December 13 2017

VIA ELECTRONIC MAIL
Christopher J. Kirkpatrick
Office of the Secretariat
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street, N.W.
Washington, DC 20581

     Re: Rule Filing SR-OCC-2017-022 Rule Certification

Dear Secretary Kirkpatrick:

     Pursuant to Section 5c(c)(1) of the Commodity Exchange Act, as amended ("Act"), and Commodity Futures Trading Commission ("CFTC") Regulation 40.6, enclosed is a copy of the above-referenced rule filing submitted by The Options Clearing Corporation ("OCC"). The date of implementation of the rule is at least 10 business days following receipt of the rule filing by the CFTC or the date the proposed rule is approved by the Securities and Exchange Commission ("SEC") or otherwise becomes effective under the Securities Exchange Act of 1934 (the "Exchange Act"). This rule filing has been, or is concurrently being, submitted to the SEC under the Exchange Act.[1]

     OCC has requested confidential treatment for Exhibit 5 to SR-OCC-2017-022, the Margins Methodology, contained in pages 57-141 of the enclosed filing.

     In conformity with the requirements of Regulation 40.6(a)(7), OCC states the following:

<u>Explanation and Analysis</u>

     This proposed rule change by OCC would modify OCC's margin methodology to move away from the existing monthly data source provided by its current vendor and towards obtaining and incorporating daily price and returns data (adjusted for any corporate actions) of securities to estimate accurate margins. This would be further supported by enhancing OCC's econometric model applied to different risk factors;[2] improving the sensitivity and stability of correlation estimates between them; and enhancing OCC's methodology around the treatment of

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[1]   OCC also has filed an advance notice with the SEC in connection with the proposed changes. <u>See</u> SR-OCC-2017-811.

[2]   The use of risk factors in OCC's margin methodology is discussed in more detail in the Background section below.

securities with limited historical data. OCC also proposes to make a few clarifying and clean-up changes to its margin methodology unrelated to the proposed changes described above.

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. The proposed rule change does not require any changes to the text of OCC's By-Laws or Rules. 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.[3]

Background

OCC's margin methodology, the System for Theoretical Analysis and Numerical Simulations ("STANS"), is OCC's proprietary risk management system that calculates Clearing Member margin requirements.[4] STANS utilizes large-scale Monte Carlo simulations to forecast price and volatility movements in determining a Clearing Member's margin requirement.[5] The STANS margin requirement is calculated at the portfolio level of Clearing Member accounts with positions in marginable securities and consists of an estimate of a 99% expected shortfall[6] over a two-day time horizon and an add-on margin charge for model risk (the concentration/dependence stress test charge).[7] The STANS methodology is used to measure the exposure of portfolios of options and futures cleared by OCC and cash instruments in margin collateral.

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. The majority of risk factors utilized in the STANS methodology are total returns on individual equity securities. Other risk factors considered include: returns on equity indexes; returns on implied

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

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

[5]   See OCC Rule 601.

[6]   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.

[7]   A detailed description of the STANS methodology is available at http://optionsclearing.com/risk-management/margins/.

volatility[8] risk factors that are a set of nine chosen volatility pivots per product;[9] changes in foreign exchange rates; and changes in model parameters that sufficiently capture the model dynamics from a larger set of data.

Under OCC's current margin methodology, OCC obtains monthly price data for most of its equity-based products[10] from a widely used industry vendor. This data arrives around the second week of every month in arrears and requires a maximum of about four weeks for OCC to process the data after any clean up and reruns as may be required prior to installing into OCC's margin system. As a result, correlations and statistical parameters for risk factors at any point in time represent back-dated data and therefore may not be representative of the most recent market data. In the absence of daily updates, OCC employs an approach where one or many identified market proxies (or "scale-factors") are used to incorporate day-to-day market volatility across all associated asset classes throughout.[11] The scale factor approach, however, assumes a perfect correlation of the volatilities between the security and its scale factor, which gives little room to

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[8]   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.

[9]   In December 2015, the SEC approved a proposed rule change, and issued a Notice of No Objection to an advance notice filing, by OCC to its modify margin methodology by more broadly incorporating variations in implied volatility within STANS. See Securities Exchange Act Release No. 34-76781 (December 28, 2015), 81 FR 135 (January 4, 2016) (SR-OCC-2015-016) and Securities Exchange Act Release No. 34-76548 (December 3, 2015), 80 FR 76602 (December 9, 2015) (SR-OCC-2015-804). The proposed rule change was certified with the CFTC on October 20, 2015.

[10]   The securities underlying these products are also known as risk factors within OCC's margin system.

[11]   Earlier this year, the SEC approved a proposed rule change and issued a Notice of No Objection to an advance notice filing by OCC which, among other things: (1) expanded the number of scale factors used for equity-based products to more accurately measure the relationship between current and long-run market volatility with proxies that correlate more closely to certain products carried within the equity asset class, and (2) applied relevant scale factors to the greater of (i) the estimated variance of 1-day return scenarios or (ii) the historical variance of the daily return scenarios of a particular instrument, as a floor to mitigate procyclicality. See Securities Exchange Act Release No. 80147 (March 3, 2017), 82 FR 13163 (March 9, 2017) (SR-OCC-2017-001) and Securities Exchange Act Release No. 80143 (March 2, 2017), 82 FR 13036 (March 8, 2017) (SR-OCC-2017-801). The proposed rule change was certified with the CFTC on October 20, 2015. The proposed rule change was certified with the CFTC on February 2, 2017.

capture the idiosyncratic risk of a given security and which may be different from the broad market risk represented by the scale factor.

In risk management, it is a common practice to establish a floor for volatility at a certain level in order to protect against procyclicality[12] in the model. OCC imposes a floor on volatility estimates for its equity-based products using a 500-day look back period. These monthly updates coupled with the dependency of margins on scale factors and the volatility floor can result in imprecise changes in margins charged to Clearing Members, specifically across periods of heavy volatility when the correlation between the risk factor and a scale factor fluctuate.

OCC's current methodology for estimating covariance and correlations between risk factors relies on the same monthly data described above, resulting in a similar lag time between updates. In addition, correlation estimates are based off historical returns series, with estimates between a pair of risk factors being highly sensitive to the volatility of either risk factor in the chosen pair. The current approach therefore results in potentially less stable correlation estimates that may not be representative of current market conditions.

Finally, under OCC's existing margin methodology, theoretical price scenarios for "defaulting securities"[13] are simulated using uncorrelated return scenarios with an average zero return and a pre-specified volatility called "default variance." The default variance is estimated as the average of the top 25 percent quantile of the conditional variances of all securities. As a result, these default estimates may be impacted by extremely illiquid securities with discontinuous data. In addition, the default variance (and the associated scale factors used to scale up volatility) is also subject to sudden jumps with the monthly simulation installations across successive months because it is derived from monthly data updates, as opposed to daily updates, which are prone to wider fluctuations and are subject to adjustments using scale factors.

Proposed Changes

OCC proposes to modify its margin methodology by: (1) obtaining daily price data for equity products (including daily corporate action-adjusted returns of equities where price and thus returns of securities are adjusted for any dividends issued, stock splits, etc.) for use in the daily estimation of econometric model parameters; (2) enhancing its econometric model for updating statistical parameters (e.g., parameters concerning correlations or volatility) for all risk

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12   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.

13   Within the context of OCC's margin system, securities that do not have enough historical data for calibration are classified as "defaulting securities."

factors that reflect the most recent data obtained; (3) improving the sensitivity and stability of correlation estimates across risk factors by using de-volatized[14] returns (but using a 500 day look back period); and (4) improving OCC's methodology related to the treatment of defaulting securities that would result in stable and realistic risk estimates for such securities.

The purpose of the proposed changes is to enhance OCC's margin methodology to mitigate the issues described above that arise from the current monthly update and scale factor approach. Specifically, by introducing daily (as opposed to monthly) updates for price data (and thereby allowing for daily updates of statistical parameters in the model) and making other proposed model enhancements described herein, the proposed changes are designed to result in more accurate and responsive margin requirements and a model that is more stable and proactive during times of market volatility, with margins that are based off of the most recent market data. In addition, the proposed changes are intended to improve OCC's approach to estimating covariance and correlations between risk factors in an effort to achieve more stable and sensitive correlation estimations and improve OCC's methodology related to the treatment of defaulting securities by reducing the impact that illiquid securities with discontinuous data have on default variance estimates.

The proposed changes are described in further detail below.[15]

1. *Daily Updates of Price Data*

OCC proposes to introduce daily updates for price data for equity products, including daily corporate action-adjusted returns of equities, Exchange Traded Funds ("ETFs"), Exchange Traded Notes ("ETNs") and certain indexes. The daily price data would be obtained from a widely used external vendor, as is the case with the current monthly updates. The purpose of the proposed change is to ensure that OCC's margin methodology is reliant on data that is more representative of current market conditions, thereby resulting in more accurate and responsive margin requirements.

As described above, OCC currently obtains price data for all securities on a monthly basis from a third party vendor. After obtaining the monthly price data, additional time is required for OCC to process the data prior to installing into OCC's margin system. As a result, correlations and statistical parameters for risk factors at any point in time represent back-dated data and therefore may not be representative of the most recent market data. To mitigate pro-

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[14] De-volatization is a process of normalizing historical data with the associated volatility thus enabling any comparison between different sets of data.

[15] In addition to the proposed methodology changes described herein, OCC also would make some clarifying and clean-up changes, unrelated to the proposed changes described above, to update its margin methodology to reflect existing practices for the daily calibration of seasonal and non-seasonal energy models and the removal of methodology language for certain products that are no longer cleared by OCC.

cyclicality within its margin methodology in the absence of daily updates, OCC employs the use of scale-factors to incorporate day-to-day market volatility across all associated asset classes. While the scale factors help to reduce procyclicality in the model, the scale factors do not necessarily capture the idiosyncratic risks of a given security, which may be different from the broad market risk represented by the scale factor.

OCC proposes to address these issues associated with its current margin methodology by eliminating its dependency on monthly price data, which arrives in arrears and requires additional time for OCC to process the data prior to installing into OCC's margin system through the introduction of daily updates for price data for equity products. The introduction of daily price updates would enable OCC's margin methodology to better capture both market as well idiosyncratic risk by allowing for daily updates to the parameters associated with of the econometric model (discussed below) that capture the risk associated with a particular product, and therefore ensure that OCC's margin requirements are based on more current market conditions. As a result, OCC would also reduce its reliance on the use of scale factors to incorporate day-to-day market volatility, which, as noted above, give little room to capture the idiosyncratic risk of a given security and which may be different from the broad market risk represented by the scale factor. In addition, the processing time between receipt of the data and installation into the margin system would be reduced as the data review and processing for daily prices would be incorporated into OCC's daily price editing process.

2. *Proposed Enhancements to the Econometric Model*

In addition to introducing daily updates for price and corporate action-adjusted returns data, OCC is proposing enhancements to its econometric model for calculating statistical parameters for all qualifying risk factors that reflect the most recent data obtained (e.g., OCC would be able to calculate parameters such as volatility and correlations on a daily basis using the new daily price data discussed above). Specifically, OCC proposes to enhance its econometric model by: (i) introducing daily updates for statistical parameters; (ii) introducing features in its econometric model that are designed to take into account asymmetry in the model used to forecast volatility associated with a risk factor; (iii) modifying the statistical distribution used to model the returns of equity prices; (iv) introducing a second-day forecast for volatility into the model to estimate the two-day scenario distributions for risk factors; and (v) imposing a floor on volatility estimates using a 10-year look back period.

These proposed model enhancements are described in detail below.

     i.   Daily Updates for Statistical Parameters

Under the proposal, the statistical parameters for the model would be updated on a daily basis using the new daily price data obtained by OCC (as described in section 1 above).[16] As a result, OCC would no longer need to rely on scale factors to approximate day-to-day market volatility for equity-based products. Statistical parameters would be calibrated on daily basis, allowing OCC to calculate more accurate margin requirements that are representative of the most recent market data.

ii. Proposed Enhancements to Capture Asymmetry in Conditional Variance

In addition to the daily update of statistical parameters, OCC proposes to include new features in its econometric model that are designed to take into account asymmetry in the conditional variance process. The econometric model currently used in STANS for all risk factors is a GARCH(1,1) with Student's *t*-distributed innovations of logarithmic returns[17], which is a relatively straightforward and widely used model to forecast volatility. [18] The current approach for forecasting the conditional variance for a given risk factor does not, however, consider the asymmetric volatility phenomenon observed in financial markets (also called the "leverage effect") where volatility is more sensitive and reactive to market downturns. As a result, OCC proposes to enhance its model by adding new features (i.e., incorporating asymmetry into its forecast volatility) designed to allow the conditional volatility forecast to be more sensitive to market downturns and thereby capture the most significant dynamics of the relationship between price and volatility observed in financial markets. OCC believes the proposed enhancement would result in more accurate and responsive margin requirements, particularly in market downturns.

iii. Proposed Change in Statistical Distribution

OCC further proposes to change the statistical distribution used to model the returns of equity prices. OCC's current methodology uses a fat tailed distribution[19] (the Student's *t*-

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[16]   OCC notes that this change would apply to most risk factors with the exception of certain equity indexes, Treasury securities, and energy futures products, which are already updated on a daily basis.

[17]   The Student's *t* distribution is a widely used statistical distribution to model the historical logarithmic price returns data of a security that allows for the presence of fat tails (aka kurtosis) or a non-zero conditional fourth moment.

[18]   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.

[19]   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.

distribution) to model returns; however, price scenarios generated using very large log-return scenarios (positive) that follow this distribution can approach infinity and could potentially result in excessively large price jumps, a known limitation of this distribution. OCC proposes to move to a more defined distribution (Standardized Normal Reciprocal Inverse Gaussian or NRIG) for modeling returns, which OCC believes would more appropriately simulate future returns based on the historical price data for the products in question (i.e., it has a better "goodness of fit"[20] to the historical data) and allows for more appropriate modeling of fat tails. As a result, OCC believes that the proposed change would lead to more consistent treatment of log returns both on the upside as well as downside of the distribution.

iv. Second Day Volatility Forecast

OCC also proposes to introduce a second-day forecast for volatility into the model to estimate the two-day scenario distributions for risk factors.[21] Under the current methodology, OCC typically uses a two-day horizon to determine its risk exposure to a given portfolio. This is done by simulating 10,000 theoretical price scenarios for the two-day horizon using a one-day forecast conditional variance, and the value at risk and expected shortfall components of the margin requirement are then determined from the simulated profit/loss distributions. These one-day and two-day returns scenarios are both simulated using the one-day forecast conditional variance estimate. This could lead to a risk factor's coverage differing substantially on volatile trading days. As a result, OCC proposes to introduce a second-day forecast variance for all equity-based risk factors. The second-day conditional variance forecast would be estimated for each of the 10,000 Monte Carlo returns scenarios, resulting in more accurately estimated two-day scenario distributions, and therefore more accurate and responsive margin requirements.

v. Anti-Procyclical Floor for Volatility Estimates

Additionally, OCC proposes to modify its floor for volatility estimates. OCC currently imposes a floor on volatility estimates for its equity-based products using a 500-day look back period. OCC proposes to extend this look back period to 10-years (2520 days) in the enhanced model and to apply this floor to volatility estimates for other products (excluding implied volatility risk factor scenarios). The proposed model described herein is calibrated from historical data, and as a result, the level of the volatilities generated by the model will vary from time to time. OCC is therefore proposing to establish a volatility floor for the model using a 10-year look back period to reduce the risk of procyclicality in its margin model. OCC believes that using a longer 10-year look back period will ensure that OCC captures sufficient historical events/market shocks in the calculation of its anti-procyclical floor. The 10-year look back

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

[21]   This proposed change would not apply to STANS implied volatility scenario risk factors. For those risk factors, OCC's existing methodology would continue to apply. See supra note 9.

period also is in line with requirements of the European Market Infrastructure Regulation (including regulations thereunder)[22] concerning the calibration of risk factors.

3. *Proposed Enhancements to Correlation Estimates*

As described above, OCC's current methodology for estimating covariance and correlations between risk factors relies on the same monthly price data feeding the econometric model, resulting in a similar lag time between updates. In addition, correlation estimates are based off historical returns series, with estimates between a pair of risk factors being highly sensitive to the volatility of either risk factors in the chosen pair. The current approach therefore results in correlation estimates being sensitive to volatile historical data.

In order to address these limitations, OCC proposes to enhance its methodology for calculating correlation estimates by moving to a daily process for updating correlations (with a minimum of one week's lag) to ensure Clearing Member account margins are more current and thus more accurate. Moreover, OCC proposes to enhance its approach to modeling correlation estimates by de-volatizing[23] the returns series to estimate the correlations. Under the proposed approach, OCC would first consider the returns excess of the mean (i.e., the average estimated from historical data sample) and then further scale them by the corresponding estimated conditional variances. OCC believes that by using de-volatized returns, which is a widely suggested approach in relevant literature, it would lead to normalizing returns across a variety of asset classes and make the correlation estimator less sensitive to sudden market jumps and therefore more stable.

4. *Defaulting Securities Methodology*

Finally, OCC proposes to enhance its methodology for estimating the defaulting variance in its model. OCC's margin system is dependent on market data to determine Clearing Member margin requirements. Securities that do not have enough historical data are classified as to be a "defaulting security" within OCC systems (e.g., IPO securities). As noted above, within current STANS systems, the theoretical price scenarios for defaulting securities are simulated using uncorrelated return scenarios with a zero mean and a default variance, with the default variance being estimated as the average of the top 25 percent quantile of the conditional variances of all securities. As a result, these default estimates may be impacted by extremely illiquid securities with discontinuous data. In addition, the default variance (and the associated scale factors used

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[22] Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories. Specifically, the proposed floor would be compliant with Article 28 of Commission Delegated Regulation (EU) No. 153/2013 of 19 December 2012 Supplementing Regulation (EU) No. 648/2012 of the European Parliament and of the Council with regard to Regulatory Technical Standards on Requirements for Central Counterparties (the "Regulatory Technical Standards").

[23] See supra note 14.

to scale up volatility) is also subject to sudden jumps with the monthly simulation installations across volatile months. To mitigate these concerns, OCC proposes to: (i) use only optionable equity securities to estimate the defaulting variance; (ii) use a shorter time series to enable calibration of the model for all securities; and (iii) simulating default correlations with the driver Russell 2000 index ("RUT").

i.   Proposed Modifications to Securities and Quantile Used in Estimation.

OCC proposes that only optionable equity securities, which are typically more liquid, be considered while estimating the default variance. This limitation would eliminate from the estimation almost all illiquid securities with discontinuous data that could contribute to high conditional variance estimates and thus a high default variance. In addition, OCC proposes to estimate the default variance as the lowest estimate of the top 10% of the floored conditional variance across the risk factors. This change in methodology is designed to ensure that while the estimate is aggressive it is also robust to the presence of outliers caused by a few extremely volatile securities that influence the location parameter of a distribution. Moreover, as a consequence of the daily updates described above, the default variances would change daily and there would be no scale factor to amplify the effect of the variance on risk factor coverage.

ii.   Proposed Change in Time Series

In addition, OCC proposes to use a shorter time series to enable calibration of the model for all securities. Currently, OCC does not calibrate parameters for defaulting securities that have historical data of less than two years. OCC is proposing to shorten this time period to around 6 months (180 days) to enable calibration of the model for all securities within OCC systems. OCC believes that this shorter time series is sufficient to produce stable calibrated parameters.

iii.   Proposed Default Correlation

Finally, OCC proposes that returns scenarios for defaulting securities, securities with insufficient historical data, be simulated using a default correlation with the driver RUT.[24] The RUT Index is a small cap index and is hence a natural choice to represent most new issues that are small cap and deemed to be a "defaulting security." The default correlation is roughly equal to the median of all positively correlated securities with the index. Since 90% of the risk factors in OCC systems correlate positively to the RUT index, OCC would only consider those risk

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[24]   OCC notes that, in certain limited circumstances where there are reasonable grounds backed by the existing return history to support an alternative approach in which the returns are strongly correlated with those of an existing risk factor (a "proxy") with a full price history, the Margins Methodology allows OCC's Financial Risk Management staff to construct a "conditional" simulation to override any default treatment that would have otherwise been applied to the defaulting security.

factors to determine the median. OCC believes that the median of the correlation distribution has been steady over a number of simulations and is therefore proposing that it replace the current methodology of simulating uncorrelated scenarios, which OCC believes is not a realistic approach.

Clearing Member Outreach

OCC has discussed the proposed changes with its Financial Risk Advisory Council[25] at a meeting held on October 25, 2016. OCC also provided general updates to members at OCC Roundtable[26] meetings on June 20, 2017, and November 9, 2017. Clearing Members expressed interest in seeing how reactive margin changes would be under the proposal; however, there were no objections or significant concerns expressed regarding the proposed changes. OCC will provide at least 30-days of parallel reporting prior to implementation so that Clearing Members can see the impact of the proposed changes. In addition, OCC would publish an Information Memorandum to all Clearing Members describing the proposed change and will provide additional periodic Information Memoranda updates prior to the implementation date. Additionally, OCC would perform targeted and direct outreach with Clearing Members that would be most impacted by the proposed changes to the margin methodology and OCC would work closely with such Clearing Members to coordinate the implementation and associated funding for such Clearing Members resulting from the proposed change.[27]

OCC reviewed the derivatives clearing organization ("DCO") core principles ("Core Principles") as set forth in the Act. During this review, OCC identified the following Core Principle as potentially being impacted:

Risk Management. OCC believes that by implementing the proposed rule change it will be better able to manage the risks associated with discharging its responsibilities as set forth in Core Principle D concerning risk management. The proposed changes are designed to result in more accurate and responsive margin requirements and a model that is more stable and proactive during times of market volatility, with margins that are based off of the most recent market data. In addition, the proposed changes are intended to improve OCC's approach to estimating covariance and correlations between risk factors in an effort to achieve more stable and sensitive

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[25]   The Financial Risk Advisory Council is a working group consisting of representatives of Clearing Members and exchanges formed by OCC to review and comment on various risk management proposals.

[26]   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 the 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.

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

correlation estimations and improve OCC's methodology related to the treatment of defaulting securities by reducing the impact that illiquid securities with discontinuous data have on default variance estimates. These proposed methodology enhancements are therefore designed to consider, and produce margin levels commensurate with, the risks and particular attributes of each relevant product and portfolio and to calculate margin sufficient to cover OCC's potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default. Moreover, the proposed changes are designed to result in margin requirements that limit OCC's exposure to potential losses from defaults by its Clearing Members to ensure that its operations would not be disrupted and that non-defaulting Clearing Members would not be exposed to losses that non-defaulting Clearing Members cannot anticipate or control.

Opposing Views

No opposing views were expressed related to the rule amendments.

Notice of Pending Rule Certification

OCC hereby certifies that notice of this rule filing has been be given to Clearing Members of OCC in compliance with Regulation 40.6(a)(2) by posting a copy of the submission on OCC's website concurrently with the filing of this submission.

Certification

OCC hereby certifies that the rule set forth at Item 1 of the enclosed filing complies with the Act and the CFTC's regulations thereunder.

Should you have any questions regarding this matter, please do not hesitate to contact me.

Sincerely,

Justin W. Byrne
Vice President, Regulatory Filings

Enclosure

Required fields are shown with yellow backgrounds and asterisks.

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SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
Form 19b-4

File No.* SR - 2017 - * 022

Amendment No. (req. for Amendments *)

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) * ☐

Rule

Pilot ☐	Extension of Time Period for Commission Action * ☐

Date Expires *

☑ 19b-4(f)(1)   ☑ 19b-4(f)(4)
☑ 19b-4(f)(2)   ☑ 19b-4(f)(5)
☑ 19b-4(f)(3)   ☑ 19b-4(f)(6)

Notice of proposed change pursuant to the Payment, Clearing, and Settlement Act of 2010

Section 806(e)(1) * ☐   Section 806(e)(2) * ☐

Security-Based Swap Submission pursuant to the Securities Exchange Act of 1934

Section 3C(b)(2) * ☐

Exhibit 2 Sent As Paper Document ☑   Exhibit 3 Sent As Paper Document ☑

Description

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

Proposed rule change related to The Options Clearing Corporation's margin methodology.

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 11/13/2017

By Justin W. Byrne
(Name *)

Vice President, Regulatory Filings

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.

Justin Byrne, jbyrne@theocc.com

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

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

Form 19b-4 Information *

Add   Remove   View

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 *

Add   Remove   View

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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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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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

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Form 19b-4

Proposed Rule Change
by

THE OPTIONS CLEARING CORPORATION

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

Item 1.   **Text of the Proposed Rule Change**

This proposed rule change by The Options Clearing Corporation ("OCC") would modify

OCC's margin methodology to move away from the existing monthly data source provided by its

current vendor and towards obtaining and incorporating daily price and returns (adjusted for any

corporate actions) data of securities to estimate accurate margins.[1] This would be further

supported by enhancing OCC's econometric model applied to different risk factors;[2] improving

the sensitivity and stability of correlation estimates between them; and enhancing OCC's

methodology around the treatment of securities with limited historical data. OCC also proposes

to make a few clarifying and clean-up changes to its margin methodology unrelated to the

proposed changes described above.

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. The proposed changes are

described in detail in Item 3 below. The proposed rule change does not require any changes to

the text of OCC's By-Laws or Rules. 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.[3]

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[1]   OCC also has filed an advance notice with the Commission in connection with the proposed changes. See SR-OCC-2017-811.

[2]   The use of risk factors in OCC's margin methodology is discussed in more detail in the Background section of Item 3 below.

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

Item 2. **Procedures of the Self-Regulatory Organization**

The proposed rule change was approved for filing with the Commission by the Board of

Directors at a meeting held on May 3, 2017.

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**

        A.   Purpose

Background

OCC's margin methodology, the System for Theoretical Analysis and Numerical

Simulations ("STANS"), is OCC's proprietary risk management system that calculates Clearing

Member margin requirements.[4] STANS utilizes large-scale Monte Carlo simulations to forecast

price and volatility movements in determining a Clearing Member's margin requirement.[5] The

STANS margin requirement is calculated at the portfolio level of Clearing Member accounts

with positions in marginable securities and consists of an estimate of a 99% expected shortfall[6]

over a two-day time horizon and an add-on margin charge for model risk (the

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

[5]   See OCC Rule 601.

[6]   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.

concentration/dependence stress test charge).[7] The STANS methodology is used to measure the

exposure of portfolios of options and futures cleared by OCC and cash instruments in margin

collateral.

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. The

majority of risk factors utilized in the STANS methodology are total returns on individual equity

securities. Other risk factors considered include: returns on equity indexes; returns on implied

volatility[8] risk factors that are a set of nine chosen volatility pivots per product;[9] changes in

foreign exchange rates; and changes in model parameters that sufficiently capture the model

dynamics from a larger set of data.

Under OCC's current margin methodology, OCC obtains monthly price data for most of

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[7]   A detailed description of the STANS methodology is available at http://optionsclearing.com/risk-management/margins/.

[8]   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.

[9]   In December 2015, the Commission approved a proposed rule change, and issued a Notice of No Objection to an advance notice filing, by OCC to its modify margin methodology by more broadly incorporating variations in implied volatility within STANS. See Securities Exchange Act Release No. 34-76781 (December 28, 2015), 81 FR 135 (January 4, 2016) (SR-OCC-2015-016) and Securities Exchange Act Release No. 34-76548 (December 3, 2015), 80 FR 76602 (December 9, 2015) (SR-OCC-2015-804).

its equity-based products[10] from a widely used industry vendor. This data arrives around the

second week of every month in arrears and requires a maximum of about four weeks for OCC to

process the data after any clean up and reruns as may be required prior to installing into OCC's

margin system. As a result, correlations and statistical parameters for risk factors at any point in

time represent back-dated data and therefore may not be representative of the most recent market

data. In the absence of daily updates, OCC employs an approach where one or many identified

market proxies (or "scale-factors") are used to incorporate day-to-day market volatility across all

associated asset classes throughout.[11] The scale factor approach, however, assumes a perfect

correlation of the volatilities between the security and its scale factor, which gives little room to

capture the idiosyncratic risk of a given security and which may be different from the broad

market risk represented by the scale factor.

In risk management, it is a common practice to establish a floor for volatility at a certain

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[10]   The securities underlying these products are also known as risk factors within OCC's margin
         system.

[11]   Earlier this year, the Commission approved a proposed rule change and issued a Notice of No
         Objection to an advance notice filing by OCC which, among other things: (1) expanded the
         number of scale factors used for equity-based products to more accurately measure the
         relationship between current and long-run market volatility with proxies that correlate more
         closely to certain products carried within the equity asset class, and (2) applied relevant scale
         factors to the greater of (i) the estimated variance of 1-day return scenarios or (ii) the historical
         variance of the daily return scenarios of a particular instrument, as a floor to mitigate
         procyclicality. See Securities Exchange Act Release No. 80147 (March 3, 2017), 82 FR 13163
         (March 9, 2017) (SR-OCC-2017-001) and Securities Exchange Act Release No. 80143 (March 2,
         2017), 82 FR 13036 (March 8, 2017) (SR-OCC-2017-801).

level in order to protect against procyclicality[12] in the model. OCC imposes a floor on volatility

estimates for its equity-based products using a 500-day look back period. These monthly

updates coupled with the dependency of margins on scale factors and the volatility floor can

result in imprecise changes in margins charged to Clearing Members, specifically across periods

of heavy volatility when the correlation between the risk factor and a scale factor fluctuate.

OCC's current methodology for estimating covariance and correlations between risk

factors relies on the same monthly data described above, resulting in a similar lag time between

updates. In addition, correlation estimates are based off historical returns series, with estimates

between a pair of risk factors being highly sensitive to the volatility of either risk factor in the

chosen pair. The current approach therefore results in potentially less stable correlation

estimates that may not be representative of current market conditions.

Finally, under OCC's existing margin methodology, theoretical price scenarios for

"defaulting securities"[13] are simulated using uncorrelated return scenarios with an average zero

return and a pre-specified volatility called "default variance." The default variance is estimated

as the average of the top 25 percent quantile of the conditional variances of all securities. As a

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[12]   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.

[13]   Within the context of OCC's margin system, securities that do not have enough historical data for calibration are classified as "defaulting securities."

result, these default estimates may be impacted by extremely illiquid securities with discontinuous data. In addition, the default variance (and the associated scale factors used to scale up volatility) is also subject to sudden jumps with the monthly simulation installations across successive months because it is derived from monthly data updates, as opposed to daily updates, which are prone to wider fluctuations and are subject to adjustments using scale factors.

Proposed Changes

OCC proposes to modify its margin methodology by: (1) obtaining daily price data for equity products (including daily corporate action-adjusted returns of equities where price and thus returns of securities are adjusted for any dividends issued, stock splits, etc.) for use in the daily estimation of econometric model parameters; (2) enhancing its econometric model for updating statistical parameters (e.g., parameters concerning correlations or volatility) for all risk factors that reflect the most recent data obtained; (3) improving the sensitivity and stability of correlation estimates across risk factors by using de-volatized[14] returns (but using a 500 day look back period); and (4) improving OCC's methodology related to the treatment of defaulting securities that would result in stable and realistic risk estimates for such securities.

The purpose of the proposed changes is to enhance OCC's margin methodology to mitigate the issues described above that arise from the current monthly update and scale factor approach. Specifically, by introducing daily (as opposed to monthly) updates for price data (and

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[14]   De-volatization is a process of normalizing historical data with the associated volatility thus enabling any comparison between different sets of data.

thereby allowing for daily updates of statistical parameters in the model) and making other

proposed model enhancements described herein, the proposed changes are designed to result in

more accurate and responsive margin requirements and a model that is more stable and proactive

during times of market volatility, with margins that are based off of the most recent market data.

In addition, the proposed changes are intended to improve OCC's approach to estimating

covariance and correlations between risk factors in an effort to achieve more stable and sensitive

correlation estimations and improve OCC's methodology related to the treatment of defaulting

securities by reducing the impact that illiquid securities with discontinuous data have on default

variance estimates.

The proposed changes are described in further detail below.[15]

1. *Daily Updates of Price Data*

OCC proposes to introduce daily updates for price data for equity products, including

daily corporate action-adjusted returns of equities, Exchange Traded Funds ("ETFs"), Exchange

Traded Notes ("ETNs") and certain indexes. The daily price data would be obtained from a

widely used external vendor, as is the case with the current monthly updates. The purpose of the

proposed change is to ensure that OCC's margin methodology is reliant on data that is more

representative of current market conditions, thereby resulting in more accurate and responsive

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[15]   In addition to the proposed methodology changes described herein, OCC also would make some
         clarifying and clean-up changes, unrelated to the proposed changes described above, to update its
         margin methodology to reflect existing practices for the daily calibration of seasonal and non-
         seasonal energy models and the removal of methodology language for certain products that are no
         longer cleared by OCC.

margin requirements.

As described above, OCC currently obtains price data for all securities on a monthly

basis from a third party vendor. After obtaining the monthly price data, additional time is

required for OCC to process the data prior to installing into OCC's margin system. As a result,

correlations and statistical parameters for risk factors at any point in time represent back-dated

data and therefore may not be representative of the most recent market data. To mitigate pro-

cyclicality within its margin methodology in the absence of daily updates, OCC employs the use

of scale-factors to incorporate day-to-day market volatility across all associated asset classes.

While the scale factors help to reduce procyclicality in the model, the scale factors do not

necessarily capture the idiosyncratic risks of a given security, which may be different from the

broad market risk represented by the scale factor.

OCC proposes to address these issues associated with its current margin methodology by

eliminating its dependency on monthly price data, which arrives in arrears and requires

additional time for OCC to process the data prior to installing into OCC's margin system through

the introduction of daily updates for price data for equity products. The introduction of daily

price updates would enable OCC's margin methodology to better capture both market as well

idiosyncratic risk by allowing for daily updates to the parameters associated with of the

econometric model (discussed below) that capture the risk associated with a particular product,

and therefore ensure that OCC's margin requirements are based on more current market

conditions. As a result, OCC would also reduce its reliance on the use of scale factors to

incorporate day-to-day market volatility, which, as noted above, give little room to capture the

idiosyncratic risk of a given security and which may be different from the broad market risk

represented by the scale factor. In addition, the processing time between receipt of the data and

installation into the margin system would be reduced as the data review and processing for daily

prices would be incorporated into OCC's daily price editing process.

2. *Proposed Enhancements to the Econometric Model*

In addition to introducing daily updates for price and corporate action-adjusted returns

data, OCC is proposing enhancements to its econometric model for calculating statistical

parameters for all qualifying risk factors that reflect the most recent data obtained (e.g., OCC

would be able to calculate parameters such as volatility and correlations on a daily basis using

the new daily price data discussed above). Specifically, OCC proposes to enhance its

econometric model by: (i) introducing daily updates for statistical parameters; (ii) introducing

features in its econometric model that are designed to take into account asymmetry in the model

used to forecast volatility associated with a risk factor ; (iii) modifying the statistical distribution

used to model the returns of equity prices; (iv) introducing a second-day forecast for volatility

into the model to estimate the two-day scenario distributions for risk factors; and (v) imposing a

floor on volatility estimates using a 10-year look back period.

These proposed model enhancements are described in detail below.

i. Daily Updates for Statistical Parameters

Under the proposal, the statistical parameters for the model would be updated on a daily

basis using the new daily price data obtained by OCC (as described in section 1 above).[16] As a

result, OCC would no longer need to rely on scale factors to approximate day-to-day market

volatility for equity-based products. Statistical parameters would be calibrated on daily basis,

allowing OCC to calculate more accurate margin requirements that are representative of the most

recent market data.

> ii.   Proposed Enhancements to Capture Asymmetry in Conditional Variance

In addition to the daily update of statistical parameters, OCC proposes to include new

features in its econometric model that are designed to take into account asymmetry in the

conditional variance process. The econometric model currently used in STANS for all risk

factors is a GARCH(1,1) with Student's *t*-distributed innovations of logarithmic returns[17], which

is a relatively straightforward and widely used model to forecast volatility. [18] The current

approach for forecasting the conditional variance for a given risk factor does not, however,

consider the asymmetric volatility phenomenon observed in financial markets (also called the

"leverage effect") where volatility is more sensitive and reactive to market downturns. As a

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[16]   OCC notes that this change would apply to most risk factors with the exception of certain equity indexes, Treasury securities, and energy futures products, which are already updated on a daily basis.

[17]   The Student's *t* distribution is a widely used statistical distribution to model the historical logarithmic price returns data of a security that allows for the presence of fat tails (aka kurtosis) or a non-zero conditional fourth moment.

[18]   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.

result, OCC proposes to enhance its model by adding new features (i.e., incorporating asymmetry into its forecast volatility) designed to allow the conditional volatility forecast to be more sensitive to market downturns and thereby capture the most significant dynamics of the relationship between price and volatility observed in financial markets. OCC believes the proposed enhancement would result in more accurate and responsive margin requirements, particularly in market downturns.

iii.   Proposed Change in Statistical Distribution

OCC further proposes to change the statistical distribution used to model the returns of equity prices. OCC's current methodology uses a fat tailed distribution[19] (the Student's *t*-distribution) to model returns; however, price scenarios generated using very large log-return scenarios (positive) that follow this distribution can approach infinity and could potentially result in excessively large price jumps, a known limitation of this distribution. OCC proposes to move to a more defined distribution (Standardized Normal Reciprocal Inverse Gaussian or NRIG) for modeling returns, which OCC believes would more appropriately simulate future returns based on the historical price data for the products in question (i.e., it has a better "goodness of fit"[20] to the historical data) and allows for more appropriate modeling of fat tails. As a result, OCC believes that the proposed change would lead to more consistent treatment of log returns both on

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[19]   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.

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

the upside as well as downside of the distribution.

       iv.   <u>Second Day Volatility Forecast</u>

OCC also proposes to introduce a second-day forecast for volatility into the model to estimate the two-day scenario distributions for risk factors.[21] Under the current methodology, OCC typically uses a two-day horizon to determine its risk exposure to a given portfolio. This is done by simulating 10,000 theoretical price scenarios for the two-day horizon using a one-day forecast conditional variance, and the value at risk and expected shortfall components of the margin requirement are then determined from the simulated profit/loss distributions. These one-day and two-day returns scenarios are both simulated using the one-day forecast conditional variance estimate. This could lead to a risk factor's coverage differing substantially on volatile trading days. As a result, OCC proposes to introduce a second-day forecast variance for all equity-based risk factors. The second-day conditional variance forecast would be estimated for each of the 10,000 Monte Carlo returns scenarios, resulting in more accurately estimated two-day scenario distributions, and therefore more accurate and responsive margin requirements.

       v.   <u>Anti-Procyclical Floor for Volatility Estimates</u>

Additionally, OCC proposes to modify its floor for volatility estimates. OCC currently imposes a floor on volatility estimates for its equity-based products using a 500-day look back period. OCC proposes to extend this look back period to 10-years (2520 days) in the enhanced

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[21]   This proposed change would not apply to STANS implied volatility scenario risk factors. For those risk factors, OCC's existing methodology would continue to apply. <u>See</u> <u>supra</u> note 9.

model and to apply this floor to volatility estimates for other products (excluding implied

volatility risk factor scenarios). The proposed model described herein is calibrated from

historical data, and as a result, the level of the volatilities generated by the model will vary from

time to time. OCC is therefore proposing to establish a volatility floor for the model using a 10-

year look back period to reduce the risk of procyclicality in its margin model. OCC believes that

using a longer 10-year look back period will ensure that OCC captures sufficient historical

events/market shocks in the calculation of its anti-procyclical floor. The 10-year look back

period also is in line with requirements of the European Market Infrastructure Regulation

(including regulations thereunder)[22] concerning the calibration of risk factors.

3. *Proposed Enhancements to Correlation Estimates*

As described above, OCC's current methodology for estimating covariance and

correlations between risk factors relies on the same monthly price data feeding the econometric

model, resulting in a similar lag time between updates. In addition, correlation estimates are

based off historical returns series, with estimates between a pair of risk factors being highly

sensitive to the volatility of either risk factors in the chosen pair. The current approach therefore

results in correlation estimates being sensitive to volatile historical data.

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[22]   Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on
        OTC derivatives, central counterparties and trade repositories. Specifically, the proposed floor
        would be compliant with Article 28 of Commission Delegated Regulation (EU) No. 153/2013 of
        19 December 2012 Supplementing Regulation (EU) No. 648/2012 of the European Parliament
        and of the Council with regard to Regulatory Technical Standards on Requirements for Central
        Counterparties (the "Regulatory Technical Standards").

In order to address these limitations, OCC proposes to enhance its methodology for

calculating correlation estimates by moving to a daily process for updating correlations (with a

minimum of one week's lag) to ensure Clearing Member account margins are more current and

thus more accurate. Moreover, OCC proposes to enhance its approach to modeling correlation

estimates by de-volatizing[23] the returns series to estimate the correlations. Under the proposed

approach, OCC would first consider the returns excess of the mean (i.e., the average estimated

from historical data sample) and then further scale them by the corresponding estimated

conditional variances. OCC believes that by using de-volatized returns, which is a widely

suggested approach in relevant literature, it would lead to normalizing returns across a variety of

asset classes and make the correlation estimator less sensitive to sudden market jumps and

therefore more stable.

4. *Defaulting Securities Methodology*

Finally, OCC proposes to enhance its methodology for estimating the defaulting variance

in its model. OCC's margin system is dependent on market data to determine Clearing Member

margin requirements. Securities that do not have enough historical data are classified as to be a

"defaulting security" within OCC systems (e.g., IPO securities). As noted above, within current

STANs systems, the theoretical price scenarios for defaulting securities are simulated using

uncorrelated return scenarios with a zero mean and a default variance, with the default variance

being estimated as the average of the top 25 percent quantile of the conditional variances of all

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[23]   See supra note 14.

securities. As a result, these default estimates may be impacted by extremely illiquid securities with discontinuous data. In addition, the default variance (and the associated scale factors used to scale up volatility) is also subject to sudden jumps with the monthly simulation installations across volatile months. To mitigate these concerns, OCC proposes to: (i) use only optionable equity securities to estimate the defaulting variance; (ii) use a shorter time series to enable calibration of the model for all securities; and (iii) simulating default correlations with the driver Russell 2000 index ("RUT").

i. Proposed Modifications to Securities and Quantile Used in Estimation.

OCC proposes that only optionable equity securities, which are typically more liquid, be considered while estimating the default variance. This limitation would eliminate from the estimation almost all illiquid securities with discontinuous data that could contribute to high conditional variance estimates and thus a high default variance. In addition, OCC proposes to estimate the default variance as the lowest estimate of the top 10% of the floored conditional variance across the risk factors. This change in methodology is designed to ensure that while the estimate is aggressive it is also robust to the presence of outliers caused by a few extremely volatile securities that influence the location parameter of a distribution. Moreover, as a consequence of the daily updates described above, the default variances would change daily and there would be no scale factor to amplify the effect of the variance on risk factor coverage.

ii. Proposed Change in Time Series

In addition, OCC proposes to use a shorter time series to enable calibration of the model for all securities. Currently, OCC does not calibrate parameters for defaulting securities that

have historical data of less than two years. OCC is proposing to shorten this time period to around 6 months (180 days) to enable calibration of the model for all securities within OCC systems. OCC believes that this shorter time series is sufficient to produce stable calibrated parameters.

iii. Proposed Default Correlation

Finally, OCC proposes that returns scenarios for defaulting securities, securities with insufficient historical data, be simulated using a default correlation with the driver RUT.[24] The RUT Index is a small cap index and is hence a natural choice to represent most new issues that are small cap and deemed to be a "defaulting security." The default correlation is roughly equal to the median of all positively correlated securities with the index. Since 90% of the risk factors in OCC systems correlate positively to the RUT index, OCC would only consider those risk factors to determine the median. OCC believes that the median of the correlation distribution has been steady over a number of simulations and is therefore proposing that it replace the current methodology of simulating uncorrelated scenarios, which OCC believes is not a realistic approach.

Clearing Member Outreach

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[24]   OCC notes that, in certain limited circumstances where there are reasonable grounds backed by the existing return history to support an alternative approach in which the returns are strongly correlated with those of an existing risk factor (a "proxy") with a full price history, the Margins Methodology allows OCC's Financial Risk Management staff to construct a "conditional" simulation to override any default treatment that would have otherwise been applied to the defaulting security.

OCC has discussed the proposed changes with its Financial Risk Advisory Council[25] at a meeting held on October 25, 2016. OCC also provided general updates to members at OCC Roundtable[26] meetings on June 20, 2017, and November 9, 2017. Clearing Members expressed interest in seeing how reactive margin changes would be under the proposal; however, there were no objections or significant concerns expressed regarding the proposed changes. OCC will provide at least 30-days of parallel reporting prior to implementation so that Clearing Members can see the impact of the proposed changes. In addition, OCC would publish an Information Memorandum to all Clearing Members describing the proposed change and will provide additional periodic Information Memoranda updates prior to the implementation date. Additionally, OCC would perform targeted and direct outreach with Clearing Members that would be most impacted by the proposed changes to the margin methodology and OCC would work closely with such Clearing Members to coordinate the implementation and associated funding for such Clearing Members resulting from the proposed change.[27]

        B.   <u>Statutory Basis</u>

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[25]   The Financial Risk Advisory Council is a working group consisting of representatives of Clearing Members and exchanges formed by OCC to review and comment on various risk management proposals.

[26]   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 the 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.

[27]   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 believes that the proposed rule change is consistent with Section 17A of the Securities Exchange Act of 1934, as amended (the "Act"),[28] and the rules thereunder applicable to OCC. Section 17A(b)(3)(F) of Act[29] requires that the rules of a clearing agency be designed to assure the safeguarding of securities and funds which are in the custody or control of the clearing agency or for which it is responsible. OCC believes the propose rule change would enhance its margin methodology in a manner designed to safeguard the securities and funds in its custody or control for the reasons set forth below.

As noted above, OCC's current margin methodology relies on monthly price data being obtained from a third party vendor. This data arrives monthly in arrears and requires additional time for OCC to process the data prior to installing into OCC's margin system. As a result, correlations and statistical parameters for risk factors at any point in time represent back-dated data and therefore may not be representative of the most recent market data. To mitigate procyclicality within its margin methodology in the absence of daily updates, OCC employs a scale factor approach to incorporate day-to-day market volatility across all associated asset classes throughout.[30] For the reasons noted above, these monthly updates coupled with the dependency of margins on scale factors can result in imprecise changes in margins charged to Clearing Members, specifically across periods of heavy volatility.

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[28]   15 U.S.C. 78q-1.

[29]   15 U.S.C. 78q-1(b)(3)(F).

[30]   See supra note 11 and accompanying text.

OCC proposes to enhance its margin methodology to introduce daily updates for equity price data, thereby allowing for daily updates of statistical parameters in its margin model for most risk factors. In addition, the proposed changes would introduce features to the model to better account for the asymmetric volatility phenomenon observed in financial markets and allow for conditional volatility forecast to be more sensitive to market downturns. The proposed changes would also introduce a new statistical distribution for modeling equity price returns that OCC believes would have a better goodness of fit and would more appropriately account for fait tails. Moreover, the proposed changes would introduce a second-day volatility forecast into the model to provide for more accurate and timely estimations of its two-day scenario distributions. OCC also proposes to enhance its econometric model by establishing a volatility floor using a 10-year look back period to reduce procyclicality in the margin model. OCC believes the proposed changes would result in more accurate and responsive margin requirements and a model that is more stable and proactive during times of market volatility, with risk charges that are based off of most recent market data.

In addition, the proposed rule change is intended to improve OCC's approach to estimating covariance and correlations between risk factors in an effort to achieve more stable and sensitive correlation estimations and improve OCC's methodology related to the treatment of defaulting securities by reducing the impact that illiquid securities with discontinuous data have on default variance estimates.

The proposed methodology changes 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 that may result from such a default. As a result, OCC believes the proposed rule changed is designed to assure the safeguarding of securities and funds in its custody or control in accordance with Section 17A(b)(3)(F) of the Act.[31]

Rules 17Ad-22(b)(1) and (2)[32] require that a registered clearing agency that performs central counterparty services establish, implement, maintain and enforce written policies and procedures reasonably designed to, in part: (1) 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 and (2) 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, the proposed changes would introduce the use of daily price updates into OCC's margin methodology, which allows for daily updates to the statistical parameters in the model (e.g., parameters concerning volatility and correlation). These changes would be supported by a number of other risk-based enhancements to OCC's econometric model designed to: (i) more appropriately account for asymmetry in conditional variance; (ii) more appropriately model the statistical distribution of price returns; (iii) provide for an anti-procyclical floor for

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[31]   Id.

[32]   17 CFR 240.17Ad-22(b)(1) and (2).

volatility estimates based on a 10-year look back period; and (iv) more accurately model second-day volatility forecasts. Moreover, the proposed changes would improve OCC's approach to estimating covariance and correlations between risk factors in an effort to achieve more stable and sensitive correlation estimations and improve OCC's methodology related to the treatment of defaulting securities by reducing the impact that illiquid securities with discontinuous data have on default variance estimates.

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. The proposed enhancements concerning daily price updates, daily updates of statistical parameters, and to more appropriately account for asymmetry in conditional variance would result in more accurate and responsive margin requirements and a model that is more stable and proactive during times of market volatility, with margin charges that are based off of the most recent market data. In addition, the proposed modifications to extend the look back period for determining volatility estimates for equity-based products from 500 days to 10 years will help to ensure that OCC captures sufficient historical events/market shocks in the calculation of its anti-procyclical floor. Additionally, the proposed changes would enhance OCC's margin methodology for calculating correlation estimates by moving to a daily process for updating correlations (with a minimum of one week's lag) so that Clearing Member account margins are more current and thus more accurate and using de-volatized returns to normalize returns across a variety of asset classes and make the correlation estimator less sensitive to sudden market jumps and therefore more stable. Finally, the proposed changes to OCC's

methodology for the treatment of defaulting securities is designed to result in stable and realistic

risk estimates for such securities   The proposed changes are therefore designed to ensure that

OCC sets margin requirements, using risk-based models and parameters, 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 Rules 17Ad-22(b)(1) and (2).[33]

Rule 17Ad-22(e)(6)[34] further requires OCC to 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: (i) considers,

and produces margin levels commensurate with, the risks and particular attributes of each

relevant product, portfolio, and market; (ii) 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 (iii) uses reliable sources of timely price data

and uses procedures and sound valuation models for addressing circumstances in which pricing

data are not readily available or reliable.

As described in detail above, the proposed changes are designed to ensure that, among

other things, OCC's margin methodology: (i) more appropriately accounts for asymmetry in

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[33]   Id.

[34]   17 CFR 240.17Ad-2(e)(6).

conditional variance; (ii) more appropriately models the statistical distribution of price returns, (iii) more accurately models second-day volatility forecasts; (iv) improves OCC's approach to estimating covariance and correlations between risk factors to provide for stable and sensitive correlation estimations; and (v) improves OCC's methodology related to the treatment of defaulting securities by reducing the impact that illiquid securities with discontinuous data have on default variance estimates. These methodology enhancements would be used to calculate daily margin requirements for OCC's Clearing Members. In this way, the proposed changes are designed to consider, and produce margin levels commensurate with, the risks and particular attributes of each relevant product, portfolio, and market and to 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.

Moreover, the proposed changes would introduce daily updates for price data for equity products, including daily corporate action-adjusted returns of equities, ETFs, ETNs, and certain indexes. This daily price data would be obtained from a widely used and reliable industry vendor. In this way, the proposed changes would ensure that OCC uses reliable sources of timely price data in its margin methodology, which better reflect current market conditions than the current monthly updates, thereby resulting in more accurate and responsive margin requirements.

For these reasons, OCC believes that the proposed changes are consistent with Rule

17Ad-22(e)(6).[35]

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

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

Section 17A(b)(3)(I) requires that the rules of a clearing agency do not impose any burden on competition not necessary or appropriate in furtherance of the purposes of Act.[36] OCC does not believe that the proposed rule change would impose any burden on competition. The proposed risk model enhancements would apply to all Clearing Members equally. While OCC expects that margin requirements may see slight reductions in the aggregate, the individual impact of the proposed changes will be mixed and depend on market conditions and the composition of the portfolio in question. The proposed rule change is primarily designed to allow OCC to determine margin requirements that more accurately represent the risk presented by its cleared products and that are more responsive to changes in volatility or overall market conditions. OCC does not believe that the proposed rule change would unfairly inhibit access to OCC's services or disadvantage or favor any particular user in relationship to another user. Accordingly, OCC believes that any competitive impact would be necessary and appropriate in furtherance of the safeguarding of securities and funds which are in the custody or control of

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[35]   Id.

[36]   15 U.S.C. 78q-1(b)(3)(I).

OCC or for which it is responsible, and in general, the protection of investors and the public

interest.

Item 5.   **Self-Regulatory Organization's Statement on Comments on the Proposed**
Rule Change Received from Members, Participants or Others

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

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

written comments received by OCC.

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.   **Proposed Rule Change Based on Rule of Another Self-Regulatory**
Organization or of the Commission

Not applicable.

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

Not applicable.

Item 11.   **Exhibits**

Exhibit 1A.   Completed Notice of Proposed Rule Change for publication in the Federal

Register.

Exhibit 5.   Margins Methodology

CONFIDENTIAL TREATMENT IS REQUESTED FOR EXHIBIT 5

PURSUANT TO SEC RULE 24b-2

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-2017-022)

November __, 2017

Self-Regulatory Organizations; The Options Clearing Corporation; Notice of Filing of
Proposed Rule Change Related to The Options Clearing Corporation's Margin
Methodology

      Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 ("Act"),[1]

and Rule 19b-4 thereunder,[2] notice is hereby given that on November 13, 2017, The

Options Clearing Corporation ("OCC") filed with the Securities and Exchange

Commission ("Commission") the proposed rule change as described in Items I, II, and

III below, which Items have been prepared primarily by OCC. The Commission is

publishing this notice to solicit comments on the proposed rule change from interested

persons.

I.   Clearing Agency's Statement of the Terms of Substance of the Proposed
        Rule Change

      This proposed rule change by OCC would modify OCC's margin methodology to

move away from the existing monthly data source provided by its current vendor and

towards obtaining and incorporating daily price and returns (adjusted for any corporate

actions) data of securities to estimate accurate margins.[3] This would be further supported

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[1]   15 U.S.C. 78s(b)(1).

[2]   17 CFR 240.19b-4.

[3]   OCC also has filed an advance notice with the Commission in connection with the
      proposed changes. See SR-OCC-2017-811.

by enhancing OCC's econometric model applied to different risk factors;[4] improving the

sensitivity and stability of correlation estimates between them; and enhancing OCC's

methodology around the treatment of securities with limited historical data. OCC also

proposes to make a few clarifying and clean-up changes to its margin methodology

unrelated to the proposed changes described above

     The proposed changes to OCC's Margins Methodology document are contained

in confidential Exhibit 5 of the filing. The proposed changes are described in detail in

Item II below. The proposed rule change does not require any changes to the text of

OCC's By-Laws or Rules. 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.[5]

II.   Clearing Agency's Statement of the Purpose of, and Statutory Basis for,
        the Proposed Rule Change

     In its filing with the Commission, OCC included statements concerning the purpose

of and basis for the proposed rule change and discussed any comments it received on the

proposed rule change. 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), (B), and (C)

below, of the most significant aspects of these statements.

     (A)   Clearing Agency's Statement of the Purpose of, and Statutory Basis for,
            the Proposed Rule Change

            (1)   Purpose

Background

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4   The use of risk factors in OCC's margin methodology is discussed in more detail
      in the Background section of Item II below.

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

OCC's margin methodology, the System for Theoretical Analysis and

Numerical Simulations ("STANS"), is OCC's proprietary risk management system that

calculates Clearing Member margin requirements.[6] STANS utilizes large-scale Monte

Carlo simulations to forecast price and volatility movements in determining a Clearing

Member's margin requirement.[7] The STANS margin requirement is calculated at the

portfolio level of Clearing Member accounts with positions in marginable securities and

consists of an estimate of a 99% expected shortfall[8] over a two-day time horizon and an

add-on margin charge for model risk (the concentration/dependence stress test charge).[9]

The STANS methodology is used to measure the exposure of portfolios of options and

futures cleared by OCC and cash instruments in margin collateral.

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. The majority of risk factors utilized in the STANS methodology are total

returns on individual equity securities. Other risk factors considered include: returns on

equity indexes; returns on implied volatility[10] risk factors that are a set of nine chosen

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

[7]   See OCC Rule 601.

[8]   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.

[9]   A detailed description of the STANS methodology is available at
        http://optionsclearing.com/risk-management/margins/.

[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,

volatility pivots per product;[11] changes in foreign exchange rates; and changes in model

parameters that sufficiently capture the model dynamics from a larger set of data.

Under OCC's current margin methodology, OCC obtains monthly price data for

most of its equity-based products[12] from a widely used industry vendor. This data arrives

around the second week of every month in arrears and requires a maximum of about four

weeks for OCC to process the data after any clean up and reruns as may be required prior

to installing into OCC's margin system. As a result, correlations and statistical

parameters for risk factors at any point in time represent back-dated data and therefore

may not be representative of the most recent market data. In the absence of daily

updates, OCC employs an approach where one or many identified market proxies (or

"scale-factors") are used to incorporate day-to-day market volatility across all associated

asset classes throughout.[13] The scale factor approach, however, assumes a perfect

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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] In December 2015, the Commission approved a proposed rule change, and issued a Notice of No Objection to an advance notice filing, by OCC to its modify margin methodology by more broadly incorporating variations in implied volatility within STANS. See Securities Exchange Act Release No. 34-76781 (December 28, 2015), 81 FR 135 (January 4, 2016) (SR-OCC-2015-016) and Securities Exchange Act Release No. 34-76548 (December 3, 2015), 80 FR 76602 (December 9, 2015) (SR-OCC-2015-804).

[12] The securities underlying these products are also known as risk factors within OCC's margin system.

[13] Earlier this year, the Commission approved a proposed rule change and issued a Notice of No Objection to an advance notice filing by OCC which, among other things: (1) expanded the number of scale factors used for equity-based products to

correlation of the volatilities between the security and its scale factor, which gives little

room to capture the idiosyncratic risk of a given security and which may be different

from the broad market risk represented by the scale factor.

In risk management, it is a common practice to establish a floor for volatility at a

certain level in order to protect against procyclicality[14] in the model. OCC imposes a

floor on volatility estimates for its equity-based products using a 500-day look back

period. These monthly updates coupled with the dependency of margins on scale factors

and the volatility floor can result in imprecise changes in margins charged to Clearing

Members, specifically across periods of heavy volatility when the correlation between the

risk factor and a scale factor fluctuate.

OCC's current methodology for estimating covariance and correlations between

risk factors relies on the same monthly data described above, resulting in a similar lag

time between updates. In addition, correlation estimates are based off historical returns

series, with estimates between a pair of risk factors being highly sensitive to the volatility

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more accurately measure the relationship between current and long-run market volatility with proxies that correlate more closely to certain products carried within the equity asset class, and (2) applied relevant scale factors to the greater of (i) the estimated variance of 1-day return scenarios or (ii) the historical variance of the daily return scenarios of a particular instrument, as a floor to mitigate procyclicality. See Securities Exchange Act Release No. 80147 (March 3, 2017), 82 FR 13163 (March 9, 2017) (SR-OCC-2017-001) and Securities Exchange Act Release No. 80143 (March 2, 2017), 82 FR 13036 (March 8, 2017) (SR-OCC-2017-801).

[14]   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.

of either risk factor in the chosen pair. The current approach therefore results in potentially less stable correlation estimates that may not be representative of current market conditions.

Finally, under OCC's existing margin methodology, theoretical price scenarios for "defaulting securities"[15] are simulated using uncorrelated return scenarios with an average zero return and a pre-specified volatility called "default variance." The default variance is estimated as the average of the top 25 percent quantile of the conditional variances of all securities. As a result, these default estimates may be impacted by extremely illiquid securities with discontinuous data. In addition, the default variance (and the associated scale factors used to scale up volatility) is also subject to sudden jumps with the monthly simulation installations across successive months because it is derived from monthly data updates, as opposed to daily updates, which are prone to wider fluctuations and are subject to adjustments using scale factors.

Proposed Changes

OCC proposes to modify its margin methodology by: (1) obtaining daily price data for equity products (including daily corporate action-adjusted returns of equities where price and thus returns of securities are adjusted for any dividends issued, stock splits, etc.) for use in the daily estimation of econometric model parameters; (2) enhancing its econometric model for updating statistical parameters (e.g., parameters concerning correlations or volatility) for all risk factors that reflect the most recent data obtained; (3) improving the sensitivity and stability of correlation estimates across risk

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[15]   Within the context of OCC's margin system, securities that do not have enough historical data for calibration are classified as "defaulting securities."

factors by using de-volatized[16] returns (but using a 500 day look back period); and (4) improving OCC's methodology related to the treatment of defaulting securities that would result in stable and realistic risk estimates for such securities.[17]

The purpose of the proposed changes is to enhance OCC's margin methodology to mitigate the issues described above that arise from the current monthly update and scale factor approach. Specifically, by introducing daily (as opposed to monthly) updates for price data (and thereby allowing for daily updates of statistical parameters in the model) and making other proposed model enhancements described herein, the proposed changes are designed to result in more accurate and responsive margin requirements and a model that is more stable and proactive during times of market volatility, with margins that are based off of the most recent market data. In addition, the proposed changes are intended to improve OCC's approach to estimating covariance and correlations between risk factors in an effort to achieve more stable and sensitive correlation estimations and improve OCC's methodology related to the treatment of defaulting securities by reducing the impact that illiquid securities with discontinuous data have on default variance estimates.

The proposed changes are described in further detail below.

1. *Daily Updates of Price Data*

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[16]   De-volatization is a process of normalizing historical data with the associated volatility thus enabling any comparison between different sets of data.

[17]   In addition to the proposed methodology changes described herein, OCC also would make some clarifying and clean-up changes, unrelated to the proposed changes described above, to update its margin methodology to reflect existing practices for the daily calibration of seasonal and non-seasonal energy models and the removal of methodology language for certain products that are no longer cleared by OCC.

OCC proposes to introduce daily updates for price data for equity products, including daily corporate action-adjusted returns of equities, Exchange Traded Funds ("ETFs"), Exchange Traded Notes ("ETNs") and certain indexes. The daily price data would be obtained from a widely used external vendor, as is the case with the current monthly updates. The purpose of the proposed change is to ensure that OCC's margin methodology is reliant on data that is more representative of current market conditions, thereby resulting in more accurate and responsive margin requirements.

As described above, OCC currently obtains price data for all securities on a monthly basis from a third party vendor. After obtaining the monthly price data, additional time is required for OCC to process the data prior to installing into OCC's margin system. As a result, correlations and statistical parameters for risk factors at any point in time represent back-dated data and therefore may not be representative of the most recent market data. To mitigate pro-cyclicality within its margin methodology in the absence of daily updates, OCC employs the use of scale-factors to incorporate day-to-day market volatility across all associated asset classes. While the scale factors help to reduce procyclicality in the model, the scale factors do not necessarily capture the idiosyncratic risks of a given security, which may be different from the broad market risk represented by the scale factor.

OCC proposes to address these issues associated with its current margin methodology by eliminating its dependency on monthly price data, which arrives in arrears and requires additional time for OCC to process the data prior to installing into OCC's margin system through the introduction of daily updates for price data for equity products. The introduction of daily price updates would enable OCC's margin

methodology to better capture both market as well idiosyncratic risk by allowing for daily updates to the parameters associated with of the econometric model (discussed below) that capture the risk associated with a particular product, and therefore ensure that OCC's margin requirements are based on more current market conditions. As a result, OCC would also reduce its reliance on the use of scale factors to incorporate day-to-day market volatility, which, as noted above, give little room to capture the idiosyncratic risk of a given security and which may be different from the broad market risk represented by the scale factor. In addition, the processing time between receipt of the data and installation into the margin system would be reduced as the data review and processing for daily prices would be incorporated into OCC's daily price editing process.

2. *Proposed Enhancements to the Econometric Model*

In addition to introducing daily updates for price and corporate action-adjusted returns data, OCC is proposing enhancements to its econometric model for calculating statistical parameters for all qualifying risk factors that reflect the most recent data obtained (e.g., OCC would be able to calculate parameters such as volatility and correlations on a daily basis using the new daily price data discussed above). Specifically, OCC proposes to enhance its econometric model by: (i) introducing daily updates for statistical parameters; (ii) introducing features in its econometric model that are designed to take into account asymmetry in the model used to forecast volatility associated with a risk factor ; (iii) modifying the statistical distribution used to model the returns of equity prices; (iv) introducing a second-day forecast for volatility into the model to estimate the two-day scenario distributions for risk factors; and (v) imposing a floor on volatility estimates using a 10-year look back period.

These proposed model enhancements are described in detail below.

i.   Daily Updates for Statistical Parameters

Under the proposal, the statistical parameters for the model would be updated on a

daily basis using the new daily price data obtained by OCC (as described in section 1

above).[18] As a result, OCC would no longer need to rely on scale factors to approximate

day-to-day market volatility for equity-based products. Statistical parameters would be

calibrated on daily basis, allowing OCC to calculate more accurate margin requirements

that are representative of the most recent market data.

ii.   Proposed Enhancements to Capture Asymmetry in Conditional Variance

In addition to the daily update of statistical parameters, OCC proposes to include

new features in its econometric model that are designed to take into account asymmetry

in the conditional variance process. The econometric model currently used in STANS for

all risk factors is a GARCH(1,1) with Student's *t*-distributed innovations of logarithmic

returns[19], which is a relatively straightforward and widely used model to forecast

volatility. [20] The current approach for forecasting the conditional variance for a given

risk factor does not, however, consider the asymmetric volatility phenomenon observed

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18   OCC notes that this change would apply to most risk factors with the exception of
        certain equity indexes, Treasury securities, and energy futures products, which are
        already updated on a daily basis.

19   The Student's *t* distribution is a widely used statistical distribution to model the
        historical logarithmic price returns data of a security that allows for the presence
        of fat tails (aka kurtosis) or a non-zero conditional fourth moment.

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.

in financial markets (also called the "leverage effect") where volatility is more sensitive

and reactive to market downturns. As a result, OCC proposes to enhance its model by

adding new features (i.e., incorporating asymmetry into its forecast volatility) designed to

allow the conditional volatility forecast to be more sensitive to market downturns and

thereby capture the most significant dynamics of the relationship between price and

volatility observed in financial markets. OCC believes the proposed enhancement would

result in more accurate and responsive margin requirements, particularly in market

downturns.

        iii.   <u>Proposed Change in Statistical Distribution</u>

OCC further proposes to change the statistical distribution used to model the

returns of equity prices. OCC's current methodology uses a fat tailed distribution[21] (the

Student's *t*-distribution) to model returns; however, price scenarios generated using very

large log-return scenarios (positive) that follow this distribution can approach infinity and

could potentially result in excessively large price jumps, a known limitation of this

distribution. OCC proposes to move to a more defined distribution (Standardized Normal

Reciprocal Inverse Gaussian or NRIG) for modeling returns, which OCC believes would

more appropriately simulate future returns based on the historical price data for the

products in question (i.e., it has a better "goodness of fit"[22] to the historical data) and

allows for more appropriate modeling of fat tails. As a result, OCC believes that the

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[21]   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.

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

proposed change would lead to more consistent treatment of log returns both on the

upside as well as downside of the distribution.

      iv.   Second Day Volatility Forecast

OCC also proposes to introduce a second-day forecast for volatility into the model

to estimate the two-day scenario distributions for risk factors.[23] Under the current

methodology, OCC typically uses a two-day horizon to determine its risk exposure to a

given portfolio. This is done by simulating 10,000 theoretical price scenarios for the two-

day horizon using a one-day forecast conditional variance, and the value at risk and

expected shortfall components of the margin requirement are then determined from the

simulated profit/loss distributions. These one-day and two-day returns scenarios are both

simulated using the one-day forecast conditional variance estimate. This could lead to a

risk factor's coverage differing substantially on volatile trading days. As a result, OCC

proposes to introduce a second-day forecast variance for all equity-based risk factors.

The second-day conditional variance forecast would be estimated for each of the 10,000

Monte Carlo returns scenarios, resulting in more accurately estimated two-day scenario

distributions, and therefore more accurate and responsive margin requirements.

      v.   Anti-Procyclical Floor for Volatility Estimates

Additionally, OCC proposes to modify its floor for volatility estimates. OCC

currently imposes a floor on volatility estimates for its equity-based products using a 500-

day look back period. OCC proposes to extend this look back period to 10-years (2520

days) in the enhanced model and to apply this floor to volatility estimates for other

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[23]   This proposed change would not apply to STANS implied volatility scenario risk factors. For those risk factors, OCC's existing methodology would continue to apply. See supra note 11.

products (excluding implied volatility risk factor scenarios). The proposed model

described herein is calibrated from historical data, and as a result, the level of the

volatilities generated by the model will vary from time to time. OCC is therefore

proposing to establish a volatility floor for the model using a 10-year look back period to

reduce the risk of procyclicality in its margin model. OCC believes that using a longer

10-year look back period will ensure that OCC captures sufficient historical

events/market shocks in the calculation of its anti-procyclical floor. The 10-year look

back period also is in line with requirements of the European Market Infrastructure

Regulation (including regulations thereunder)[24] concerning the calibration of risk factors.

3. *Proposed Enhancements to Correlation Estimates*

As described above, OCC's current methodology for estimating covariance and

correlations between risk factors relies on the same monthly price data feeding the

econometric model, resulting in a similar lag time between updates. In addition,

correlation estimates are based off historical returns series, with estimates between a pair

of risk factors being highly sensitive to the volatility of either risk factors in the chosen

pair. The current approach therefore results in correlation estimates being sensitive to

volatile historical data.

In order to address these limitations, OCC proposes to enhance its methodology

for calculating correlation estimates by moving to a daily process for updating

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[24]   Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4
       July 2012 on OTC derivatives, central counterparties and trade repositories.
       Specifically, the proposed floor would be compliant with Article 28 of
       Commission Delegated Regulation (EU) No. 153/2013 of 19 December 2012
       Supplementing Regulation (EU) No. 648/2012 of the European Parliament and of
       the Council with regard to Regulatory Technical Standards on Requirements for
       Central Counterparties (the "Regulatory Technical Standards").

correlations (with a minimum of one week's lag) to ensure Clearing Member account margins are more current and thus more accurate. Moreover, OCC proposes to enhance its approach to modeling correlation estimates by de-volatizing[25] the returns series to estimate the correlations. Under the proposed approach, OCC would first consider the returns excess of the mean (i.e., the average estimated from historical data sample) and then further scale them by the corresponding estimated conditional variances. OCC believes that by using de-volatized returns, which is a widely suggested approach in relevant literature, it would lead to normalizing returns across a variety of asset classes and make the correlation estimator less sensitive to sudden market jumps and therefore more stable.

4. *Defaulting Securities Methodology*

Finally, OCC proposes to enhance its methodology for estimating the defaulting variance in its model. OCC's margin system is dependent on market data to determine Clearing Member margin requirements. Securities that do not have enough historical data are classified as to be a "defaulting security" within OCC systems (e.g., IPO securities). As noted above, within current STANs systems, the theoretical price scenarios for defaulting securities are simulated using uncorrelated return scenarios with a zero mean and a default variance, with the default variance being estimated as the average of the top 25 percent quantile of the conditional variances of all securities. As a result, these default estimates may be impacted by extremely illiquid securities with discontinuous data. In addition, the default variance (and the associated scale factors used to scale up volatility) is also subject to sudden jumps with the monthly simulation

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[25]   See supra note 16.

installations across volatile months. To mitigate these concerns, OCC proposes to: (i) use only optionable equity securities to estimate the defaulting variance; (ii) use a shorter time series to enable calibration of the model for all securities; and (iii) simulating default correlations with the driver Russell 2000 index ("RUT").

    i.   <u>Proposed Modifications to Securities and Quantile Used in Estimation.</u>

OCC proposes that only optionable equity securities, which are typically more liquid, be considered while estimating the default variance. This limitation would eliminate from the estimation almost all illiquid securities with discontinuous data that could contribute to high conditional variance estimates and thus a high default variance. In addition, OCC proposes to estimate the default variance as the lowest estimate of the top 10% of the floored conditional variance across the risk factors. This change in methodology is designed to ensure that while the estimate is aggressive it is also robust to the presence of outliers caused by a few extremely volatile securities that influence the location parameter of a distribution. Moreover, as a consequence of the daily updates described above, the default variances would change daily and there would be no scale factor to amplify the effect of the variance on risk factor coverage.

    ii.   <u>Proposed Change in Time Series</u>

In addition, OCC proposes to use a shorter time series to enable calibration of the model for all securities. Currently, OCC does not calibrate parameters for defaulting securities that have historical data of less than two years. OCC is proposing to shorten this time period to around 6 months (180 days) to enable calibration of the model for all securities within OCC systems. OCC believes that this shorter time series is sufficient to produce stable calibrated parameters.

iii.   Proposed Default Correlation

Finally, OCC proposes that returns scenarios for defaulting securities, securities

with insufficient historical data, be simulated using a default correlation with the driver

RUT.[26] The RUT Index is a small cap index and is hence a natural choice to represent

most new issues that are small cap and deemed to be a "defaulting security." The default

correlation is roughly equal to the median of all positively correlated securities with the

index. Since 90% of the risk factors in OCC systems correlate positively to the RUT

index, OCC would only consider those risk factors to determine the median. OCC

believes that the median of the correlation distribution has been steady over a number of

simulations and is therefore proposing that it replace the current methodology of

simulating uncorrelated scenarios, which OCC believes is not a realistic approach.

Clearing Member Outreach

OCC has discussed the proposed changes with its Financial Risk Advisory

Council[27] at a meeting held on October 25, 2016. OCC also provided general updates to

members at OCC Roundtable[28] meetings on June 20, 2017, and November 9, 2017.

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[26]   OCC notes that, in certain limited circumstances where there are reasonable
        grounds backed by the existing return history to support an alternative approach in
        which the returns are strongly correlated with those of an existing risk factor (a
        "proxy") with a full price history, the Margins Methodology allows OCC's
        Financial Risk Management staff to construct a "conditional" simulation to
        override any default treatment that would have otherwise been applied to the
        defaulting security.

[27]   The Financial Risk Advisory Council is a working group consisting of
        representatives of Clearing Members and exchanges formed by OCC to review
        and comment on various risk management proposals.

[28]   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 the senior OCC staff, participant exchanges and Clearing

Clearing Members expressed interest in seeing how reactive margin changes would be under the proposal; however, there were no objections or significant concerns expressed regarding the proposed changes. OCC will provide at least 30-days of parallel reporting prior to implementation so that Clearing Members can see the impact of the proposed changes. In addition, OCC would publish an Information Memorandum to all Clearing Members describing the proposed change and will provide additional periodic Information Memoranda updates prior to the implementation date. Additionally, OCC would perform targeted and direct outreach with Clearing Members that would be most impacted by the proposed changes to the margin methodology and OCC would work closely with such Clearing Members to coordinate the implementation and associated funding for such Clearing Members resulting from the proposed change.[29]

(2)   Statutory Basis

OCC believes that the proposed rule change is consistent with Section 17A of the Securities Exchange Act of 1934, as amended (the "Act"),[30] and the rules thereunder applicable to OCC. Section 17A(b)(3)(F) of Act[31] requires that the rules of a clearing agency be designed to assure the safeguarding of securities and funds which are in the custody or control of the clearing agency or for which it is responsible. OCC believes the

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Members, representing the diversity of OCC's membership in industry segments, OCC-cleared volume, business type, operational structure and geography.

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

[30]   15 U.S.C. 78q-1.

[31]   15 U.S.C. 78q-1(b)(3)(F).

propose rule change would enhance its margin methodology in a manner designed to safeguard the securities and funds in its custody or control for the reasons set forth below.

As noted above, OCC's current margin methodology relies on monthly price data being obtained from a third party vendor. This data arrives monthly in arrears and requires additional time for OCC to process the data prior to installing into OCC's margin system. As a result, correlations and statistical parameters for risk factors at any point in time represent back-dated data and therefore may not be representative of the most recent market data. To mitigate procyclicality within its margin methodology in the absence of daily updates, OCC employs a scale factor approach to incorporate day-to-day market volatility across all associated asset classes throughout.[32] For the reasons noted above, these monthly updates coupled with the dependency of margins on scale factors can result in imprecise changes in margins charged to Clearing Members, specifically across periods of heavy volatility.

OCC proposes to enhance its margin methodology to introduce daily updates for equity price data, thereby allowing for daily updates of statistical parameters in its margin model for most risk factors. In addition, the proposed changes would introduce features to the model to better account for the asymmetric volatility phenomenon observed in financial markets and allow for conditional volatility forecast to be more sensitive to market downturns. The proposed changes would also introduce a new statistical distribution for modeling equity price returns that OCC believes would have a better goodness of fit and would more appropriately account for fait tails. Moreover, the proposed changes would introduce a second-day volatility forecast into the model to

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[32]   See supra note 13 and accompanying text.

provide for more accurate and timely estimations of its two-day scenario distributions. OCC also proposes to enhance its econometric model by establishing a volatility floor using a 10-year look back period to reduce procyclicality in the margin model. OCC believes the proposed changes would result in more accurate and responsive margin requirements and a model that is more stable and proactive during times of market volatility, with risk charges that are based off of most recent market data.

In addition, the proposed rule change is intended to improve OCC's approach to estimating covariance and correlations between risk factors in an effort to achieve more stable and sensitive correlation estimations and improve OCC's methodology related to the treatment of defaulting securities by reducing the impact that illiquid securities with discontinuous data have on default variance estimates.

The proposed methodology changes 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 that may result from such a default. As a result, OCC believes the proposed rule changed is designed to assure the safeguarding of securities and funds in its custody or control in accordance with Section 17A(b)(3)(F) of the Act.[33]

Rules 17Ad-22(b)(1) and (2)[34] require that a registered clearing agency that performs central counterparty services establish, implement, maintain and enforce written policies and procedures reasonably designed to, in part: (1) measure its credit exposures to its participants at least once a day and limit its exposures to potential losses from

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[33] Id.

[34] 17 CFR 240.17Ad-22(b)(1) and (2).

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 and (2) 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, the proposed changes would introduce the use of daily price updates into OCC's margin methodology, which allows for daily updates to the statistical parameters in the model (e.g., parameters concerning volatility and correlation). These changes would be supported by a number of other risk-based enhancements to OCC's econometric model designed to: (i) more appropriately account for asymmetry in conditional variance; (ii) more appropriately model the statistical distribution of price returns; (iii) provide for an anti-procyclical floor for volatility estimates based on a 10-year look back period; and (iv) more accurately model second-day volatility forecasts. Moreover, the proposed changes would improve OCC's approach to estimating covariance and correlations between risk factors in an effort to achieve more stable and sensitive correlation estimations and improve OCC's methodology related to the treatment of defaulting securities by reducing the impact that illiquid securities with discontinuous data have on default variance estimates.

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. The proposed enhancements concerning daily price updates, daily updates of statistical parameters, and to more appropriately account for asymmetry in conditional variance would result in more accurate and responsive margin

requirements and a model that is more stable and proactive during times of market

volatility, with margin charges that are based off of the most recent market data. In

addition, the proposed modifications to extend the look back period for determining

volatility estimates for equity-based products from 500 days to 10 years will help to

ensure that OCC captures sufficient historical events/market shocks in the calculation of

its anti-procyclical floor. Additionally, the proposed changes would enhance OCC's

margin methodology for calculating correlation estimates by moving to a daily process

for updating correlations (with a minimum of one week's lag) so that Clearing Member

account margins are more current and thus more accurate and using de-volatized returns

to normalize returns across a variety of asset classes and make the correlation estimator

less sensitive to sudden market jumps and therefore more stable. Finally, the proposed

changes to OCC's methodology for the treatment of defaulting securities is designed to

result in stable and realistic risk estimates for such securities   The proposed changes are

therefore designed to ensure that OCC sets margin requirements, using risk-based models

and parameters, 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 Rules 17Ad-22(b)(1) and (2).[35]

Rule 17Ad-22(e)(6)[36] further requires OCC to establish, implement, maintain and

enforce written policies and procedures reasonably designed to cover its credit exposures

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[35]   Id.

[36]   17 CFR 240.17Ad-2(e)(6).

to its participants by establishing a risk-based margin system that, among other things: (i) considers, and produces margin levels commensurate with, the risks and particular attributes of each relevant product, portfolio, and market; (ii) 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 (iii) uses reliable sources of timely price data and uses procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.

As described in detail above, the proposed changes are designed to ensure that, among other things, OCC's margin methodology: (i) more appropriately accounts for asymmetry in conditional variance; (ii) more appropriately models the statistical distribution of price returns, (iii) more accurately models second-day volatility forecasts; (iv) improves OCC's approach to estimating covariance and correlations between risk factors to provide for stable and sensitive correlation estimations; and (v) improves OCC's methodology related to the treatment of defaulting securities by reducing the impact that illiquid securities with discontinuous data have on default variance estimates. These methodology enhancements would be used to calculate daily margin requirements for OCC's Clearing Members. In this way, the proposed changes are designed to consider, and produce margin levels commensurate with, the risks and particular attributes of each relevant product, portfolio, and market and to 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.

Moreover, the proposed changes would introduce daily updates for price data for equity products, including daily corporate action-adjusted returns of equities, ETFs, ETNs, and certain indexes. This daily price data would be obtained from a widely used and reliable industry vendor. In this way, the proposed changes would ensure that OCC uses reliable sources of timely price data in its margin methodology, which better reflect current market conditions than the current monthly updates, thereby resulting in more accurate and responsive margin requirements.

For these reasons, OCC believes that the proposed changes are consistent with Rule 17Ad-22(e)(6).[37]

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

(B) <u>Clearing Agency's Statement on Burden on Competition</u>

Section 17A(b)(3)(I) requires that the rules of a clearing agency do not impose any burden on competition not necessary or appropriate in furtherance of the purposes of Act.[38] OCC does not believe that the proposed rule change would impose any burden on competition. The proposed risk model enhancements would apply to all Clearing Members equally. While OCC expects that margin requirements may see slight reductions in the aggregate, the individual impact of the proposed changes will be mixed and depend on market conditions and the composition of the portfolio in question. The proposed rule change is primarily designed to allow OCC to determine margin requirements that more accurately represent the risk presented by its cleared products and

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[37]   <u>Id.</u>

[38]   15 U.S.C. 78q-1(b)(3)(I).

that are more responsive to changes in volatility or overall market conditions. OCC does not believe that the proposed rule change would unfairly inhibit access to OCC's services or disadvantage or favor any particular user in relationship to another user. Accordingly, OCC believes that any competitive impact would be necessary and appropriate in furtherance of the safeguarding of securities and funds which are in the custody or control of OCC or for which it is responsible, and in general, the protection of investors and the public interest.

(C) Clearing Agency's Statement on Comments on the Proposed Rule Change Received from Members, Participants or Others

Written comments on the proposed rule change were not and are not intended to be solicited with respect to the proposed rule change and none have been received. OCC will notify the Commission of any written comments received by OCC.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Within 45 days of the date of publication of this notice in the Federal Register or within such longer period up to 90 days (i) as the Commission may designate if it finds such longer period to be appropriate and publishes its reasons for so finding or (ii) as to which the self- regulatory organization consents, the Commission will:

(A) by order approve or disapprove the proposed rule change, or

(B) institute proceedings to determine whether the proposed rule change should be disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views and arguments

concerning the foregoing, including whether the proposed rule change is consistent with

the 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-2017-022 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 Number SR-OCC-2017-022. 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 proposed rule change that are filed

with the Commission, and all written communications relating to the proposed rule

change 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 such 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; 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 Number SR-OCC-2017-022 and should be

submitted on or before [insert date 21 days from publication in the Federal Register].

For the Commission, by the Division of Trading and Markets, pursuant to

delegated authority. [39]

Robert W. Errett
Deputy Secretary

Action as set forth recommended herein
APPROVED pursuant to authority delegated
by the Commission under Public Law 87-
592.

For: Division of Trading and Markets

By:_____

Print Name:_____

Date:_____

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[39]   17 CFR 200.30-3(a)(12).