that is referred to by the proposed rule change.

Exhibit 4 - Marked Copies

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The full text shall be marked, in any convenient manner, to indicate additions to and deletions from the immediately preceding filing. The purpose of Exhibit 4 is to permit the staff to identify immediately the changes made from the text of the rule with which it has been working.

Exhibit 5 - Proposed Rule Text

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The self-regulatory organization may choose to attach as Exhibit 5 proposed changes to rule text in place of providing it in Item I and which may otherwise be more easily readable if provided separately from Form 19b-4. Exhibit 5 shall be considered part of the proposed rule change.

Partial Amendment

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If the self-regulatory organization is amending only part of the text of a lengthy proposed rule change, it may, with the Commission's permission, file only those portions of the text of the proposed rule change in which changes are being made if the filing (i.e. partial amendment) is clearly understandable on its face. Such partial amendment shall be clearly identified and marked to show deletions and additions.

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 19b-4

Advance Notice
by

THE OPTIONS CLEARING CORPORATION

Pursuant to Rule 19b-4 under the
Securities Exchange Act of 1934

Item 1. Text of the Advance Notice

In accordance with Section 806(e)(1) of Title VIII of the Dodd-Frank Wall Street Reform and Consumer Protection Act, entitled Payment, Clearing, and Settlement Supervision Act of 2010 (“Clearing Supervision Act”),¹ and Rule 19b-4(n)(i)² of the Securities Exchange Act of 1934 (“Exchange Act” or “Act”),³ this advance notice is filed by The Options Clearing Corporation (“OCC”) in connection with proposed changes to OCC’s margin methodology for futures on indexes designed to measure volatilities implied by prices of options on a particular underlying interest (such indexes being “Volatility Indexes,” and futures contracts on such Volatility Indexes being “Volatility Index Futures”). The proposed methodology enhancements for Volatility Index Futures would include: (1) introducing “synthetic” futures (discussed below) into the daily re-estimation of prices and correlations for Volatility Index Futures; (2) an enhanced statistical distribution for modeling price returns of the “synthetic” futures; and (3) a new anti-procyclical floor for variance estimates. The proposed changes are discussed in detail in Item 10 below.

The proposed changes to OCC’s Margins Methodology document are contained in confidential Exhibit 5 of the filing. Material proposed to be added is marked by underlining and material proposed to be deleted is marked by strikethrough text. OCC also has included backtesting and impact analysis of the proposed model changes in confidential Exhibit 3. All terms with initial capitalization that are not otherwise defined herein have the same meaning as

¹ 12 U.S.C. 5465(e)(1).

² 17 CFR 240.19b-4(n)(1)(i).

³ 15 U.S.C. 78a et seq.

set forth in the OCC By-Laws and Rules.⁴

Item 2. Procedures of the Self-Regulatory Organization

The advance notice was approved for filing with the Commission by the Board of Directors of OCC at a meeting held on March 6, 2014.

Questions should be addressed to Justin Byrne, Vice President, Regulatory Filings, at (202) 971-7238.

Item 3. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

Not applicable.

Item 4. Self-Regulatory Organization's Statement on Burden on Competition

Not applicable.

Item 5. Self-Regulatory Organization's Statement on Comments on the Advance Notice Received from Members, Participants or Others

Written comments were not and are not intended to be solicited with respect to the proposed change and none have been received.

Item 6. Extension of Time Period for Commission Action

Not applicable.

Item 7. Basis for Summary Effectiveness Pursuant to Section 19(b)(3) or for Accelerated Effectiveness Pursuant to Section 19(b)(2) or Section 19(b)(7)(D)

Not applicable.

Item 8. Advance Notice Based on Rule of Another Self-Regulatory Organization or of the Commission

Not applicable.

⁴ OCC's By-Laws and Rules can be found on OCC's public website: <http://optionsclearing.com/about/publications/bylaws.jsp>.

Item 9. Security-Based Swap Submissions Filed Pursuant to Section 3C of the Act

Not applicable.

Item 10. Advance Notices Filed Pursuant to Section 806(e) of the Payment, Clearing and Settlement Supervision Act**Description of the Proposed Change**

The purpose of the proposed changes is to introduce enhancements to OCC's margin methodology for Volatility Index Futures so that OCC's margin model reflects more current market information for Volatility Index Futures and allows for more appropriate modeling of the risk attributes of such products. Specifically, the proposed methodology enhancements for Volatility Index Futures would include: (1) introducing "synthetic" futures into the process for daily re-estimation of prices and correlations for Volatility Index Futures; (2) an enhanced statistical distribution for modeling price returns for "synthetic" futures; and (3) a new anti-procyclical floor for variance estimates. OCC's current model for Volatility Index Futures and the proposed changes thereto are described in further detail below.

Background

OCC's margin methodology, the System for Theoretical Analysis and Numerical Simulations ("STANS"),⁵ is OCC's proprietary risk management system that calculates Clearing Member margin requirements. STANS utilizes large-scale Monte Carlo simulations to forecast price and volatility movements in determining a Clearing Member's margin requirement.⁶ The STANS margin requirement is calculated at the portfolio level of Clearing Member accounts

⁵ See Securities Exchange Act Release No. 53322 (February 15, 2006), 71 FR 9403 (February 23, 2006) (SR-OCC-2004-20).

⁶ See OCC Rule 601.

with positions in marginable securities. The STANS margin requirement consists of an estimate of a 99% expected shortfall⁷ over a two-day time horizon and an add-on margin charge for model risk (the concentration/dependence stress test charge).⁸ The STANS methodology is used to measure the exposure of portfolios of options, futures and cash instruments, including the Volatility Index Futures cleared by OCC.⁹

Volatility Indexes are indexes designed to measure the volatility that is implied by the prices of options on a particular reference index or asset. For example, the Cboe Volatility Index (“VIX”) is an index designed to measure the 30-day expected volatility of the Standard & Poor’s

⁷ The expected shortfall component is established as the estimated average of potential losses higher than the 99% value at risk threshold. The term “value at risk” or “VaR” refers to a statistical technique that, generally speaking, is used in risk management to measure the potential risk of loss for a given set of assets over a particular time horizon.

⁸ A detailed description of the STANS methodology is available at <http://optionsclearing.com/risk-management/margins/>.

⁹ Pursuant to OCC Rule 601(e)(1), OCC also calculates initial margin requirements for segregated futures accounts on a gross basis using the Standard Portfolio Analysis of Risk Margin Calculation System (“SPAN”). Commodity Futures Trading Commission (“CFTC”) Rule 39.13(g)(8), requires, in relevant part, that derivatives clearing organizations (“DCOs”) collect initial margin for customer segregated futures accounts on a gross basis. While OCC uses SPAN to calculate initial margin requirements for segregated futures accounts on a gross basis, OCC believes that margin requirements calculated on a net basis (i.e., permitting offsets between different customers’ positions held by a Clearing Member in a segregated futures account using STANS) affords OCC additional protections at the clearinghouse level against risks associated with liquidating a Clearing Member’s segregated futures account. As a result, OCC calculates margin requirements for segregated futures accounts using both SPAN on a gross basis and STANS on a net basis, and if at any time OCC staff observes a segregated futures account where initial margin calculated pursuant to STANS on a net basis exceeds the initial margin calculated pursuant to SPAN on a gross basis, OCC collateralizes this risk exposure by applying an additional margin charge in the amount of such difference to the account. See Securities Exchange Act Release No. 72331 (June 5, 2014), 79 FR 33607 (June 11, 2014) (SR-OCC-2014-13).

500 index (“SPX”).¹⁰ OCC currently clears futures contracts on such Volatility Indexes. These Volatility Index Futures contracts can consequently be viewed as an indication of the market’s future expectations of the volatility of a given Volatility Index’s underlying reference index (e.g., in the case of the VIX, providing a snapshot of the expected market volatility of the underlying over the term of the options making up the index).

Current Model for Volatility Index Futures

Under OCC’s existing margin methodology, OCC models the potential final settlement prices of Volatility Index Futures using the underlying index as the risk factor.¹¹ Final settlement prices are simulated under the assumption that the logarithm of the values of the risk factor (i.e., the underlying spot Volatility Index) follows a mean-reverting¹² random walk¹³ with normally-distributed steps.¹⁴ The model is designed to calibrate the distribution that defines this

¹⁰ Generally speaking, the implied volatility of an option is a measure of the expected future volatility of the value of the option’s annualized standard deviation of the price of the underlying security, index, or future at exercise, which is reflected in the current option premium in the market. Using the Black-Scholes options pricing model, the implied volatility is the standard deviation of the underlying asset price necessary to arrive at the market price of an option of a given strike, time to maturity, underlying asset price and given the current risk-free rate. In effect, the implied volatility is responsible for that portion of the premium that cannot be explained by the then-current intrinsic value (i.e., the difference between the price of the underlying and the exercise price of the option) of the option, discounted to reflect its time value.

¹¹ A “risk factor” within OCC’s margin system may be defined as a product or attribute whose historical data is used to estimate and simulate the risk for an associated product.

¹² In finance, the term “mean reversion” describes a financial time series in which returns can be very unstable in the short run but very stable in the long run.

¹³ A random walk is a continuous process with random increments drawn independently from a particular distribution.

¹⁴ This is known as a Gaussian Ornstein-Uhlenbeck process. See Uhlenbeck, G. E. and L.S. Ornstein, “On the Theory of Brownian Motion,” Physical Review, 36, 823-841 (1930) (explaining the Gaussian Ornstein-Uhlenbeck process).

mean-reversion behavior so that the expected final settlement prices of the futures match their currently-observed market prices to ensure that margin coverage is sufficient to limit credit exposures to OCC's participants under normal market conditions. OCC recalculates the Monte Carlo scenarios of the returns of each futures series over its remaining life so that the standard deviation of the scenarios matches two days' worth of the implied volatility of near-the-money and contemporaneously expiring options on the Volatility Index, where available, in order to align with OCC's two-day liquidation period assumption. Currently, the calibration for the distribution is performed on a daily basis.

OCC's current model for Volatility Index Futures, which utilizes the underlying Volatility Index as the sole risk factor, is subject to certain limitations, which would be addressed by the proposed changes described herein. Volatility Indexes, unlike futures contracts, are not investible (i.e., they cannot be replicated by static portfolios of traded contracts). In addition, the futures market has a term structure that cannot be modeled using just the underlying index. Finally, futures on a Volatility Index are less volatile and less fat-tailed¹⁵ than the index itself, and these features are term-dependent. The current model was developed before sufficient data on the futures was available, so a model based on "synthetic" futures,¹⁶ as proposed herein, was not an option at the time. Also, the current model does not account for certain strategies Clearing Members might employ involving spreads between delivery dates, which may result in

¹⁵ A data set with a "fat tail" is one in which extreme price returns have a higher probability of occurrence than would be the case in a normal distribution.

¹⁶ As discussed in further detail below, a "synthetic" futures time series, for the intended purposes of OCC, relates to a uniform substitute for a time series of daily settlement prices for actual futures contracts, which persists over many expiration cycles and thus can be used as a basis for econometric analysis.

under-margining of those positions.

In recent years, OCC has seen significant growth in trading volume for Volatility Index Futures. As a result, OCC is proposing a number of enhancements to its margin methodology designed to provide for more accurate and responsive margin requirements for Volatility Index Futures.

Proposed Changes

The purpose of the proposed changes is to introduce enhancements to OCC's margin methodology so that OCC's margin models reflect more current market information for Volatility Index Futures, introduce asymmetry into the statistical distribution used to model price returns of the "synthetic" futures, and reduce procyclicality¹⁷ in the model.

The proposed changes would specifically include: (1) the daily re-estimation of prices and correlations using "synthetic" futures; (2) an enhanced statistical distribution for modeling price returns for "synthetic" futures; and (3) a new anti-procyclical floor for variance estimates.¹⁸ The main feature of the proposed model, relative to the current model, is the replacement of the underlying Volatility Index itself as a risk factor by risk factors that are based on observed futures prices (i.e., the "synthetic" futures contracts). The proposed change would introduce a new set of risk factors and method for generating scenarios for those risk factors, and hence

¹⁷ A quality that is positively correlated with the overall state of the market is deemed to be "procyclical." For example, procyclicality may be evidenced by increasing margin or Clearing Fund requirements in times of stressed market conditions and low margin or Clearing Fund requirements when markets are calm. Hence, anti-procyclical features in a model are measures intended to prevent risk-based models from fluctuating too drastically in response to changing market conditions.

¹⁸ OCC would also make a number of conforming changes throughout its Margins Methodology so that the document accurately reflects the adoption of the new model.

Volatility Index Futures settlement prices, to be incorporated into the STANS margin calculations. OCC believes its proposed methodology would provide for more accurate and responsive margin requirements and that the imposition of a floor for variance estimates would mitigate procyclicality in OCC's margin methodology for Volatility Index Futures. The proposed changes are described in further detail below.

1. Daily Re-Estimations Using Synthetic Futures

As noted above, OCC currently models the potential final settlement prices of Volatility Index Futures based on the underlying index itself. OCC proposes to modify its modeling approach for Volatility Index Futures by modeling the price distributions of "synthetic" futures on a daily basis based on the historical returns of futures contracts with approximately the same tenor (as opposed to OCC's current approach of calibrating the distribution based on the Volatility Index itself). A "synthetic" futures time series for the intended purposes of OCC relates to a uniform substitute for a time series of daily settlement prices for actual futures contracts, which persists over many expiration cycles and thus can be used as a basis for econometric analysis. One feature of futures contracts is that each contract may have a different expiration date, and at any one point in time there may be a variety of futures contracts on the same underlying interest, all with varying dates of expiry, so that there is no one continuous time series for those futures. "Synthetic" futures can be used to generate a continuous time series of futures contract prices across multiple expirations. These "synthetic" futures price return histories would be inputted into the existing Copula simulation process in STANS alongside the underlying interests of OCC's other cleared and cross-margin products and collateral. The purpose of this use of "synthetic" futures is to allow the margin system to better approximate correlations between futures contracts of different tenors by creating more price data points and

their margin offsets.

Under the proposal, the historical “synthetic” time series for these Volatility Indexes would be updated daily and mapped to their corresponding futures contracts. By construction, the first “synthetic” time series would always contain returns of the front contract (i.e., the contract closest to maturity, on any given day), the second, which would correspond to the next month out, and the remaining series would follow the same pattern. Following the expiration date of the front contract, each contract within a time series would be replaced with a contract maturing one month later. While “synthetic” time series contain returns from different contracts, a return on any given date is constructed from prices of the same contract (e.g., as the front month futures contract “rolls” from the current month to the subsequent month, returns on the roll date would be constructed by using the same contract and not by calculating returns across months). The marginal probability distribution parameters for the “synthetic” time series (i.e., marginal probabilities of various values of the variables in the distribution without reference to the values of the other variables) would be estimated daily using recent historical observations.¹⁹ In cases in which the GARCH variance²⁰ forecast falls below the sample variance, in addition to being floored by the sample variance, the “synthetic” time series would additionally be “scaled

¹⁹ However, for any tenor extension or new contract that does not have enough historical data for the associated “synthetic” security, the scenarios for the longest tenor “synthetic” with enough history would be used as a proxy for generating futures theoretical price scenarios. In this case, the long run floor (discussed below) would be borrowed from the proxy “synthetic.”

²⁰ See generally Tim Bollerslev, “Generalized Autoregressive Conditional Heteroskedasticity,” Journal of Econometrics, 31(3), 307-327 (1986). The acronym “GARCH” refers to an econometric model that can be used to estimate volatility based on historical data. The general distinction between the “GARCH variance” and the “sample variance” for a given time series is that the GARCH variance uses the underlying time series data to forecast volatility.

up” through the introduction of a new floor on variance estimates based on the corresponding underlying index in order to reduce procyclicality in the model (as discussed in further detail below).

OCC believes that using synthetic futures in its daily re-estimation process would allow OCC’s econometric model for Volatility Index Futures to reflect more current market information and achieve better coverage across the term curve.²¹ As a result, OCC believes the proposed changes would result more accurate margin requirements for Clearing Members under the current market conditions.

2. Enhancements to Statistical Distribution for Volatility Index Futures

In addition to using a “synthetic” futures price return history in the process for daily re-estimation of model parameters, OCC is proposing additional enhancements to its margin methodology for Volatility Index Futures to introduce asymmetry into the statistical distribution used to model price returns of the “synthetic” futures. The econometric model currently used in STANS for all price risk factors is an asymmetric GARCH(1,1) with symmetric Standardized Normal Reciprocal Inverse Gaussian (or “NRIG”)-distributed logarithmic returns.²² OCC

²¹ In 2018, the Commission approved, and issued a Notice of No-Objection to, proposed changes to OCC’s margin methodology designed to enable OCC to: (1) obtain daily price data for equity products for use in the daily estimation of econometric model parameters; (2) enhance OCC’s econometric model for updating statistical parameters for all risk factors that reflect the most recent data obtained; (3) improve the sensitivity and stability of correlation estimates across risk factors by using de-volatized returns; and (4) improve OCC’s methodology related to the treatment of defaulting securities. See Securities Exchange Act Release No. 83326 (May 24, 2018), 83 FR 25081 (May 31, 2018) (SR-OCC-2017-022) and Securities Exchange Act Release No. 83305 (May 23, 2018), 83 FR 24536 (May 29, 2018) (SR-OCC-2017-811). Under the proposal, correlation updates for “synthetic” futures would be done daily with a one-day lag.

²² See id.

proposes to move to an asymmetric NRM distribution for purposes of modeling proportionate returns of the “synthetic” futures. OCC believes the asymmetric NRM distribution has a better “goodness of fit”²³ to the historical data and allows for more appropriate modeling of observed asymmetry of the distribution. As a result, OCC believes that the proposed change would lead to more consistent treatment of returns both on the upside as well as downside of the distribution. Accordingly, OCC believes that the proposed changes would result in margin requirements for Volatility Index Futures that respond more appropriately to changes in market volatility and therefore are more accurate.

3. Introduction of Anti-Procyclical Floor for Variance Estimates

OCC also proposes to introduce a new floor for variance estimates of the Volatility Index Futures that would be modeled under the newly proposed approach to mitigate procyclicality in OCC’s margin model. In order to incorporate a variance level implied by a longer time series of data, OCC would calculate a floor for variance estimates based on the underlying index (e.g., VIX) which is expected to have a longer history that is more reflective of the long-run variance level that cannot be otherwise captured using the “synthetic” futures data. The floor would therefore reduce the impact of a sudden increase in margin requirements from a low level and therefore mitigate procyclicality in the model.

Clearing Member Outreach

In order to inform Clearing Members of the proposed change, OCC has provided updates

²³ The goodness of fit of a statistical model describes the extent to which observed data match the values generated by the model.

to members at OCC Roundtable²⁴ and Financial Risk Advisory Council (or “FRAC”)²⁵ meetings and will provide additional reminders about the proposed changes at its next FRAC meeting. In addition, OCC will publish an Information Memo to all Clearing Members describing the proposed changes and will provide additional periodic Information Memo updates prior to the implementation date. Additionally, OCC will perform targeted and direct outreach with Clearing Members that would be most impacted by the proposed change, and OCC would work closely with such Clearing Members to coordinate the implementation and to discuss the impact and timing of any required collateral deposits that may result from the proposed change.²⁶

Implementation Timeframe

OCC plans to implement the proposed changes on May 20, 2019, provided that all necessary regulatory approvals are received by that date. If all regulatory approvals are not received by May 20, 2019, or if implementation on that date becomes otherwise impractical, OCC will implement the proposed changes within thirty (30) days after the date that OCC receives all necessary regulatory approvals for the proposed changes. OCC will announce any alternative implementation date of the proposed changes by an Information Memo posted to its public website at least one week prior to implementation.

²⁴ The OCC Roundtable was established to bring Clearing Members, exchanges and OCC together to discuss industry and operational issues. It is comprised of representatives of senior OCC staff, participant exchanges and Clearing Members, representing the diversity of OCC’s membership in industry segments, OCC-cleared volume, business type, operational structure and geography.

²⁵ The Financial Risk Advisory Council is a working group comprised of exchanges, Clearing Members and indirect participants of OCC.

²⁶ Specifically, OCC will discuss with those Clearing Members how they plan to satisfy any increase in their margin requirements associated with the proposed change.

Anticipated Effect on and Management of Risk

OCC believes that the proposed changes would reduce the nature and level of risk presented by OCC because it would introduce enhancements to OCC's margin methodology so that OCC's margin models reflect more current market information for Volatility Index Futures; use a statistical distribution for modeling proportionate returns of the "synthetic" futures, which OCC believes has a better "goodness of fit" to the historical data and allows for more appropriate modeling of observed asymmetry of the distribution; and reduce procyclicality in the model.

The main feature of the proposed model, relative to the current model, is the replacement of the underlying Volatility Index itself as a risk factor by risk factors that are based on observed futures prices (i.e., the "synthetic" futures contracts). OCC believes that using "synthetic" futures in its daily re-estimation process would allow OCC's econometric model for Volatility Index Futures to reflect more current market information and achieve better coverage across the term curve. As a result, OCC believes the proposed changes would result more accurate margin requirements for Clearing Members under the current market conditions that respond more appropriately to changes in market volatility. In addition, OCC believes that the proposed change to an asymmetrical NRIX statistical distribution would lead to more consistent treatment of returns both on the upside as well as downside of the distribution and therefore result in margin requirements for Volatility Index Futures that respond more appropriately to changes in market volatility and therefore are more accurate. Finally, the proposed changes would enhance OCC's approach for modeling Volatility Index Futures by introducing a floor on variance estimates in the model to mitigate procyclicality.

The proposed model would be used by OCC to calculate margin requirements designed to limit its credit exposures to participants, and OCC uses the margin it collects from a defaulting

Clearing Member to protect other Clearing Members from losses as a result of the default and ensure that OCC is able to continue the prompt and accurate clearance and settlement of its cleared products. Accordingly, OCC believes the proposed changes would promote robust risk management for Volatility Index futures and promote safety and soundness consistent with the objectives and principles of Section 805(b) of the Clearing Supervision Act.²⁷

For the foregoing reasons, OCC believes that the proposed change would enhance OCC's management of risk and reduce the nature or level of risk presented to OCC.

Consistency with the Payment, Clearing and Settlement Supervision Act

The stated purpose of the Clearing Supervision Act is to mitigate systemic risk in the financial system and promote financial stability by, among other things, promoting uniform risk management standards for systemically important financial market utilities and strengthening the liquidity of systemically important financial market utilities.²⁸ Section 805(a)(2) of the Clearing Supervision Act²⁹ also authorizes the Commission to prescribe risk management standards for the payment, clearing and settlement activities of designated clearing entities, like OCC, for which the Commission is the supervisory agency. Section 805(b) of the Clearing Supervision Act³⁰ states that the objectives and principles for risk management standards prescribed under Section 805(a) shall be to:

- promote robust risk management;
- promote safety and soundness;

²⁷ 12 U.S.C. 5464(b).

²⁸ 12 U.S.C. 5461(b).

²⁹ 12 U.S.C. 5464(a)(2).

³⁰ 12 U.S.C. 5464(b).

- reduce systemic risks; and
- support the stability of the broader financial system.

The Commission has adopted risk management standards under Section 805(a)(2) of the Clearing Supervision Act and the Act, which include Commission Rules 17Ad-22(b)(1), (b)(2) and (e)(6).³¹

Rule 17Ad-22(b)(1)³² requires that a registered clearing agency that performs central counterparty services establish, implement, maintain and enforce written policies and procedures reasonably designed to measure its credit exposures to its participants at least once a day and limit its exposures to potential losses from defaults by its participants under normal market conditions so that the operations of the clearing agency would not be disrupted and non-defaulting participants would not be exposed to losses that they cannot anticipate or control. As described above, the proposed changes would introduce new model enhancements for OCC's cleared Volatility Index Futures. OCC would use the risk-based model enhancements described herein to measure its credit exposures to its participants on a daily basis and determine margin requirements based on such calculations. OCC believes that the proposed enhancements would result in more accurate and responsive margin requirements by ensuring that OCC's margin models reflect more current market information for Volatility Index Futures and using an asymmetric distribution in its model that has a better "goodness of fit" to the historical data and

³¹ 17 CFR 240.17Ad-22. See Securities Exchange Act Release Nos. 68080 (October 22, 2012), 77 FR 66220 (November 2, 2012) (S7-08-11) ("Clearing Agency Standards"); 78961 (September 28, 2016, 81 FR 70786 (October 13, 2016) (S7-03-14) ("Standards for Covered Clearing Agencies"). The Standards for Covered Clearing Agencies became effective on December 12, 2016. OCC is a "covered clearing agency" as defined in Rule 17Ad-22(a)(5) and therefore OCC must comply with new section (e) of Rule 17Ad-22.

³² 17 CFR 240.17Ad-22(b)(1).

allows for more appropriate modeling of observed asymmetry of the distribution. The proposed changes would also introduce a new floor on variance estimates in the model to mitigate procyclicality. OCC believes the proposed changes are therefore designed to ensure that OCC sets margin requirements that would serve to limit OCC's exposures to potential losses from defaults by its participants under normal market conditions so that the operations of OCC would not be disrupted, and non-defaulting participants would not be exposed to losses that they cannot anticipate or control. Accordingly, OCC believes the proposed changes are consistent with Rule 17Ad-22(b)(1).³³

Rule 17Ad-22(b)(2)³⁴ further requires, in part, that a registered clearing agency that performs central counterparty services establish, implement, maintain and enforce written policies and procedures reasonably designed 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. As noted above, OCC would use the proposed model enhancements to calculate margin requirements for Volatility Index Futures in a manner designed to limit its credit exposures to participants under normal market conditions. Moreover, OCC believes that the proposed risk-based model enhancements for Volatility Index Futures would result in more accurate and responsive margin requirements for OCC's Clearing Members and would introduce an asymmetric distribution into its model that has a better "goodness of fit" to the historical data and allows for more appropriate modeling of observed asymmetry of the distribution. The proposed floor on variance estimates would also help to reduce procyclicality

³³ Id.

³⁴ 17 CFR 240.17Ad-22(b)(2).

in margin requirements for Volatility Index Futures. The risk-based model would therefore be used to calculate margin requirements designed to limit OCC's credit exposures to participants under normal market conditions in a manner consistent with Rule 17Ad-22(b)(2).³⁵

Rules 17Ad-22(e)(6)(i), (iii), and (v)³⁶ further require that a covered clearing agency establish, implement, maintain and enforce written policies and procedures reasonably designed to cover its credit exposures to its participants by establishing a risk-based margin system that, among other things: (1) considers, and produces margin levels commensurate with, the risks and particular attributes of each relevant product, portfolio, and market; (2) calculates margin sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default; and (3) uses an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products.

As described in detail above, OCC believes that the proposed model enhancements would result in more accurate, more responsive, and less procyclical margin requirements for OCC's Clearing Members clearing Volatility Index Futures, with such margin serving to protect other Clearing Members from losses arising as a result of a Clearing Member default. The proposed changes are intended to ensure that OCC's margin models reflect more current market information for Volatility Index Futures and would introduce an asymmetric distribution into its model that has a better "goodness of fit" to the historical data and allows for more appropriate modeling of the observed asymmetry of the distribution. Additionally, OCC would introduce a

³⁵ Id.

³⁶ 17 CFR 240.17Ad-22(e)(6)(i), (iii), and (v).

floor on variance estimates in the model to limit procyclicality. OCC therefore believes the proposed changes are reasonably designed to consider and produce margin levels commensurate with the risks and particular attributes of OCC's cleared Volatility Index Futures, calculate margin sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default, and apply an appropriate method for measuring credit exposure that accounts for risk factors and portfolio effects of Volatility Index Futures in a manner consistent with Rules 17Ad-22(e)(6)(i), (iii), and (v).³⁷

The changes are not inconsistent with the existing rules of OCC, including any other rules proposed to be amended

Item 11. Exhibits

Exhibit 1A. Completed Notice of Advance Notice for publication in the Federal Register.

Exhibit 3. Backtesting and Impact Analysis.

Exhibit 5. Margins Methodology.

Exhibits 3 and 5 have been omitted and filed separately with the Commission. Confidential treatment of Exhibits 3 and 5 is requested pursuant to SEC Rule 24b-2 (17 CFR 240.24b-2).

³⁷

Id.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, The Options Clearing Corporation has caused this filing to be signed on its behalf by the undersigned hereunto duly authorized.

THE OPTIONS CLEARING CORPORATION

By: _____
Justin W. Byrne
Vice President, Regulatory Filings

EXHIBIT 1A

SECURITIES AND EXCHANGE COMMISSION

(Release No. 34-[_____]; File No. SR-OCC-2019-801)

March __, 2019

Self-Regulatory Organizations; The Options Clearing Corporation; Notice of Filing of Advance Notice Related to The Options Clearing Corporation's Margin Methodology for Volatility Index Futures

Pursuant to Section 806(e)(1) of Title VIII of the Dodd-Frank Wall Street Reform and Consumer Protection Act, entitled Payment, Clearing and Settlement Supervision Act of 2010 ("Clearing Supervision Act")¹ and Rule 19b-4(n)(1)(i)² of the Securities Exchange Act of 1934 ("Exchange Act" or "Act"),³ notice is hereby given that on March 18, 2019, The Options Clearing Corporation ("OCC") filed with the Securities and Exchange Commission ("Commission") an advance notice as described in Items I, II and III below, which Items have been prepared by OCC. 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

This advance notice is in connection with proposed changes to OCC's margin methodology for futures on indexes designed to measure volatilities implied by prices of options on a particular underlying interest (such indexes being "Volatility Indexes," and futures contracts on such Volatility Indexes being "Volatility Index Futures"). The proposed methodology enhancements for Volatility Index Futures would include: (1) introducing "synthetic" futures (discussed below) into the daily re-estimation of prices

¹ 12 U.S.C. 5465(e)(1).

² 17 CFR 240.19b-4(n)(1)(i).

³ 15 U.S.C. 78a et seq.

and correlations for Volatility Index Futures; (2) an enhanced statistical distribution for modeling price returns of the “synthetic” futures; and (3) a new anti-procyclical floor for variance estimates. The proposed changes are discussed in detail in Item 10 below.

The proposed changes to OCC’s Margins Methodology document are contained in confidential Exhibit 5 of the filing. Material proposed to be added is marked by underlining and material proposed to be deleted is marked by strikethrough text. OCC also has included backtesting and impact analysis of the proposed model changes in confidential Exhibit 3.

The advance notice is available on OCC’s website at <https://www.theocc.com/about/publications/bylaws.jsp>. All terms with initial capitalization that are not otherwise defined herein have the same meaning as set forth in the OCC By-Laws and Rules.⁴

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

In its filing with the Commission, OCC 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. OCC has prepared summaries, set forth in sections A and B below, of the most significant aspects of these statements.

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

Written comments were not and are not intended to be solicited with respect to the

⁴ OCC’s By-Laws and Rules can be found on OCC’s public website: <http://optionsclearing.com/about/publications/bylaws.jsp>.

proposed rule change and none have been received. OCC will notify the Commission of any written comments received by OCC.

- (B) Advance Notices Filed Pursuant to Section 806(e) of the Payment, Clearing, and Settlement Supervision Act

Description of the Proposed Change

The purpose of the proposed changes is to introduce enhancements to OCC's margin methodology for Volatility Index Futures so that OCC's margin model reflects more current market information for Volatility Index Futures and allows for more appropriate modeling of the risk attributes of such products. Specifically, the proposed methodology enhancements for Volatility Index Futures would include: (1) introducing "synthetic" futures into the process for daily re-estimation of prices and correlations for Volatility Index Futures; (2) an enhanced statistical distribution for modeling price returns for "synthetic" futures; and (3) a new anti-procyclical floor for variance estimates. OCC's current model for Volatility Index Futures and the proposed changes thereto are described in further detail below.

Background

OCC's margin methodology, the System for Theoretical Analysis and Numerical Simulations ("STANS"),⁵ is OCC's proprietary risk management system that calculates Clearing Member margin requirements. STANS utilizes large-scale Monte Carlo simulations to forecast price and volatility movements in determining a Clearing Member's margin requirement.⁶ The STANS margin requirement is calculated at the

⁵ See Securities Exchange Act Release No. 53322 (February 15, 2006), 71 FR 9403 (February 23, 2006) (SR-OCC-2004-20).

⁶ See OCC Rule 601.

portfolio level of Clearing Member accounts with positions in marginable securities. The STANS margin requirement consists of an estimate of a 99% expected shortfall⁷ over a two-day time horizon and an add-on margin charge for model risk (the concentration/dependence stress test charge).⁸ The STANS methodology is used to measure the exposure of portfolios of options, futures and cash instruments, including the Volatility Index Futures cleared by OCC.⁹

Volatility Indexes are indexes designed to measure the volatility that is implied by the prices of options on a particular reference index or asset. For example, the Cboe Volatility Index (“VIX”) is an index designed to measure the 30-day expected volatility

⁷ The expected shortfall component is established as the estimated average of potential losses higher than the 99% value at risk threshold. The term “value at risk” or “VaR” refers to a statistical technique that, generally speaking, is used in risk management to measure the potential risk of loss for a given set of assets over a particular time horizon.

⁸ A detailed description of the STANS methodology is available at <http://optionsclearing.com/risk-management/margins/>.

⁹ Pursuant to OCC Rule 601(e)(1), OCC also calculates initial margin requirements for segregated futures accounts on a gross basis using the Standard Portfolio Analysis of Risk Margin Calculation System (“SPAN”). Commodity Futures Trading Commission (“CFTC”) Rule 39.13(g)(8), requires, in relevant part, that derivatives clearing organizations (“DCOs”) collect initial margin for customer segregated futures accounts on a gross basis. While OCC uses SPAN to calculate initial margin requirements for segregated futures accounts on a gross basis, OCC believes that margin requirements calculated on a net basis (i.e., permitting offsets between different customers’ positions held by a Clearing Member in a segregated futures account using STANS) affords OCC additional protections at the clearinghouse level against risks associated with liquidating a Clearing Member’s segregated futures account. As a result, OCC calculates margin requirements for segregated futures accounts using both SPAN on a gross basis and STANS on a net basis, and if at any time OCC staff observes a segregated futures account where initial margin calculated pursuant to STANS on a net basis exceeds the initial margin calculated pursuant to SPAN on a gross basis, OCC collateralizes this risk exposure by applying an additional margin charge in the amount of such difference to the account. See Securities Exchange Act Release No. 72331 (June 5, 2014), 79 FR 33607 (June 11, 2014) (SR-OCC-2014-13).

of the Standard & Poor's 500 index ("SPX").¹⁰ OCC currently clears futures contracts on such Volatility Indexes. These Volatility Index Futures contracts can consequently be viewed as an indication of the market's future expectations of the volatility of a given Volatility Index's underlying reference index (e.g., in the case of the VIX, providing a snapshot of the expected market volatility of the underlying over the term of the options making up the index).

Current Model for Volatility Index Futures

Under OCC's existing margin methodology, OCC models the potential final settlement prices of Volatility Index Futures using the underlying index as the risk factor.¹¹ Final settlement prices are simulated under the assumption that the logarithm of the values of the risk factor (i.e., the underlying spot Volatility Index) follows a mean-reverting¹² random walk¹³ with normally-distributed steps.¹⁴ The model is designed to

¹⁰ Generally speaking, the implied volatility of an option is a measure of the expected future volatility of the value of the option's annualized standard deviation of the price of the underlying security, index, or future at exercise, which is reflected in the current option premium in the market. Using the Black-Scholes options pricing model, the implied volatility is the standard deviation of the underlying asset price necessary to arrive at the market price of an option of a given strike, time to maturity, underlying asset price and given the current risk-free rate. In effect, the implied volatility is responsible for that portion of the premium that cannot be explained by the then-current intrinsic value (i.e., the difference between the price of the underlying and the exercise price of the option) of the option, discounted to reflect its time value.

¹¹ A "risk factor" within OCC's margin system may be defined as a product or attribute whose historical data is used to estimate and simulate the risk for an associated product.

¹² In finance, the term "mean reversion" describes a financial time series in which returns can be very unstable in the short run but very stable in the long run.

¹³ A random walk is a continuous process with random increments drawn independently from a particular distribution.

calibrate the distribution that defines this mean-reversion behavior so that the expected final settlement prices of the futures match their currently-observed market prices to ensure that margin coverage is sufficient to limit credit exposures to OCC's participants under normal market conditions. OCC recalculates the Monte Carlo scenarios of the returns of each futures series over its remaining life so that the standard deviation of the scenarios matches two days' worth of the implied volatility of near-the-money and contemporaneously expiring options on the Volatility Index, where available, in order to align with OCC's two-day liquidation period assumption. Currently, the calibration for the distribution is performed on a daily basis.

OCC's current model for Volatility Index Futures, which utilizes the underlying Volatility Index as the sole risk factor, is subject to certain limitations, which would be addressed by the proposed changes described herein. Volatility Indexes, unlike futures contracts, are not investible (i.e., they cannot be replicated by static portfolios of traded contracts). In addition, the futures market has a term structure that cannot be modeled using just the underlying index. Finally, futures on a Volatility Index are less volatile and less fat-tailed¹⁵ than the index itself, and these features are term-dependent. The current model was developed before sufficient data on the futures was available, so a model based on "synthetic" futures,¹⁶ as proposed herein, was not an option at the time. Also,

¹⁴ This is known as a Gaussian Ornstein-Uhlenbeck process. *See* Uhlenbeck, G. E. and L.S. Ornstein, "On the Theory of Brownian Motion," *Physical Review*, 36, 823-841 (1930) (explaining the Gaussian Ornstein-Uhlenbeck process).

¹⁵ A data set with a "fat tail" is one in which extreme price returns have a higher probability of occurrence than would be the case in a normal distribution.

¹⁶ As discussed in further detail below, a "synthetic" futures time series, for the intended purposes of OCC, relates to a uniform substitute for a time series of

the current model does not account for certain strategies Clearing Members might employ involving spreads between delivery dates, which may result in under-margining of those positions.

In recent years, OCC has seen significant growth in trading volume for Volatility Index Futures. As a result, OCC is proposing a number of enhancements to its margin methodology designed to provide for more accurate and responsive margin requirements for Volatility Index Futures.

Proposed Changes

The purpose of the proposed changes is to introduce enhancements to OCC's margin methodology so that OCC's margin models reflect more current market information for Volatility Index Futures, introduce asymmetry into the statistical distribution used to model price returns of the "synthetic" futures, and reduce procyclicality¹⁷ in the model.

The proposed changes would specifically include: (1) the daily re-estimation of prices and correlations using "synthetic" futures; (2) an enhanced statistical distribution for modeling price returns for "synthetic" futures; and (3) a new anti-procyclical floor for

daily settlement prices for actual futures contracts, which persists over many expiration cycles and thus can be used as a basis for econometric analysis.

¹⁷ A quality that is positively correlated with the overall state of the market is deemed to be "procyclical." For example, procyclicality may be evidenced by increasing margin or Clearing Fund requirements in times of stressed market conditions and low margin or Clearing Fund requirements when markets are calm. Hence, anti-procyclical features in a model are measures intended to prevent risk-based models from fluctuating too drastically in response to changing market conditions.

variance estimates.¹⁸ The main feature of the proposed model, relative to the current model, is the replacement of the underlying Volatility Index itself as a risk factor by risk factors that are based on observed futures prices (i.e., the “synthetic” futures contracts). The proposed change would introduce a new set of risk factors and method for generating scenarios for those risk factors, and hence Volatility Index Futures settlement prices, to be incorporated into the STANS margin calculations. OCC believes its proposed methodology would provide for more accurate and responsive margin requirements and that the imposition of a floor for variance estimates would mitigate procyclicality in OCC’s margin methodology for Volatility Index Futures. The proposed changes are described in further detail below.

1. Daily Re-Estimations Using Synthetic Futures

As noted above, OCC currently models the potential final settlement prices of Volatility Index Futures based on the underlying index itself. OCC proposes to modify its modeling approach for Volatility Index Futures by modeling the price distributions of “synthetic” futures on a daily basis based on the historical returns of futures contracts with approximately the same tenor (as opposed to OCC’s current approach of calibrating the distribution based on the Volatility Index itself). A “synthetic” futures time series for the intended purposes of OCC relates to a uniform substitute for a time series of daily settlement prices for actual futures contracts, which persists over many expiration cycles and thus can be used as a basis for econometric analysis. One feature of futures contracts is that each contract may have a different expiration date, and at any one point in time

¹⁸ OCC would also make a number of conforming changes throughout its Margins Methodology so that the document accurately reflects the adoption of the new model.

there may be a variety of futures contracts on the same underlying interest, all with varying dates of expiry, so that there is no one continuous time series for those futures. “Synthetic” futures can be used to generate a continuous time series of futures contract prices across multiple expirations. These “synthetic” futures price return histories would be inputted into the existing Copula simulation process in STANS alongside the underlying interests of OCC’s other cleared and cross-margin products and collateral. The purpose of this use of “synthetic” futures is to allow the margin system to better approximate correlations between futures contracts of different tenors by creating more price data points and their margin offsets.

Under the proposal, the historical “synthetic” time series for these Volatility Indexes would be updated daily and mapped to their corresponding futures contracts. By construction, the first “synthetic” time series would always contain returns of the front contract (i.e., the contract closest to maturity, on any given day), the second, which would correspond to the next month out, and the remaining series would follow the same pattern. Following the expiration date of the front contract, each contract within a time series would be replaced with a contract maturing one month later. While “synthetic” time series contain returns from different contracts, a return on any given date is constructed from prices of the same contract (e.g., as the front month futures contract “rolls” from the current month to the subsequent month, returns on the roll date would be constructed by using the same contract and not by calculating returns across months). The marginal probability distribution parameters for the “synthetic” time series (i.e., marginal probabilities of various values of the variables in the distribution without reference to the values of the other variables) would be estimated daily using recent

historical observations.¹⁹ In cases in which the GARCH variance²⁰ forecast falls below the sample variance, in addition to being floored by the sample variance, the “synthetic” time series would additionally be “scaled up” through the introduction of a new floor on variance estimates based on the corresponding underlying index in order to reduce procyclicality in the model (as discussed in further detail below).

OCC believes that using synthetic futures in its daily re-estimation process would allow OCC’s econometric model for Volatility Index Futures to reflect more current market information and achieve better coverage across the term curve.²¹ As a result, OCC believes the proposed changes would result more accurate margin requirements for Clearing Members under the current market conditions.

¹⁹ However, for any tenor extension or new contract that does not have enough historical data for the associated “synthetic” security, the scenarios for the longest tenor “synthetic” with enough history would be used as a proxy for generating futures theoretical price scenarios. In this case, the long run floor (discussed below) would be borrowed from the proxy “synthetic.”

²⁰ See generally Tim Bollerslev, “Generalized Autoregressive Conditional Heteroskedasticity,” *Journal of Econometrics*, 31(3), 307-327 (1986). The acronym “GARCH” refers to an econometric model that can be used to estimate volatility based on historical data. The general distinction between the “GARCH variance” and the “sample variance” for a given time series is that the GARCH variance uses the underlying time series data to forecast volatility.

²¹ In 2018, the Commission approved, and issued a Notice of No-Objection to, proposed changes to OCC’s margin methodology designed to enable OCC to: (1) obtain daily price data for equity products for use in the daily estimation of econometric model parameters; (2) enhance OCC’s econometric model for updating statistical parameters for all risk factors that reflect the most recent data obtained; (3) improve the sensitivity and stability of correlation estimates across risk factors by using de-volitized returns; and (4) improve OCC's methodology related to the treatment of defaulting securities. See Securities Exchange Act Release No. 83326 (May 24, 2018), 83 FR 25081 (May 31, 2018) (SR-OCC-2017-022) and Securities Exchange Act Release No. 83305 (May 23, 2018), 83 FR 24536 (May 29, 2018) (SR-OCC-2017-811). Under the proposal, correlation updates for “synthetic” futures would be done daily with a one-day lag.

2. Enhancements to Statistical Distribution for Volatility Index Futures

In addition to using a “synthetic” futures price return history in the process for daily re-estimation of model parameters, OCC is proposing additional enhancements to its margin methodology for Volatility Index Futures to introduce asymmetry into the statistical distribution used to model price returns of the “synthetic” futures. The econometric model currently used in STANS for all price risk factors is an asymmetric GARCH(1,1) with symmetric Standardized Normal Reciprocal Inverse Gaussian (or “NRIG”)-distributed logarithmic returns.²² OCC proposes to move to an asymmetric NRIG distribution for purposes of modeling proportionate returns of the “synthetic” futures. OCC believes the asymmetric NRIG distribution has a better “goodness of fit”²³ to the historical data and allows for more appropriate modeling of observed asymmetry of the distribution. As a result, OCC believes that the proposed change would lead to more consistent treatment of returns both on the upside as well as downside of the distribution. Accordingly, OCC believes that the proposed changes would result in margin requirements for Volatility Index Futures that respond more appropriately to changes in market volatility and therefore are more accurate.

3. Introduction of Anti-Procyclical Floor for Variance Estimates

OCC also proposes to introduce a new floor for variance estimates of the Volatility Index Futures that would be modeled under the newly proposed approach to mitigate procyclicality in OCC’s margin model. In order to incorporate a variance level

²² See id.

²³ The goodness of fit of a statistical model describes the extent to which observed data match the values generated by the model.

implied by a longer time series of data, OCC would calculate a floor for variance estimates based on the underlying index (e.g., VIX) which is expected to have a longer history that is more reflective of the long-run variance level that cannot be otherwise captured using the “synthetic” futures data. The floor would therefore reduce the impact of a sudden increase in margin requirements from a low level and therefore mitigate procyclicality in the model.

Clearing Member Outreach

In order to inform Clearing Members of the proposed change, OCC has provided updates to members at OCC Roundtable²⁴ and Financial Risk Advisory Council (or “FRAC”)²⁵ meetings and will provide additional reminders about the proposed changes at its next FRAC meeting. In addition, OCC will publish an Information Memo to all Clearing Members describing the proposed changes and will provide additional periodic Information Memo updates prior to the implementation date. Additionally, OCC will perform targeted and direct outreach with Clearing Members that would be most impacted by the proposed change, and OCC would work closely with such Clearing Members to coordinate the implementation and to discuss the impact and timing of any

²⁴ The OCC Roundtable was established to bring Clearing Members, exchanges and OCC together to discuss industry and operational issues. It is comprised of representatives of senior OCC staff, participant exchanges and Clearing Members, representing the diversity of OCC’s membership in industry segments, OCC-cleared volume, business type, operational structure and geography.

²⁵ The Financial Risk Advisory Council is a working group comprised of exchanges, Clearing Members and indirect participants of OCC.

required collateral deposits that may result from the proposed change.²⁶

Implementation Timeframe

OCC plans to implement the proposed changes on May 20, 2019, provided that all necessary regulatory approvals are received by that date. If all regulatory approvals are not received by May 20, 2019, or if implementation on that date becomes otherwise impractical, OCC will implement the proposed changes within thirty (30) days after the date that OCC receives all necessary regulatory approvals for the proposed changes. OCC will announce any alternative implementation date of the proposed changes by an Information Memo posted to its public website at least one week prior to implementation.

Anticipated Effect on and Management of Risk

OCC believes that the proposed changes would reduce the nature and level of risk presented by OCC because it would introduce enhancements to OCC's margin methodology so that OCC's margin models reflect more current market information for Volatility Index Futures; use a statistical distribution for modeling proportionate returns of the "synthetic" futures, which OCC believes has a better "goodness of fit" to the historical data and allows for more appropriate modeling of observed asymmetry of the distribution; and reduce procyclicality in the model.

The main feature of the proposed model, relative to the current model, is the replacement of the underlying Volatility Index itself as a risk factor by risk factors that are based on observed futures prices (i.e., the "synthetic" futures contracts). OCC believes that using "synthetic" futures in its daily re-estimation process would allow

²⁶ Specifically, OCC will discuss with those Clearing Members how they plan to satisfy any increase in their margin requirements associated with the proposed change.

OCC's econometric model for Volatility Index Futures to reflect more current market information and achieve better coverage across the term curve. As a result, OCC believes the proposed changes would result more accurate margin requirements for Clearing Members under the current market conditions that respond more appropriately to changes in market volatility. In addition, OCC believes that the proposed change to an asymmetrical NRIX statistical distribution would lead to more consistent treatment of returns both on the upside as well as downside of the distribution and therefore result in margin requirements for Volatility Index Futures that respond more appropriately to changes in market volatility and therefore are more accurate. Finally, the proposed changes would enhance OCC's approach for modeling Volatility Index Futures by introducing a floor on variance estimates in the model to mitigate procyclicality.

The proposed model would be used by OCC to calculate margin requirements designed to limit its credit exposures to participants, and OCC uses the margin it collects from a defaulting Clearing Member to protect other Clearing Members from losses as a result of the default and ensure that OCC is able to continue the prompt and accurate clearance and settlement of its cleared products. Accordingly, OCC believes the proposed changes would promote robust risk management for Volatility Index futures and promote safety and soundness consistent with the objectives and principles of Section 805(b) of the Clearing Supervision Act.²⁷

For the foregoing reasons, OCC believes that the proposed change would enhance OCC's management of risk and reduce the nature or level of risk presented to OCC.

²⁷ 12 U.S.C. 5464(b).

Consistency with the Payment, Clearing and Settlement Supervision Act

The stated purpose of the Clearing Supervision Act is to mitigate systemic risk in the financial system and promote financial stability by, among other things, promoting uniform risk management standards for systemically important financial market utilities and strengthening the liquidity of systemically important financial market utilities.²⁸

Section 805(a)(2) of the Clearing Supervision Act²⁹ also authorizes the Commission to prescribe risk management standards for the payment, clearing and settlement activities of designated clearing entities, like OCC, for which the Commission is the supervisory agency. Section 805(b) of the Clearing Supervision Act³⁰ states that the objectives and principles for risk management standards prescribed under Section 805(a) shall be to:

- promote robust risk management;
- promote safety and soundness;
- reduce systemic risks; and
- support the stability of the broader financial system.

The Commission has adopted risk management standards under Section 805(a)(2) of the Clearing Supervision Act and the Act, which include Commission Rules 17Ad-22(b)(1), (b)(2) and (e)(6).³¹

²⁸ 12 U.S.C. 5461(b).

²⁹ 12 U.S.C. 5464(a)(2).

³⁰ 12 U.S.C. 5464(b).

³¹ 17 CFR 240.17Ad-22. *See* Securities Exchange Act Release Nos. 68080 (October 22, 2012), 77 FR 66220 (November 2, 2012) (S7-08-11) (“Clearing Agency Standards”); 78961 (September 28, 2016, 81 FR 70786 (October 13, 2016) (S7-03-14) (“Standards for Covered Clearing Agencies”). The Standards for Covered Clearing Agencies became effective on December 12, 2016. OCC is

Rule 17Ad-22(b)(1)³² requires that a registered clearing agency that performs central counterparty services establish, implement, maintain and enforce written policies and procedures reasonably designed to measure its credit exposures to its participants at least once a day and limit its exposures to potential losses from defaults by its participants under normal market conditions so that the operations of the clearing agency would not be disrupted and non-defaulting participants would not be exposed to losses that they cannot anticipate or control. As described above, the proposed changes would introduce new model enhancements for OCC's cleared Volatility Index Futures. OCC would use the risk-based model enhancements described herein to measure its credit exposures to its participants on a daily basis and determine margin requirements based on such calculations. OCC believes that the proposed enhancements would result in more accurate and responsive margin requirements by ensuring that OCC's margin models reflect more current market information for Volatility Index Futures and using an asymmetric distribution in its model that has a better "goodness of fit" to the historical data and allows for more appropriate modeling of observed asymmetry of the distribution. The proposed changes would also introduce a new floor on variance estimates in the model to mitigate procyclicality. OCC believes the proposed changes are therefore designed to ensure that OCC sets margin requirements that would serve to limit OCC's exposures to potential losses from defaults by its participants under normal market conditions so that the operations of OCC would not be disrupted, and non-

a "covered clearing agency" as defined in Rule 17Ad-22(a)(5) and therefore OCC must comply with new section (e) of Rule 17Ad-22.

³² 17 CFR 240.17Ad-22(b)(1).

defaulting participants would not be exposed to losses that they cannot anticipate or control. Accordingly, OCC believes the proposed changes are consistent with Rule 17Ad-22(b)(1).³³

Rule 17Ad-22(b)(2)³⁴ further requires, in part, that a registered clearing agency that performs central counterparty services establish, implement, maintain and enforce written policies and procedures reasonably designed 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. As noted above, OCC would use the proposed model enhancements to calculate margin requirements for Volatility Index Futures in a manner designed to limit its credit exposures to participants under normal market conditions. Moreover, OCC believes that the proposed risk-based model enhancements for Volatility Index Futures would result in more accurate and responsive margin requirements for OCC's Clearing Members and would introduce an asymmetric distribution into its model that has a better "goodness of fit" to the historical data and allows for more appropriate modeling of observed asymmetry of the distribution. The proposed floor on variance estimates would also help to reduce procyclicality in margin requirements for Volatility Index Futures. The risk-based model would therefore be used to calculate margin requirements designed to limit OCC's credit exposures to participants under normal market conditions in a manner consistent with Rule 17Ad-22(b)(2).³⁵

³³ Id.

³⁴ 17 CFR 240.17Ad-22(b)(2).

³⁵ Id.

Rules 17Ad-22(e)(6)(i), (iii), and (v)³⁶ further require that a covered clearing agency establish, implement, maintain and enforce written policies and procedures reasonably designed to cover its credit exposures to its participants by establishing a risk-based margin system that, among other things: (1) considers, and produces margin levels commensurate with, the risks and particular attributes of each relevant product, portfolio, and market; (2) calculates margin sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default; and (3) uses an appropriate method for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products.

As described in detail above, OCC believes that the proposed model enhancements would result in more accurate, more responsive, and less procyclical margin requirements for OCC's Clearing Members clearing Volatility Index Futures, with such margin serving to protect other Clearing Members from losses arising as a result of a Clearing Member default. The proposed changes are intended to ensure that OCC's margin models reflect more current market information for Volatility Index Futures and would introduce an asymmetric distribution into its model that has a better "goodness of fit" to the historical data and allows for more appropriate modeling of the observed asymmetry of the distribution. Additionally, OCC would introduce a floor on variance estimates in the model to limit procyclicality. OCC therefore believes the proposed changes are reasonably designed to consider and produce margin levels commensurate with the risks and particular attributes of OCC's cleared Volatility Index

³⁶ 17 CFR 240.17Ad-22(e)(6)(i), (iii), and (v).

Futures, calculate margin sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default, and apply an appropriate method for measuring credit exposure that accounts for risk factors and portfolio effects of Volatility Index Futures in a manner consistent with Rules 17Ad-22(e)(6)(i), (iii), and (v).³⁷

The changes are not inconsistent with the existing rules of OCC, including any other rules proposed to be amended.

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 the proposed change was filed with the Commission or (ii) the date any additional information requested by the Commission is received. OCC 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 providing the clearing agency 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 the clearing agency in writing that it does not object to the proposed change and authorizes the clearing agency to implement the proposed change on an earlier date, subject to any conditions imposed by the Commission.

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

³⁷ Id.

The proposal shall not take effect until all regulatory actions required with respect to the proposal are completed.

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. Please include File Number SR-OCC-2019-801 on the subject line.

Paper Comments:

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

All submissions should refer to File Number SR-OCC-2019-801. 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 OCC and on OCC's website at <https://www.theocc.com/about/publications/bylaws.jsp>.

All comments received will be posted without change. Persons submitting comments are cautioned that we do not redact or edit personal identifying information from comment submissions. You should submit only information that you wish to make available publicly.

All submissions should refer to File Number SR-OCC-2019-801 and should be submitted on or before [insert date 21 days from publication in the Federal Register].

By the Commission.

Secretary

EXHIBIT 3

[Redacted Pursuant to Rule 24b-2]

[Redacted Pursuant to Rule 24b-2]

EXHIBIT 5

[Redacted Pursuant to Rule 24b-2]

[Redacted Pursuant to Rule 24b-2]

[Redacted Pursuant to Rule 24b-2]