



SECURITIES AND EXCHANGE COMMISSION
[Release No. 34-98454; File No. SR-CBOE-2023-005]

Self-Regulatory Organizations; Cboe Exchange, Inc.; Order Granting Approval of a Proposed Rule Change, as Modified by Amendment No. 1, to Make Permanent the Operation of the Program that Allows the Exchange to List P.M.-Settled Third Friday-of-the-Month S&P 500 Stock Index Options (“SPX”) Series

September 20, 2023.

I. Introduction

On January 6, 2023, Cboe Exchange, Inc. (“Exchange” or “Cboe Options”) filed with the Securities and Exchange Commission (“Commission”), pursuant to section 19(b)(1) of the Securities Exchange Act of 1934 (“Act”)¹ and Rule 19b-4 thereunder,² a proposed rule change to make permanent the operation of its pilot program (“Program”) that permits the Exchange to list p.m.-settled third Friday-of-the-month SPX options (“SPXPM”). The proposed rule change was published for comment in the Federal Register on January 24, 2023.³ On March 7, 2023, pursuant to section 19(b)(2) of the Act,⁴ the Commission designated a longer period within which to approve the proposed rule change, disapprove the proposed rule change, or institute proceedings to determine whether to disapprove the proposed rule change.⁵ On March 17, 2023, the Exchange filed Amendment No. 1 to the proposed rule change (“Amendment No. 1”).⁶ On April 24, 2023, the Commission instituted proceedings to determine whether to approve or disapprove the proposed rule change and published Amendment No. 1 for notice and comment.⁷

¹ 15 U.S.C. 78s(b)(1).

² 17 CFR 240.19b-4.

³ See Securities Exchange Act Release No. 96703 (January 18, 2023), 88 FR 4265 (“Notice”).

⁴ 15 U.S.C. 78s(b)(2).

⁵ See Securities Exchange Act Release No. 97063, 88 FR 15476 (March 13, 2023). The Commission designated April 24, 2023, as the date by which the Commission shall approve or disapprove, or institute proceedings to determine whether to approve or disapprove, the proposed rule change.

⁶ In Amendment No. 1, the Exchange filed Exhibit 3, which provides additional detail regarding the Exchange’s analysis of the market quality impact of p.m.-settled index options. Amendment No. 1 is available at: <https://www.sec.gov/comments/sr-cboe-2023-005/srcboe2023005.htm>.

⁷ Amendment No. 1 was published for comment in the Federal Register on April 28, 2023. See Securities Exchange Act Release No. 97367 (April 24, 2023), 88 FR 26366 (April 28, 2023) (order instituting proceedings and noticing Amendment No. 1).

On July 20, 2023, the Commission designated a longer period for Commission action on proceedings to determine whether to approve or disapprove the proposed rule change, as modified by Amendment No. 1.⁸ The Commission did not receive any comment letters and is approving the proposed rule change, as modified by Amendment No. 1.

II. Background

When cash-settled⁹ index options were first introduced in the 1980s, they generally utilized closing-price settlement procedures (i.e., p.m. settlement).¹⁰ The Commission became concerned with the impact of p.m.-settled, cash-settled index options on the underlying cash equities markets, and in particular, added market volatility and sharp price movements near the close on expiration days.¹¹ These concerns were heightened during the “triple-witching” hour on the third Friday of March, June, September, and December when index options, index futures, and options on index futures expired concurrently.¹² Academic research at the time provided at least some evidence suggesting that futures and options expirations contributed to excess volatility and reversals around the close on those days.¹³

In light of the concerns with p.m. settlement and to help ameliorate the price effects

⁸ See Securities Exchange Act Release No. 97956, 88 FR 48278 (July 26, 2023). The Commission designated September 21, 2023, as the date by which the Commission shall either approve or disapprove the proposed rule change.

⁹ The seller of a “cash-settled” index option pays out the cash value of the applicable index on expiration or exercise. A “physical delivery” option, like equity and ETF options, involves the transfer of the underlying asset rather than cash. See Characteristics and Risks of Standardized Options, available at: <https://www.theocc.com/Company-Information/Documents-and-Archives/Options-Disclosure-Documents>.

¹⁰ See Securities Exchange Act Release No. 65256 (September 2, 2011), 76 FR 55969, at 55972 (September 9, 2011) (SR-C2-2011-008) (Order approving proposed rule change to establish a pilot program to list and trade SPXPM options on the C2 Options Exchange, Incorporated (“C2”)) (“C2 SPXPM Approval”). SPXPM was traded on a pilot basis on C2 until the introduction of SPXPM trading on Cboe Options. See Securities Exchange Act Release No. 68888 (February 8, 2013), 78 FR 10668, at 10668 (February 14, 2013) (SR-CBOE-2012-120) (“SPXPM Approval Order”).

¹¹ See C2 SPXPM Approval, 76 FR at 55972.

¹² See *id.*

¹³ See Securities and Exchange Commission, Division of Economic Risk and Analysis, Memorandum dated February 2, 2021 on Cornerstone Analysis of PM Cash-Settled Index Option Pilots (September 16, 2020) (“Pilot Memo”) at 5, available at: https://www.sec.gov/files/Analysis_of_PM_Cash_Settled_Index_Option_Pilots.pdf (citing, among other papers, Stoll, Hans R., and Robert E. Whaley, “Expiration day effects of index options and futures,” Monograph Series in Finance and Economics, no. 3 (1986)).

associated with expirations of p.m.-settled, cash-settled index products, in 1987, the Commodity Futures Trading Commission approved a proposed rule change by the Chicago Mercantile Exchange (“CME”) to provide for a.m. settlement¹⁴ for index futures, including futures on the S&P 500 Index (“S&P 500”).¹⁵ The Commission subsequently approved a proposed rule change by Cboe Options to list and trade a.m.-settled options on the S&P 500.¹⁶ In 1992, the Commission approved Cboe Options’ proposal to transition all of its European-style cash-settled options on the S&P 500 to a.m. settlement.¹⁷ However, in 1993, the Commission approved a proposed rule change allowing Cboe Options to list p.m.-settled options on certain broad-based indexes, including the S&P 500, expiring at the end of each calendar quarter (since approved as permanent).¹⁸ Starting in 2006, the Commission approved a number of proposals, on a pilot basis, permitting Cboe Options to introduce other index options, including SPX options, with p.m.-settlement. These include p.m.-settled index options expiring weekly (other than the third Friday) and at the end of each month,¹⁹ SPXPM, as well as p.m.-settled Mini-SPX Index (“XSP”) options and Mini-Russell 2000 Index (“MRUT”) options expiring on the third Friday of the month.²⁰

¹⁴ The exercise settlement value for an a.m.-settled index option is determined by reference to the reported level of the index as derived from the opening prices of the component securities on the business day before expiration.

¹⁵ See Proposed Amendments Relating to the Standard and Poor’s 500, the Standard and Poor’s 100 and the Standard Poor’s OTC Stock Price Index Futures Contract, 51 FR 47053 (December 30, 1986) (notice of proposed rule change from the CME). See also Securities Exchange Act Release No. 24367 (April 17, 1987), 52 FR 13890 (April 27, 1987) (SR-CBOE-87-11) (noting that the CME moved the S&P 500 futures contract’s settlement value to opening prices on the delivery date).

¹⁶ See Securities Exchange Act Release No. 24367 (April 17, 1987), 52 FR 13890 (April 27, 1987) (SR-CBOE-87-11).

¹⁷ See Securities Exchange Act Release No. 30944 (July 21, 1992), 57 FR 33376 (July 28, 1992) (SR-CBOE-92-09). The Commission also approved proposals by other options markets to transfer most of their cash-settled index products to a.m. settlement. See, e.g., Securities Exchange Act Release No. 25804 (June 15, 1988), 53 FR 23475 (June 22, 1988) (SR-NYSE-87-11 and 88-04).

¹⁸ See Securities Exchange Act Release No. 31800 (February 1, 1993), 58 FR 7274 (February 5, 1993) (SR-CBOE-92-13). See also Securities Exchange Act Release Nos. 54123 (July 11, 2006), 71 FR 40558 (July 17, 2006) (SR-CBOE-2006-65); and 60164 (June 23, 2009), 74 FR 31333 (June 30, 2009) (SR-CBOE-2009-029).

¹⁹ See Securities Exchange Act Release Nos. 62911 (September 14, 2010), 75 FR 57539 (September 21, 2010) (SR-CBOE-2009-075); 76529 (November 30, 2015), 80 FR 75695 (December 3, 2015) (SR-CBOE-2015-106); and 78531 (August 10, 2016), 81 FR 54643 (August 16, 2016) (SR-CBOE-2016-046).

²⁰ See Securities Exchange Act Release Nos. 70087 (July 31, 2013), 78 FR 47809 (August 6, 2013) (SR-

In the course of approving the various pilots, the Commission reiterated its concern about the potential impact on the market at expiration for the underlying component stocks for a p.m.-settled, cash-settled index option.²¹ However, the Commission also recognized the potential impact was unclear.²² The Commission approved the Program on a pilot basis to allow the Exchange and the Commission to monitor for and assess any potential for adverse market effects.²³ In order to facilitate this assessment, the Exchange committed to provide the Commission with data and analysis in connection with the Program²⁴ and to make such data publicly available.²⁵ In addition to the Exchange's data and analysis, Cornerstone Research also conducted an analysis at the direction of Staff from the Commission's Division of Economic and Risk Analysis. The analysis utilizes the level of expiring p.m.-settled index options open interest and the measures of volatility and price reversals for the corresponding index futures, the underlying cash index, and index component securities in the minutes leading up to and immediately following the market close to study the effects of pilot programs allowing p.m.-settled index options. The Pilot Memo is discussed in more detail below.

III. Description of the Proposal, as Modified by Amendment No. 1

SPXPM are cash-settled SPX options with third Friday-of-the-month expiration dates ("Expiration Friday") whose exercise settlement value is derived from closing prices on the last

CBOE-2013-055); and 91067 (February 5, 2021) 86 FR 9108 (February 11, 2021) (SR-CBOE-2020-116).

²¹ See, e.g., SPXPM Approval Order, 78 FR at 10669. See also Securities Exchange Act Release Nos. 64599 (June 3, 2011), 76 FR 33798, 33801-02 (June 9, 2011) (order instituting proceedings to determine whether to approve or disapprove a proposed rule change to allow the listing and trading of SPXPM options on the C2 Options Exchange, Incorporated); and C2 SPXPM Approval, 76 FR at 55972-76.

²² See, e.g., SPXPM Approval Order, 78 FR at 10669.

²³ See id.

²⁴ See id. at 10670.

²⁵ See, e.g., Securities Exchange Act Release No. 84535 (November 5, 2018), 83 FR 56129, at 56130 (November 9, 2018) (SR-CBOE-2018-069) (stating the Exchange is making public on its website data and analyses previously submitted to the Commission under the Program and committing to make public any data or analyses submitted in the future).

trading day prior to expiration. In February 2013, the Commission approved the Program to list and trade these options on a pilot basis.²⁶

The Exchange has filed to extend the operation of the pilot on multiple occasions and it is currently set to expire on the earlier of November 6, 2023, or the date on which the Program is approved on a permanent basis.²⁷ Now, the Exchange proposes to make the Program permanent.

Since the Program's inception in 2013, the Exchange has submitted reports to the Commission regarding the Program that detail the Exchange's experience with the Program, pursuant to the SPXPM Approval Order.²⁸ The Exchange states that, during the course of the Program, it also provided the Commission with any additional data or analyses the Commission requested if the Commission deemed such data or analyses necessary to determine whether the Program was consistent with the Act.²⁹

IV. Discussion and Commission Findings

After careful review, the Commission finds that the proposed rule change, as modified by Amendment No. 1, is consistent with the Act and the rules and regulations thereunder applicable to a national securities exchange.³⁰ In particular, the Commission finds that the proposed rule change, as modified by Amendment No. 1, is consistent with section 6(b)(5) of

²⁶ See SPXPM Approval Order.

²⁷ See Securities Exchange Act Release Nos. 71424 (January 28, 2014), 79 FR 6249 (February 3, 2014) (SR-CBOE-2014-004); 73338 (October 10, 2014), 79 FR 62502 (October 17, 2014) (SR-CBOE-2014-076); 77573 (April 8, 2016), 81 FR 22148 (April 14, 2016) (SR-CBOE-2016-036); 80386 (April 6, 2017), 82 FR 17704 (April 12, 2017) (SR-CBOE-2017-025); 83166 (May 3, 2018), 83 FR 21324 (May 9, 2018) (SR-CBOE-2018-036); 84535 (November 5, 2018), 83 FR 56129 (November 9, 2018) (SR-CBOE-2018-069); 85688 (April 18, 2019), 84 FR 17214 (April 24, 2019) (SR-CBOE-2019-023); 87464 (November 5, 2019), 84 FR 61099 (November 12, 2019) (SR-CBOE-2019-107); 88674 (April 16, 2020), 85 FR 22479 (April 22, 2020) (SR-CBOE-2020-036); 90263 (October 23, 2020), 85 FR 68611 (October 29, 2020) (SR-CBOE-2020-100); 91698 (April 28, 2021) 86 FR 23761 (May 4, 2021) (SR-CBOE-2021-027); 93455 (October 28, 2021), 86 FR 60660 (November 3, 2021) (SR-CBOE-2021-062); 94799 (April 27, 2022), 87 FR 26244 (May 3, 2022) (SR-CBOE-2022-019); 96222 (November 3, 2022), 87 FR 67736 (November 9, 2022) (SR-CBOE-2022-054); and 97446 (May 5, 2023), 88 FR 30365 (May 11, 2023).

²⁸ See *supra* note 10. The Exchange has made public on its website data and analyses previously submitted to the Commission under the Program. See <https://www.cboe.com/aboutcboe/legal-regulatory/national-market-system-plans/pm-settlement-spxpm-data>.

²⁹ See Notice, 88 FR at 4267.

³⁰ In approving this proposed rule change, the Commission has considered the proposed rule's impact on efficiency, competition, and capital formation. See 15 U.S.C. 78c(f).

the Act,³¹ which requires, among other things, that the Exchange's rules be designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, to remove impediments to and perfect the mechanism of a free and open market and a national market system, and, in general, to protect investors and the public interest. In its proposal to make the Program permanent, the Exchange addressed whether the Program negatively impacts markets or impacted the quality of the SPX options market. Each of these elements is discussed in greater detail below. As stated above, no comments were received on the proposed rule change.

Market Impact Considerations

The Exchange states it has not identified any evidence from the pilot data indicating that the trading of p.m.-settled SPX options has any adverse impact on fair and orderly markets on Expiration Fridays for the S&P 500 or the underlying securities comprising the S&P 500, nor have there been any observations of abnormal market movements attributable to p.m.-settled SPX options from any market participants that have come to the attention of the Exchange.³² In order to support its overall assessment of the Program, the Exchange included a review and analysis of pilot data.³³ Among other things, the Exchange's analysis includes end of day volatility as well as a comparison of the impact of quarterly index rebalancing versus p.m.-settled expirations.³⁴

In addition to reviewing the data and analysis provided by the Exchange, the Commission reviewed the analysis in the Pilot Memo, which evaluates whether higher levels of expiring open interest in p.m.-settled index options results in increased volatility and price reversals around the close. The Pilot Memo shows that the market share for p.m.-settled options

³¹ 15 U.S.C. 78f(b)(5).

³² See Notice, 88 FR at 4267.

³³ See id. at 4266-70.

³⁴ See id. at 4268.

on the S&P 500 has grown substantially since 2007.³⁵ The Exchange's review of pilot data also showed this trend continuing from 2019 through 2021.³⁶

The Pilot Memo examines whether and to what extent expiring open interest in p.m.-settled index options is empirically related with the tendency of the corresponding index futures, the underlying index, or index components to experience increased transitory volatility and price reversals around the time of market close on expiration dates. The Pilot Memo concludes that, although expiring p.m.-settled index option open interest may have a statistically significant relationship with volatility and price reversals of the underlying index, index futures, and index component securities around the market close, the magnitude of the effect is economically very small.³⁷ For example, the largest settlement event that occurred during the time period studied in the Pilot Memo (a settlement of \$100.4 billion of notional on December 29, 2017) had an estimated impact on the futures price of only approximately 0.02% (a predicted impact of \$0.54 relative to a closing futures price of \$2,677).³⁸

The Exchange further reviewed a sample of pilot data from 2019 through 2021, and measured the volatility of the S&P 500 over the final fifteen minutes of each trading day and compared expiration days to non-expiration days.³⁹ Generally volatility was slightly higher on expiration days, but in cases where overall market volatility increased, the normalized impact on expiration days versus non-expiration days remained consistent.⁴⁰ The Exchange further analyzed volatility on days when the S&P 500 was rebalanced, and states its results suggest more closing volatility on rebalance dates compared to non-rebalance expiration dates, indicating that rebalancing of the S&P 500 may have a greater impact on S&P 500 volatility

³⁵ See Pilot Memo at 2.

³⁶ See Notice, 88 FR at 4267. Specifically, since 2007, p.m.-settled SPX options grew from 0.1% of open interest to 30% of open interest in 2021. Id.

³⁷ See Pilot Memo at 3.

³⁸ See id.

³⁹ See Notice, 88 FR at 4268.

⁴⁰ See id.

than p.m.-settled option expirations.⁴¹

The Exchange also reviewed a sample of post-2018 pilot data for potential correlation between excess market volatility and price reversals and the hedging activity of liquidity providers.⁴² To determine whether there is a correlation, the Exchange calculated an estimate of the amount of market-on-close (“MOC”) volume in the S&P 500 component markets attributable to expected hedging activity as a result of expiring in-the-money options.⁴³ The Exchange states its results indicate that other sources of MOC share volume generally exceed the volume resulting from hedging activity for p.m.-settled SPX options.⁴⁴ Further, the Exchange also compared hedging futures positions that would correspond to expiring in-the-money p.m.-settled SPX options and concludes the data indicate negligible capacity for hedging activity to increase volatility in the underlying markets.⁴⁵

Finally, the Exchange states that the significant changes in the closing procedures of the primary markets in recent decades, including considerable advances in trading systems and technology, have significantly minimized risks of any potential impact of p.m.-, cash-settled SPX options on the underlying cash markets.⁴⁶

Market Quality Considerations

The Exchange also completed an analysis intended to evaluate whether the Program impacted the quality of the SPX options market. Specifically, the Exchange compared values of key market quality indicators (specifically, the bid-ask spread⁴⁷ and effective spread⁴⁸) in p.m.-

⁴¹ See id.

⁴² See id.

⁴³ See id.

⁴⁴ See id. at 4269.

⁴⁵ See id.

⁴⁶ See id.

⁴⁷ The Exchange calculated for each of SPXW options (with Monday, Wednesday, and Friday expirations) and SPY Weekly options (with Monday, Wednesday, and Friday expirations) the daily time-weighted bid-ask spread on the Exchange during its regular trading hours session, adjusted for the difference in size between SPXW options and SPY options (SPXW options are approximately ten times the value of SPY options).

⁴⁸ The Exchange calculated the volume-weighted average daily effective spread for simple trades for each of

settled SPX weekly (“SPXW”) options both before and after the introduction of Tuesday expirations and Thursday expirations for SPXW options on April 18 and May 11, 2022, respectively.⁴⁹ The Exchange states that analyzing whether the introduction of new SPXW p.m.-settled expirations (i.e., SPXW options with Tuesday and Thursday expirations) impacted the market quality of then-existing SPXW p.m.-settled expirations (i.e., SPXW options with Monday, Wednesday, and Friday expirations) provides a reasonable substitute to evaluate whether the introduction of p.m.-settled index options impacted the market quality of the SPX market when the Program began.⁵⁰ Therefore, the Exchange believes analyzing the impact of new SPXW options on then-existing SPXW options permit the Exchange to extrapolate that it is unlikely the introduction of p.m.-settled SPXW options significantly impacted the market quality of a.m.-settled SPX options when the Program began.⁵¹ The Exchange concludes from this analysis that the introduction of SPX options with Tuesday and Thursday options had no significant impact on the market quality of SPXW options with Monday, Wednesday, and Friday expirations. For a majority of the series analyzed, the Exchange observed no statistically significant difference in bid-ask spread or effective spread.⁵²

The Commission believes that the evidence contained in the Exchange’s filing, the Exchange’s pilot data and reports, and the Pilot Memo analysis demonstrate that the Program has benefitted investors and other market participants by providing more flexible trading and hedging opportunities while also having no disruptive impact on the market. The market for SPXPM options has grown significantly in size over the course of the Program, and analysis of

SPXW options (with Monday, Wednesday, and Friday expirations) and SPY Weekly options (with Monday, Wednesday, and Friday expirations) as twice the amount of the absolute value of the difference between an order execution price and the midpoint of the national best bid and offer at the time of execution, adjusted for the difference in size between SPXW options and SPY options.

⁴⁹ For purposes of comparison, the Exchange paired SPXW options and SPY options with the same moneyness and same days to expiration.

⁵⁰ See Notice, 88 FR at 4269.

⁵¹ See id. at 4270.

⁵² See id.

the pilot data did not identify any significant economic impact on the underlying component securities of the S&P 500 surrounding the close as a result of expiring p.m.-settled SPX options nor did it indicate a deterioration in market quality (as measured by bid-ask and effective spreads) for an existing product when a new p.m.-settled expiration was introduced. Further, significant changes in closing procedures in the decades since index options moved to a.m. settlement may also serve to mitigate the potential impact of p.m.-settled index options on the underlying cash markets.

Accordingly, the Commission finds that the proposed rule change, as modified by Amendment No. 1, is consistent with section 6(b)(5) of the Act⁵³ and the rules and regulations thereunder applicable to a national securities exchange.

V. Conclusion

IT IS THEREFORE ORDERED, pursuant to section 19(b)(2) of the Act,⁵⁴ that the proposed rule change (SR-CBOE-2023-005), as modified by Amendment No. 1, be, and hereby is, approved.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.⁵⁵

Sherry R. Haywood,

Assistant Secretary.

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⁵³ 15 U.S.C. 78f(b)(5).

⁵⁴ 15 U.S.C. 78s(b)(2).

⁵⁵ 17 CFR 200.30-3(a)(12).