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SECURITIES AND EXCHANGE COMMISSION

(Release No. 34-75427; File No. SR- OCC-2015-010)

Self-Regulatory Organizations; The Options Clearing Corporation; Order Granting Approval of Proposed Rule Change Concerning the Implementation of New Risk Models in Order to Support the Clearance and Settlement of Asian-Style Flexibly Structured Options and Flexibly Structured Cliquet Options

July 10, 2015

I.   Introduction

On May 1, 2015, The Options Clearing Corporation ("OCC") filed with the Securities and Exchange Commission ("Commission") the proposed rule change SR- OCC-2015-010 pursuant to section 19(b)(1) of the Securities Exchange Act of 1934 ("Act")[1] and Rule 19b-4 thereunder.[2] The proposed rule change was published for comment in the Federal Register on May 22, 2015.[3] The Commission received no comment letters regarding the proposed change. For the reasons discussed below, the Commission is granting approval of the proposed rule change.

II.   Description

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

[2]   17 CFR 240.19b-4.

[3]   Securities Exchange Act Release No. 34-74966 (May 14, 2015), 80 FR 29784 (May 22, 2015) (SR- OCC-2015-010). The proposed rule change was published in the Federal Register on May 22, 2015, but was deemed published on May 1, 2015, pursuant section 19b(2)(E) of the Act.

OCC is proposing to implement new risk models to support the clearance and settlement of Asian-style and Cliquet flexibly structured options[4] ("Asian Options" and "Cliquet Options," respectively). OCC already clears other flexibly structured options ("Current Index Flex Options")[5] on various securities indices[6] and risk manages clearing member positions (i.e., computes margin requirements) through its STANS methodology.[7]

Asian Options use an "Asian-style" methodology for determining the exercise settlement amount of an option, which is the difference between the aggregate exercise price and the aggregate current underlying interest value, which is based on the average of twelve monthly price "observations." OCC states that traders of Asian Options will select an observation date as well as an expiration date.[8]

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[4] Flexibly structured options permit the buyer and seller to negotiate and customize certain variable terms pursuant to exchange rules. See OCC By-Laws Article 1, section 1(F)(5). For example, parties may select from a variety of underlying indices, pick a strike price and expiration date as well as pick the exercise-style of the option – i.e., American or European exercise. Options with an American style exercise may be exercised at any time prior to, and including, expiration. Options with a European style exercise may only be exercised at expiration.

[5] The exercise settlement amount for Current Index Flex Options is determined based entirely on the strike price of a given option and the current underlying interest value on the day of exercise, in the case of American style Current Index Flex Options, or final day of trading, in the case of European style Current Index Flex Options.

[6] OCC clears Current Index Flex Options on the S&P 500 Index, S&P 100 Index, Nasdaq 100 Index and Russell 2000 Index, among other underlying indexes.

[7] See http://www.theocc.com/risk-management/margins/ for a description of OCC's margin methodology. See also OCC Rule 601.

[8] OCC provides that, since Expiration dates must be within 50 to 53 calendar weeks from the date of listing, all Asian Options that it will clear will have a term of approximately one year. OCC explains that if the expiration date precedes the observation date in the final month, then the final "observation" will be the current underlying interest value on expiration date and not the observation date, and if one of the observation dates falls on a weekend or holiday, the value used will be from the previous business day.

Cliquet Options use a cliquet[9] method for determining the exercise settlement amount of the option, which is the greater of: (i) zero (i.e., the underlying index had negative returns during the option's tenor); and, (ii) the difference between the aggregate exercise price and the aggregate current underlying interest value, which is based on the sum of the Capped Returns of the underlying index on 12 predetermined "observation dates"[10] (each an "Observation Date," and the computed value an "Observation").[11]

OCC states that both Asian Options and Cliquet Options will be only available in European style exercises, and will be subject to OCC's expiration exercise procedures set forth

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[9]   Cliquet style settlement provides for payout based on the (positive) sum of "capped" returns of an index on pre-determined dates over a specified period of time.

[10]   OCC states that the parties to a Cliquet Option will designate a set of Observation Dates for each contract as well as an expiration date. According to OCC, Observation Dates will generally be a given date each month for the twelve months preceding the expiration date, with the last Observation Date being the expiration date. If the Observation Date chosen by the parties to a Cliquet Option precedes the expiration date then OCC states that there will be two Observation Dates in the final month (i.e., the expiration date will always be an Observation Date) and ten other Observation Dates; one date in each of the ten months preceding the expiration month that will coincide with the Observation Date that was chosen by the parties to a Cliquet Option (not the expiration date). OCC explains that expiration dates must be within 50 to 53 calendar weeks from the date of listing, and that if one of the Observation Dates falls on a weekend or holiday, the previous business day will be deemed to be the Observation Date.

[11]   OCC explains that, on each Observation Date, the exchange on which the Cliquet Options is listed will determine the actual return of the underlying index from observation period-to-observation period, which will be compared to the observation cap, an amount designated the parties to the Cliquet Option. OCC further states that the Capped Return for a given Observation Date will be the lesser of the actual observation period-to-observation period return or the observation cap. For example, if the actual return of the underlying index was 1.75% and the designated capped return for a Cliquet Option was 2%, the 1.75% value will be included (and not the 2%) as the value for the Observation Date. Using this same example, if the actual return of the underlying index was 3.30%, the 2% value will be included (and not the 3.30%) as the value for the Observation Date.

in OCC Rule 805, as supplemented by OCC Rule 1804. In addition, OCC represents that it will initially clear Asian Options and Cliquet Options on the S&P 500 Index, Nasdaq 100 Index, Russell 2000 Index and Dow Jones Industrial Average Index and it may clear Asian Options and Cliquet Options on other indices in the future.

New Risk Models

As noted above, OCC will risk manage clearing member positions in Asian Options and Cliquet Options through its STANS methodology. Due to due certain features of Asian Options and Cliquet Options described below, OCC proposed adding new pricing models into its STANS methodology so that OCC may compute appropriate margin requirements for clearing members holding positions in Asian Options and Cliquet Options.[12]

Asian Options

Asian Options differ from the Current Index Flex Options currently cleared by OCC due to the option's exercise settlement amount being a function of the arithmetic average of the underlying index on certain observation dates, rather than the value of the underlying index of a given option on the exercise date or expiration date. Based on this phenomenon, OCC proposed to add a new pricing model for Asian Options that will be a shifted lognormal model[13] to

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[12] OCC explains that it currently computes the price of Current Index Flex Options on indices through standard pricing models (i.e., the Black-Scholes pricing model) that consider: i) the value of the option's underlying index, ii) the implied volatility of an option's underlying index, iii) time until expiration, iv) risk-free interest rate, and v) the strike price of the option.

[13] See Andreasen, J., "The pricing of discretely sampled Asian and lookback options: a change of numeraire approach," Journal of Computational Finance, September 2000. See also Brigo, D., Mercurio, F., Rapidsarda, F., Scotti, R., "Approximated moment-matching dynamics for basket-options simulation," EFMA Lugano meetings, November 2001. See also Haug, E.G. and Margrabe, W., "Asian Pyramid Power," Wilmott Magazine, March 2003.

accommodate the fact that Asian Options will have an arithmetic average value of the underlying index within the final exercise settlement amount calculation. OCC states that the shifted lognormal model will account for the fact that the current underlying interest value on the expiration date of an Asian Option is based on an arithmetic average of prices, and not the value of the underlying index on the option's expiration date, which introduces non-normality into the probability distribution of contract payoffs.

With respect to the Asian Option shifted lognormal pricing model, OCC proposed to utilize a modified Black-Scholes pricing model with a shift parameter that employs the first three statistical "moments." In accordance with such model, OCC states that the first moment is the expected value of an Asian Option's value based on the option's implied volatility, the second moment accounts for the statistical volatility of the option's value, and the third moment accounts for the statistical skewness of the option's value. OCC represents that the moments are intended to account for variability in the arithmetic average value of an Asian Option's underlying index. OCC states that the shifted lognormal distribution (i.e., the lognormal probability distribution derived using the first through third moments above) is then priced through the standard Black-Scholes equation.[14] OCC further states that the shift parameters are then adjusted out of the Black-Scholes price in order to derive a price for a given Asian Option that is appropriate to be utilized within the STANS methodology for the purposes of computing clearing member margin on Asian Options.

Cliquet Options

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[14]   In connection with using the standard Black-Sholes equation, OCC will also compute each of the three moments using a random shifted lognormal variable.

Similar to Asian Options, the price of a given Cliquet Options is based on monthly Observations of an underlying index. OCC states that while a shifted lognormal model is an appropriate pricing model for Asian Options, the capped return feature of Cliquet Options makes the numerical solution to the Black-Scholes Partial Differential Equation[15] the appropriate pricing model for Cliquet Options.[16] OCC therefore proposed to add a Cliquet Option pricing model to its STANS methodology that will compute the numerical solution to the Black-Scholes Partial Differential Equation. OCC represents that such a solution will provide OCC with the price of a given Cliquet Option that will be utilized within the STANS methodology for the purposes of computing clearing member margin requirements.

With respect to the pricing of a given Cliquet Option, and based on the capped return feature of Cliquet Options, OCC states that it will identify the known implied volatility skew of standard options with the same underlying interest, a similar tenor and a similar amount of forward moneyness[17] of the given Cliquet Option. OCC represents that its calculation of forward moneyness will include an adjustment to account for any known Observations of the underlying interest for a given Cliquet Option. OCC further states that the known implied volatility skew

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[15] OCC represents that the differential equation model incorporates boundary conditions, which are necessary in order to solve differential equations, to ensure that the value of a given Cliquet Option is consistent throughout the equation.

[16] See Andreasen, J., "The pricing of discretely sampled Asian and lookback options: a change of numeraire approach." Journal of Computational Finance (2000). See also Bernard, C., & Li, W. V., "Pricing and Hedging of Cliquet Options and Locally Capped Contracts." SIAM Journal on Financial Mathematics, 353-371 (2013). See also Hagan, P. S., Kumar, D., & Lesniewski, A. S., "Managing Smile Risk." Wilmott Magazine, 84-108 (2002). See also Hull, John C., "Options Futures and other Derivatives." McGraw Hill (2000). See also Kjaer, M., "Fast pricing of cliquet options with global floor." Journal of Derivatives, 14(2), 47-60 (2006).

[17] OCC describes forward moneyness as the ratio of the strike to the current value of the implied forward for the index.

will subsequently be utilized within the Black-Scholes Partial Differential Equation so that OCC will be able to derive the price of a given Cliquet Option, which will then be utilized within the STANS methodology for purposes of computing clearing member margin requirements on a Cliquet Options.

III.   Discussion and Commission Findings

Section 19(b)(2)(C) of the Act[18] directs the Commission to approve a proposed rule change of a self-regulatory organization if the Commission finds that such proposed rule change is consistent with the requirements of the Act and the rules and regulations thereunder applicable to such self-regulatory organization. Section 17A(b)(3)(F) of the Act[19] requires, among other things, that the rules of a clearing agency are 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. In addition, Rule 17Ad-22(b)(2)[20] requires registered clearing agencies, among other things, to establish, implement, maintain, and enforce written policies and procedures reasonably designed to use margin requirements to limit its credit exposures to participants under normal market conditions and use risk-based models and parameters to set margin requirements.

The Commission finds that the proposed rule change is consistent with Section 17A of the Act[21] and the rules thereunder applicable to OCC. The proposal will integrate new pricing models into the STANS methodology to accommodate the manner in which the exercise settlement amount for Asian Options and Cliquet Options is determined. The Commission believes these changes are designed to enable OCC to accurately compute margin requirements

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[18]   15 U.S.C. 78s(b)(2)(C).

[19]   15 U.S.C. 78q-1(b)(3)(F).

[20]   17 CFR 240.17Ad-22(b)(2).

[21]   15 U.S.C. 78q-1.

for Asian Option and Cliquet Option positions through its STANS methodology, therefore reducing the risk that clearing member margin assets would be insufficient should OCC need to use such assets to close-out the positions of a defaulted clearing member. The Commission therefore believes that the proposed rule change is reasonably designed to limit OCC's credit exposures to participants under normal market conditions and use risk-based models and parameters to set margin requirements, consistent with the requirements of Rule 17Ad-22(b)(2).[22] Accordingly, the Commission believes that the proposed rule change is designed to assure the safeguarding of securities and funds in OCC's custody or control or for which it is responsible, consistent with section 17A(b)(3)(F) of the Act.[23]

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

[23]   15 U.S.C. 78q-1(b)(3)(F).

IV.   Conclusion

On the basis of the foregoing, the Commission finds that the proposal is consistent with the requirements of the Act and in particular with the requirements of section 17A of the Act[24] and the rules and regulations thereunder.

IT IS THEREFORE ORDERED, pursuant to section 19(b)(2) of the Act,[25] that the proposed rule change (File No. SR- OCC-2015-010) be, and hereby is, approved.[26]

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[27]

Jill M. Peterson,
Assistant Secretary.

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[24]   15 U.S.C. 78q-1.

[25]   15 U.S.C. 78s(b)(2).

[26]   In approving the proposed rule change, the Commission considered the proposal's impact on efficiency, competition and capital formation. 15 U.S.C. 78c(f).

[27]   17 CFR 200.30-3(a)(12).