THE FOUNDATION FOR SECURE MARKETS®

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January 21, 2025

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

Re: Rule Certification by The Options Clearing Corporation Concerning Enhancements to Its Margin and Stress Testing Methodologies to Better Capture The Risks Associated With Short-dated Options

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, The Options Clearing Corporation ("OCC") hereby certifies a rule change in connection with enhancements to the modeling approach for implied volatility components within OCC's margin methodology, the System for Theoretical Analysis and Numerical Simulations ("STANS"), and OCC's Comprehensive Stress Testing ("CST") methodology, to better capture the risks associated with short-dated options. Specifically, this proposed rule change would, as described below: (1) align the day-count convention between option price smoothing and implied volatility scenario generation, and (2) extend the term structure of the implied volatility shocks to cover implied volatility risk associated with options of less than one-month expiration. The date of implementation of the rule is at least 10 business days following receipt of the certification by the CFTC. The proposal has also been submitted to the Securities and Exchange Commission ("SEC") under Section 19(b) of the Securities Exchange Act of 1934 ("Exchange Act") and Rule 19b-4 thereunder. The change will not be implemented until OCC has obtained all necessary regulatory approvals.

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

Explanation and Analysis

The purpose of this rule certification is in connection with enhancements to the modeling approach for implied volatility components within OCC's margin methodology, STANS, and OCC's CST methodology, to better capture the risks associated with short-dated options. Specifically, this proposed rule change would, as described below: (1) align the day-count convention between option price smoothing and implied volatility scenario generation, and (2) extend the term structure of the implied volatility shocks to cover implied volatility risk associated with options of less than one-month expiration.

The proposed changes to OCC's STANS Methodology Description[1] and Comprehensive Stress Testing & Clearing Fund Methodology, and Liquidity Risk Management Description[2] ("CST Methodology Description") are contained in Exhibits A and B respectively. Material proposed to be added is marked by underlining and material proposed to be deleted is marked with strikethrough text. Within the documents, new, revised, and deleted text related to the proposed rule change have been incorporated in section 2.1.3 (Implied Volatilities Scenarios) and 2.1.4 (S&P 500 Implied Volatilities Scenarios) of the STANS Methodology Description and section 3.3.2 (Volatility Shock Model) of the CST Methodology Description. 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]

Overview

OCC is the sole clearing agency for standardized equity options listed on national securities exchanges registered with the SEC. In its role as a clearing agency, OCC acts as a central counterparty ("CCP"), guarantying all contracts it clears. That is, OCC becomes the buyer to every seller and the seller to every buyer, which exposes OCC to risk because OCC is obligated to perform even when one of its members defaults. These risks include: (i) credit risk, which is the risk that OCC would not maintain sufficient financial resources to cover exposures; and (ii) liquidity risk, which is the risk that OCC would not have sufficient liquid resources to meet payment obligations when due.

OCC manages its credit and liquidity risks through various safeguards to ensure that it has sufficient financial resources in both form and amount in the event of a Clearing Member failure.

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1 OCC has filed the STANS Methodology Description and amendments thereto with the SEC. See Exchange Act Release Nos. 100528 (July 15, 2024), 89 FR 58836 (July 19, 2024) (SR-OCC-2024-008); 98101 (Aug. 10, 2023), 88 FR 55775 (Aug. 16, 2023) (SR-OCC-2022-012); 95319 (July 19, 2022), 87 FR 44167 (July 25, 2022) (SR-OCC-2022-001); 93371 (Oct. 18, 2021), 86 FR 58704 (Oct. 22, 2021) (SR-OCC-2021-011); 91833 (May 10, 2021), 86 FR 26586 (May 14, 2021) (SR-OCC-2021- \005); 91079 (Feb. 8, 2021), 86 FR 9410 (Feb. 12, 2021) (SR-OCC-2020-016). OCC makes its STANS Methodology Description available to Clearing Members. An overview of the STANS methodology is on OCC's public website: https://www.theocc.com/Risk-Management/Margin-Methodology.

2 OCC has filed the CST Methodology Description and amendments thereto with the SEC. See Exchange Act Release Nos. 100455 (July 2, 2024), 89 FR 56452 (July 9, 2024) (SR-OCC-2024-006); 90827 (Dec. 30, 2020), 86 FR 659 (Jan. 6, 2021) (SR-OCC-2020-015); 89014 (June 4, 2020), 85 FR 35446 (June 10, 2020) (SR-OCC-2020-003); 87718 (Dec. 11, 2019), 84 FR 68992 (Dec. 17, 2019) (SR-OCC-2019-010); 87717 (Dec. 11, 2019), 84 FR 68985 (Dec. 17, 2019) (SR-OCC-2019-009); 83735 (July 27, 2018), 83 FR 37855 (Aug. 2, 2018) (SR-OCC-2018-008).

3 OCC's By-Laws and Rules can be found on OCC's public website: https://www.theocc.com/Company-Information/Documents-and-Archives/By-Laws-and-Rules.

To begin with, OCC periodically collects margin collateral from its Clearing Members, which is designed to cover the credit exposures they individually present to OCC with a high degree of confidence. OCC also maintains a Clearing Fund, which is a mutualized pool of financial resources to which each Clearing Member is required to contribute to ensure that OCC maintains sufficient qualifying liquid resources to manage its liquidity risk, and to address the tail risk that the margin collateral OCC collects from each Clearing Member might be insufficient to cover OCC's credit exposure to a defaulting member in extreme but plausible market conditions. In general, OCC performs daily stress testing of its financial resources using scenarios designed to assess whether the resources collected are adequate and inform the size of OCC's financial resources ("Sizing Scenarios") and measure the potential exposures Clearing Members may present to OCC to determine whether calls for additional collateral in either margin or in the Clearing Fund would be needed ("Sufficiency Scenarios"). Clearing Member margin amounts are collected based on calculations obtained from STANS, while Clearing Fund contributions are default scenario-based amounts generated by the CST methodology.

Clearing Member portfolios contain a mix of products and positions in options of various tenors, as well as other cleared positions (e.g., futures, stock loans) and collateral (e.g., valued securities, delivery obligations, US treasuries, Canadian Government bonds, and cash). Over the past several years, the options markets in particular have experienced a significant increase in the trading of short-dated options ("SDOs"), which refer to option contracts with a maturity of less than or equal to one month to expiration.[4] However, the increase in the volume of SDO trading and the larger concentration of SDO positions held from hedging and speculation activities present unique challenges to the risk management framework.

For these reasons, OCC carried out a study to examine the specific risks posed by SDOs (the "Study") including risks posed by the increase to volatility due to the feedback between options and equity hedging activity. OCC also analyzed the valuation of SDOs and option scenario pricing in OCC's 2-day margin period of risk ("MPOR")[5] and assessed the margin risk of portfolios dominated by SDOs through sensitivity analysis of realized P&L and risk coverage metrics. OCC concluded from the Study that valuation of SDOs and options scenario pricing in the 2-day MPOR was in general reasonable, but that opportunities exist to improve model performance for Clearing Member portfolios dominated by SDOs. Moreover, a reasonableness analysis of the mark-to market pricing and theoretical price simulation of SDOs in the MPOR indicated that certain existing margin model assumptions having a direct impact on SDO risk coverage needed further enhancement and update.

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4 See, e.g., Cboe, The Rise of SPX & 0DTE Options (July 27, 2023), available at https://go.cboe.com/l/77532/2023-07-27/ffc83k.

5 OCC collects its credit resources with an assumption of a two-day MPOR (i.e., two days after the last good margin collection) and potential liquidity obligations are evaluated using the same concept and assuming the liquidation processes details in OCC's Default Management Policy.

Specifically, the Study referred to a difference between option price smoothing[6] that uses calendar day convention, and implied volatility[7] simulation that uses trading day convention. The usage of two-day count conventions[8] results in differences in implied volatility, especially when non-trading days make up a large portion of the time-to-expiration (e.g., on Fridays for options that expire the following Monday). In this regard, SDOs are far more sensitive to differences in day-count convention than contracts with longer expiries. In addition, OCC's model for simulating the theoretical prices assumes that the implied volatility shocks of the one-month tenor ("1M") are sufficient to cover the implied volatility changes for SDO tenors.[9] However, empirical results indicate that the implied volatility changes from SDOs can be much larger than those for options with one month to expiration.[10]

OCC proposes to improve the theoretical price simulation of SDOs and enhance the modeling of the implied volatility risk associated with SDOs by: (1) aligning the day-count convention used between option price smoothing and its models for simulating implied volatility, and (2) extending the term structure[11] to cover implied volatility risk associated with options expiring in less than one-month. The proposed changes will be introduced to the Implied Volatilities Scenarios Model and S&P 500 Implied Volatility Simulation Model in STANS and the Volatility Shock component in CST. The impact of the proposed enhancements on Clearing Member margin and on CST is presented further below.

Proposed Changes

Background

OCC's risk framework includes its STANS methodology used to calculate Clearing Member margin amounts, and its CST methodology used to stress test Clearing Member portfolios in order to

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6 The smoothing algorithm is the process that OCC uses to estimate fair values for plain vanilla listed options based on closing bid and ask price quotes. See Exchange Act Release No. 86731 (Aug. 22, 2019), 84 FR 45188, 45189 (Aug. 28, 2019) (File No. SR-OCC-2019-005).

7 Generally speaking, the implied volatility of an option is a measure of the expected future volatility of the option's underlying security at expiration, which is reflected in the current option premium in the market.

8 The term "day count convention" refers to a standardized methodology for calculating the number of days between two dates. Both calendar and business day conventions are used by OCC in STANS and CST calculations.

9 The "tenor" of an option is the amount of time remaining to its expiration or maturity.

10 OCC has observed that the day-over-day at the money implied volatility changes for the 1W tenor are approximately twice that of the 1M tenor on certain risk factors such as SPX, RUT, QQQ, AAPL, TSLA.

11 The "term structure" of implied volatility is the curve that depicts the relationship between the implied volatilities of options with different expiration (or maturity) dates on the same underlying. Expiration and maturity are used interchangeably but reflect the same meaning.

determine the appropriate size of the Clearing Fund and allocate portions to Clearing Members commensurate with the risk they present to OCC.

STANS Overview

STANS is OCC's proprietary risk management system for calculating Clearing Member margin requirements. The STANS methodology utilizes large-scale Monte Carlo simulations to forecast price and volatility movements in determining a Clearing Member's margin requirement.[12] OCC uses a smoothing algorithm to generate theoretical prices and volatilities for option contracts based on the fair value for plain vanilla listed options from closing bid and ask price quotes.[13] OCC does this by first filtering out certain poor-quality quotes on contracts based on certain conditions and estimates the forward prices of the securities underlying these options. OCC then generates the theoretical option prices based on the filtered bid and ask quotes and constructs a volatility surface[14] using the smoothed prices to approximate option contract prices. The output of the Smoothing Algorithm, consisting of various theoretical option contract prices and volatilities, is then used downstream as a starting point to simulate variations in implied volatility for option contracts.

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 the current discount interest rate. In effect, the implied volatility is responsible for that portion of the premium that cannot be explained by the current intrinsic value of the option (i.e., the difference between the price of the underlying and the exercise price of the option), discounted to reflect its time value. OCC considers variations in implied volatility within STANS to ensure that the anticipated cost of liquidating options positions in an account recognizes the possibility that the implied volatility could change during the two-business day liquidation time horizon and lead to corresponding changes in the market prices of the options. Specifically, OCC models variations in implied volatility using its (1) Implied Volatilities Scenarios Model for non-S&P 500 based products, and (2) S&P 500 Implied Volatility Simulation Model for products in the S&P 500 group.[15]

Implied Volatilities Scenarios Model

Using its current Implied Volatilities Scenarios Model, OCC models the variations in implied volatility used to re-price non-S&P 500 based options within STANS. Variations in implied volatility are modeled through a volatility surface by incorporating certain risk factors (i.e., implied

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[12] See OCC Rule 601.

[13] See Exchange Act Release No. 86731 (Aug. 22, 2019), 84 FR 45188 (Aug. 28, 2019) (SR-OCC-2019-005).

[14] The "volatility surface" refers to a three-dimensional plot of the implied volatilities of the various options on the same stock reflecting time to maturity, and different strike prices for the option.

[15] See generally Exchange Act Release No. 95319, supra note 1, at 44168-69.

volatility pivot points) based on a range of tenors and option deltas[16] into the models in STANS. These implied volatility pivot points consist of three tenors of one month, three months and one year, and three deltas of 0.25, 0.5, and 0.75, resulting in nine implied volatility risk factors.[17] These pivot points are chosen such that their combination allows the model to capture changes in level, skew (i.e., strike price), convexity, and term structure of the implied volatility surface.[18]

The Implied Volatility Scenarios Model has certain limitations related to SDOs. First, the underlying prices and implied volatilities generated from the Smoothing Algorithm, which are an input to the Implied Volatility Scenarios Model, are generated using a calendar day convention, which is not consistent with the trading day convention used in the calibration of the model parameters. The misalignment in day-count conventions may result in over- or under-estimation of option prices based on the implied volatility scenarios. SDOs are more sensitive to day-count convention alignment than contracts with longer expirations due to the proportionally larger difference in time to expiry between the trading day convention and calendar day convention for shorter dated tenors.

Second, the model imposes a flat term structure on SDOs, which forces the use of the implied volatility shock from the 1M tenor on all option contracts expiring in less than one month. Because the term structure for the Implied Volatilities Scenarios Model starts at the 1M tenor, the current model is not consistent with the observed dynamics of the underlying assets and the implied volatility surface for SDOs. This may lead to inadequate coverage for portfolios with concentrations in SDOs.

S&P 500 Implied Volatility Simulation Model

OCC uses the S&P 500 Implied Volatility Simulation Model for the S&P 500 product group.[19] The purpose of the S&P 500 Implied Volatility Simulation Model is to establish a consistent and robust framework for implied volatility simulation and provide natural offsets for volatility products with similar characteristics to S&P 500 implied volatility. The output of the S&P 500 Implied Volatility Simulation Model is used by OCC's options pricing model, as well as the Volatility Index Futures Model. The S&P 500 Implied Volatility Simulation Model is a Monte Carlo simulation model that captures the risk dynamics in the S&P 500 implied volatility surface utilizing standardized log-moneyness[20] and a fixed number of key tenors as well as skew to generate

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[16] The "delta" of an option represents the sensitivity of the option price with respect to the price of the underlying security.

[17] See Exchange Act Release No. 94165 (Feb. 7, 2022), 87 FR 8072, 8073 (Feb. 11, 2022) (SR-OCC-2022-001).

[18] Id.

[19] See generally Exchange Act Release No. 95319, supra note 1, at 44168-69.

[20] The term "moneyness" of an option refers to the relationship between the strike price and the price of the option underlying.

an S&P 500 1M at-the-money ("ATM") risk factor.[21] OCC then uses the generated implied volatility scenarios to produce option prices in margin estimation and stress testing.[22]

The S&P 500 Implied Volatility Simulation Model has certain limitations related to SDOs. Like the Implied Volatilities Scenarios Model discussed above, the S&P 500 Implied Volatility Simulation Model uses a trading day convention in the calibration of the model, which is not consistent with the calendar day convention used in the generation of the input from the Smoothing Algorithm. As for the Implied Volatilities Scenarios Model, this misalignment may result in over- or under-estimation of option prices, particularly for SDOs. Second, the S&P 500 Implied Volatility Simulation Model uses a fixed number of key tenors beginning with the 1M tenor. Because the term structure for the S&P 500 Implied Volatility Simulation Model starts at the 1M tenor, the current model is not consistent with the observed dynamics of the underlying assets and the implied volatility surface for SDOs, which may lead to inadequate coverage for portfolios with concentrations in SDOs.

CST Overview

As described in the CST Methodology Description, OCC uses CST to analyze the adequacy of its financial resources in extreme but plausible scenarios. It enables OCC to better manage its risks by promoting OCC's ability to thoroughly monitor its potential exposure under varied sets of stressed market scenarios and provides it with the ability to review the sufficiency of its financial resources. Moreover, the methodology includes stress tests designed to size and monitor the sufficiency of both prefunded credit and liquidity resources. OCC relies upon a set of stress scenarios constructed pursuant to the CST Methodology Description, including both Sizing and Sufficiency scenarios.

CST is a scenario-based, one-factor risk model with four principal elements.[23] First, a set of risk drivers is selected based on the portfolio exposures of all Clearing Members in the aggregate.[24] Second, each individual underlying security from the portfolio of a Clearing Member is mapped to a key risk driver, to estimate the sensitivity for the beta[25] of the security with respect to the corresponding risk driver.[26] Third, stress scenarios are generated by assigning a stress shock to each of the risk drivers, which drives the shock of an individual underlying security.[27] Fourth, the aggregate risk exposure or shortfall of each portfolio is generated for each stress scenario for each

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21 See Exchange Act Release No. 94165, supra note 17, at 8075.

22 Id.

23 See Exchange Act Release No. 83406 (Jun 11, 2018), 83 FR 28018, 28022 (June 15, 2018) (SR-OCC-2018-008).

24 Id.

25 The "beta" of a security is the sensitivity of the price of the security relative to the price of the security.

26 Exchange Act Release No. 83406, supra note 23, at 28022.

27 Id.

Clearing Member and the Clearing Member Group level.[28] The CST methodology consists of several component models, including the Volatility Shocks, the VIX Futures Prices Shocks, and Idiosyncratic Scenarios models.

Volatility Shocks

The Volatility Shocks model component of the CST methodology provides a method to generate implied volatility in a stress scenario for all individual option products that are cleared by OCC.[29] This model component is used to shock any option product cleared by OCC. Shocked implied volatility is needed at the product, expiration, and strike level to evaluate individual option implied volatilities in stressed market conditions, which is then used to determine options prices and calculate the profit and loss of Clearing Member accounts in stress scenarios. For all systemic stress scenarios,[30] the Cboe Volatility Index ("VIX") is used as the main risk driver in determining shocked implied volatility.[31]

Two methods are used to generate strike-level shocked implied volatility from VIX shocks: (1) an approach for equity products, including equity ETFs, indexes and futures that have the S&P 500 Index ("SPX") as the risk driver; and (2) an approach used for options on all risk factors that do not have SPX as a risk driver. The term structure of SPX-driven implied volatilities is based on volatility betas versus VIX, while a standardized log-moneyness metric is used to model the implied volatility curves.[32] For non-SPX driven risk factors, the implied volatility shocks are based on historical volatility beta regressed directly against the VIX.[33]

The Volatility Shocks component of CST has certain limitations related to SDOs. First, like the STANS models discussed above, the Volatility Shocks component uses a trading day convention in the calibration of model parameters, which is not consistent with the calendar day convention used by the Smoothing Algorithm. As discussed above, this misalignment may result in over- or under-estimation of option prices, particularly for SDOs. Second, Volatility Shock imposes a flat term structure for SDOs when calculating shocked implied volatility, which is not consistent with the observed dynamics of the underlying assets and the implied volatility surface for SDOs. These limitations may result in inadequate shocks for SDOs.

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28 Id.

29 See generally id. at 28023.

30 The term "systemic stress scenarios" are scenarios designed to the capture risk to OCC in an extreme event impacting all positions driven by risk drivers.

31 Exchange Act Release No. 83406, supra note 23, at 28023.

32 Id.

33 Id.

VIX Futures Price Shocks

The VIX is an index for measuring implied volatility based on options on the SPX with approximately 30 days to expiration. OCC derives VIX futures prices shocks from SPX volatility betas and VIX index shocks using the VIX Futures Price Shocks component of CST.[34] The term structure of the VIX futures prices shocks is modeled from that of the SPX ATM implied volatility shocks. OCC first determines the term structure of the SPX volatility beta, by running regression of the 2-day returns of SPX ATM implied volatility with respect to the 2-day returns of the VIX index for different expirations, ranging from 1M to twelve months ("12M").[35] Through linear interpolation on the term structure curve of SPX volatility beta OCC determines the volatility beta at the VIX futures expiration and 30 days after, which are the basis to calculate VIX futures price shocks. As a final step a constraint is then applied to ensure that the VIX futures price shocks do not exceed the VIX index shock.

Like the Volatility Shocks model, the VIX Futures Price Shocks component imposes a flat term structure for SDOs when calculating shocked implied volatility, which is not consistent with the observed dynamics of the underlying assets and the implied volatility surface for SDOs. This limitation of the VIX Futures Price Shocks model may result in inadequate shocks for SDOs.[36]

Idiosyncratic Scenarios

OCC uses Idiosyncratic Scenarios to generate and capture the risk from extreme non-systemic events that may impact OCC's financial resources.[37] Specifically, OCC captures the risk of extreme non-systemic market moves on single name equity securities (non-ETF, non-Index) through individual up and down shocks (assuming all other products are unchanged). Single-name equities are classified into large and small capitalization (cap) for the price shocks. Four types of idiosyncratic moves are constructed based on the market capitalization and direction of the price shock: large cap up, large cap down, small cap up and small cap down.[38] A fixed price shock for each of the four scenarios is calibrated from historical price return data such that probability of idiosyncratic moves is comparable to systemic scenarios and probability in all four scenarios is

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[34] See Exchange Act Release No. 87386 (Oct. 23, 2019), 84 FR 57911, 57913-14 (Oct. 29, 2019) (SR-OCC-2019-009).

[35] See id. at 57916 n. 29 and accompanying text.

[36] Unlike the other model discussed herein, the VIX Futures Price Shocks model uses the SPX volatility beta with extended tenors less than 1 month from the Volatility Shocks model component and Dynamic VIX Calibration model component as inputs, and day-count convention alignment is not within the scope for this model component.

[37] See generally Exchange Act Release No. 87386, supra note 34, at 57913.

[38] Id.

approximately equal. Based on price shocks, ATM implied volatility shocks are calibrated for each of the four scenarios.[39]

The Idiosyncratic Scenarios component of CST shares the limitations related to SDOs discussed above with respect to the other models. Specifically, the Idiosyncratic Scenarios component uses a trading day convention in the calibration of model parameters, which is not consistent with the Smoothing Algorithm's calendar day convention. As discussed above, this misalignment may result in over- or under-estimation of option prices, particularly for SDOs. Second, like the Volatility Shocks model, Idiosyncratic Scenarios imposes a flat term structure for SDOs when calculating shocked implied volatility, which is not consistent with the observed dynamics of the underlying assets and the implied volatility surface for SDOs. These limitations may result in inadequate shocks for SDOs.

Proposed Change

OCC proposes to capture the risks associated with SDOs by applying enhancements to the implied volatility modeling approach to: (1) align the day-count convention between option price smoothing and implied volatility scenario generation, and (2) extend the term structure to cover implied volatility risk associated with options with less than one month to expiration. These enhancements will be implemented for model components in STANS and CST.

Day-Count Convention Alignment

At present, the implied volatility output from smoothing, determined using a calendar day convention, is directly applied in the initial implied volatility scenarios in STANS and CST. However, the calibration of the parameters used in implied volatility scenarios uses a trading day convention, which is also used to model forecasted variance as well as the shocks in CST. OCC proposes to align the day-count convention to be consistent between calibration and price smoothing in both STANS and CST.

In STANS, OCC proposes to align the day-count convention between price smoothing and its model components used for forecasting changes in implied volatility through amendments to the sections of the STANS Methodology Description that address the Implied Volatilities Scenarios Model and the S&P 500 Implied Volatility Simulation Model.[40] For the Implied Volatilities Scenarios Model (pivot-based), implied volatility levels would be initially converted into trading day convention before application of pivot scenario shocks. The shocked implied volatility scenarios would then be converted back to calendar day convention before being used to calculate shocked option price scenarios. For the S&P 500 Implied Volatility Simulation Model, the process for generating the shocked implied volatility scenarios for listed tenors would convert the initial implied volatility from using calendar day convention to using trading day convention followed by

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39 Id.

40 OCC would also make conforming changes to the whitepapers for these models.

generation of the ATM implied volatility log-return scenarios for listed tenors. The skew shock scenarios would be generated next, followed by the shocked implied volatility scenarios. The outputs of the shocked implied volatility scenarios would then be converted back to calendar day convention before calculating the theoretical option price scenarios. These conversion steps taken together would then align the day-count convention used in both option price smoothing and implied volatility simulations.

Similarly, OCC would align the day-count convention of the Implied Volatility Shocks in CST through conversion of the initial volatility surface from the output of the Smoothing Algorithm to business day convention before application of any volatility shocks.[41] After the volatility shock is applied, the shocked implied volatility would then be scaled back to calendar day convention, before being used downstream for option pricing in CST. These changes would be reflected in amendments to the CST Methodology Description's section that addresses the Volatility Shock Model. With respect to the Idiosyncratic Scenarios, the CST methodology already provides that after calculating the shocked ATM volatility, the shocked implied volatility for all the strikes in the expiration follows the same methodology as for the Volatility Shock Model.

Extension of the Term Structure

At present, the STANS Implied Volatilities Scenarios model uses a flat term structure for options with listed tenors that are shorter than one month, which means that the implied volatility shock is derived from the 1M key tenor or pivot. OCC proposes to change the Implied Volatility Scenarios term structure for the implied volatility simulation of all non-SPX related risk factors, such that for points with shorter than one month to maturity, a squared-root decay is applied with respect to one month to expiration up to a predetermined shortest time to maturity. For the S&P 500 Implied Volatility Simulation Model term structure and SPX related risk factors, the applicable sections of the STANS Methodology Description would be updated to provide for a shorter key tenor than the current 1M time to maturity.

With respect to the CST Volatility Shocks model, which uses the volatility beta from the 1M tenor for SDOs, OCC proposes to extend the volatility beta approach to cover constant maturity tenors of less than one-month expiration by adding constant maturity tenors at the 1-week ("1W") and 2-week ("2W") key points of the term structure. Similarly, for the VIX Futures Price Shocks model, OCC proposes that the volatility beta for listed tenors that are less than the 1W tenor and down to the 3-day ("3D") tenor would be linearly interpolated from the 1W tenor and 2W tenor volatility betas, i.e., the 1W and 2W tenor expirations would be added as inputs to the term structure of SPX volatility betas. As for Idiosyncratic Scenarios, the term structure would be extended from 1M down to the 1W tenor and 2W tenor. These changes would be applied to the section of the CST Methodology Description that addresses the Volatility Shock Model, the same methodology for which also applies to the Idiosyncratic Scenarios Models as described above. In addition, this change would also apply to the VIX Futures Price Shock Model because the Volatility Shock

[41] OCC would also make conforming changes to the whitepapers for these models.

Model's method is incorporated by reference in the section that describes the volatility beta shocks applied to volatility instruments.

OCC also proposes to update the day count to the more precise value of 365.25 within the CST Methodology Description when referring to calendar days in a year and also when used in a formula. This amendment to the CST Methodology Description conforms with how the system was designed to be consistent with the day-count convention specified in the STANS Methodology Description. Since the CST system already uses a 365.25 day count convention, the proposed change to correct the documentation would have no impact on stress test results. Additionally, OCC plans to make several other minor non-substantial typographical changes throughout the document.

In addition, OCC proposes to further revise the relevant sections of the STANS Methodology Description concerning the S&P 500 Implied Volatility Simulation model to eliminate redundant and duplicative information. Specifically, OCC proposes to remove sections related to the generation of the simulation of certain shocks that are duplicative of information covered in the STANS Methodology Description's discussion of the theory and specifications for that model. The sections related to the simulation of the shocked implied volatility scenarios would be amended to instead refer to those previous sections, which would be updated to reflect the two changes proposed herein.

Impact Analysis

OCC has reviewed the potential impact of the proposed changes on margin across all Clearing Member tier accounts over a 15-month period, between July 2023 and September 2024. OCC observed that the proposed enhancements would lead to an average of daily total margin[42] increases of 0.58% (approximately $0.2 billion, calculated based on the average daily margin of nearly $38 billion) across all accounts and activity dates, with the daily total margins falling in a narrow range between the largest decrease of 0.81% (approximately $0.3 billion) to the largest increase of 3.21% (approximately $1.1 billion). The results further demonstrated that the SDO enhancements had a larger measurable impact for accounts with high concentrations of short-dated options.

OCC also reviewed the potential impact on CST for the proposed model enhancements based on backtesting results over the same time period. OCC observed that the proposed changes had a relatively small impact on the Cover 1 and Cover 2 shortfalls used in Sufficiency and Sizing Scenarios for the leading Clearing Member Groups. The impact varied among Clearing Members, influenced by factors such as portfolio size, product diversity within those portfolios, and the concentration of SDO positions. Smaller Clearing Members with a high concentration of SDO positions experienced relatively more meaningful impacts.

With respect to Sizing Scenarios impacts, OCC observed a decrease in the average Cover 2 shortfall for the 1-in-80-Year Rally Scenario of 0.1% (approximately $12.7 million) with the daily

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42 Margin is calculated as the sum of requirement shortfall and stress test add-on charge.

variation falling in a narrow range between the largest decrease of 3.18% to the largest increase of 0.53%. For the Cover 2 shortfall on the 1-in-80-Year Decline Scenario OCC observed an average decrease of 0.47% (approximately $65 million) with the daily variation falling in a narrow range between the largest decrease of 3.17% to the largest increase of 1.16%.

Similarly, regarding Sufficiency Scenarios impacts, OCC observed a decrease in the average Cover 1 shortfall for the 1987 Crash Scenario of 0.39% (approximately $37 million) with the daily variation falling in the range between the largest daily decrease of 3.15% and largest daily increase of 1.97%. For the Largest Rally from 2008 Sufficiency Scenario, the daily average Cover 2 Shortfall increased by around 0.22%, which is about $16 million. The shortfall ranged between a decrease of $208 million and an increase of $116 million, which is about a decrease of 3.54% to an increase of 1.90%. For the Largest Rally from 2008 - Historical Beta Sufficiency Scenario[43], the daily average Cover 2 Shortfall decreased by around 0.1%, which is about $7 million. The shortfall ranged between a decrease of $196 million and an increase of $143 million, which is about a decrease of 1.93% to an increase of 1.41%.

Overall, OCC observed a reduction to the Clearing Fund size of around 0.14% (approximately $14 million) based on the changes in Cover 2 shortfalls in Sizing Scenarios. OCC believes that such changes to margin and Cover 1 Sufficiency Scenarios and Cover 2 Sizing Scenarios are commensurate with the risks presented by Clearing Members SDO trading activities.

Consistency with DCO Core Principles

OCC reviewed the DCO core principles ("Core Principles") as set forth in the Act, the regulations thereunder, and the provisions applicable to a DCO that elects to be subject to the provisions of 17 CFR Subpart C ("Subpart C DCO"). During this review, OCC identified the following as potentially being impacted:

Risk Management. OCC believes that the proposed changes are consistent with Core Principle D and the CFTC Regulations thereunder, which require in relevant part that a DCO's models and parameters used in setting margin requirements be risk-based and reviewed on a regular basis.[44] As noted above, OCC's current models in STANS may not adequately capture the implied volatility behaviors associated with SDO in portfolios that may be dominated by SDO positions, which could result in inadequate margin requirements. OCC believes that the proposed rule changes, which, as further described in detail above, aligns the day count convention and extends the term structure in OCC's margin system to take into consideration SDO specific attributes, are appropriate risk-based methods to enable OCC to measure SDO credit exposure and produce margin requirements commensurate with the risks presented by SDO trading activities, and as designed enables OCC to calculate margin sufficient to cover SDO exposure from Clearing Member accounts with high concentrations of short-dated options. As a result, OCC believes that the proposed changes are

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43 OCC notes that backtesting data for this scenario is limited due to its recent deployment and use in production.

44 See 7 US 7a-1(c)(2)(D)(v); 17 CFR 39.13(g)(1).

designed to enhance model outputs to produce margin requirements that are commensurate with the risks presented by portfolios containing SDO positions that account for the relevant product risk factors in a manner consistent with CFTC Regulations.[45]

For these reasons, OCC believes that the proposed changes are consistent with the requirements of the DCO Core Principles and the CFTC Regulations thereunder.

Opposing Views

No substantive opposing views were expressed related to the rule amendments by OCC's Board members, Clearing Members or market participants. Public comments on the proposed rule change filed with the SEC, if any, and any OCC response to such comments may be viewed on the SEC's public website.[46]

Notice of Pending Rule Certification

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

Certification

OCC hereby certifies that the rule set forth at confidential Exhibit A and confidential Exhibit B 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,

/s/ Hafez A. Almiladi

Hafez A. Almiladi

Assistant General Counsel
The Options Clearing Corporation

Enclosure: Confidential Exhibit A and Confidential Exhibit B

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[45] 17 CFR 39.13(g)(1).

[46] See Options Clearing Corporation (OCC) Rulemaking, https://www.sec.gov/rules-regulations/self-regulatory-organization-rulemaking/occ.