NERA
ECONOMIC CONSULTING

NERA Economic Consulting
1255 23rd Street NW, Suite 600
Washington, DC 20037
Tel: +[redacted] Fax: +[redacted]
www.nera.com

MEMO

TO: Securities and Exchange Commission

DATE: May 18, 2018

FROM: Sharon Brown-Hruska, Ph.D. and Trevor Wagener, M.S.

SUBJECT: File Nos. SR-NYSEArca-2018-02, SR-CboeBZX-2018-001, & SR-NYSEArca-2017-139

Dr. Sharon Brown-Hruska[1] and Trevor Wagener[2] appreciate the opportunity to comment on three File Nos. in which the US Securities and Exchange Commission (SEC) requested information: File Nos. SR-NYSEArca-2018-02, SR-CboeBZX-2018-001, & SR-NYSEArca-2017-139. Responding to several of the questions asked by the SEC in the releases requesting public comment will be a primary focus of this comment letter, as will suggesting a suitability-based regulatory approach rather than a prescriptive approach like an effective ban on Bitcoin ETFs.[3]

1.) In File Nos. SR-NYSEArca-2018-02 and SR-NYSEArca-2017-139, the SEC asked as its first question whether the Exchange sufficiently described how the Bitcoin ETF sponsor will select the applicable benchmark futures contracts, given that the investment objectives for the ETFs are described with reference to both the Cboe Futures Exchange (Cboe) and Chicago Mercantile Exchange (CME) lead month Bitcoin futures contracts.

    a. Based on analysis of the contract specifications, the settlement methodologies for the Cboe Bitcoin futures and CME Bitcoin futures do differ and could potentially produce different settlement prices. However, if arbitrageurs are active across the underlying spot markets used to determine the settlement price of the futures contracts, the settlement prices for the futures contracts should be similar according to the Law of

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1. Dr. Sharon Brown-Hruska is a Managing Director in NERA's Securities and Finance and White Collar, Investigations, and Enforcement Practices. Dr. Brown-Hruska previously served as Commissioner and Acting Chairman of the U.S. Commodity Futures Trading Commission, and has recently served as a Professor in Tulane University's Energy Institute and a Visiting Professor of Finance in Tulane University's A.B. Freeman School of Business. She has a PhD in Economics from Virginia Polytechnic Institute and State University.

2. Trevor Wagener is a Consultant in NERA's Securities and Finance Practice. He previously worked as a trader and investment analyst in commodities and derivatives markets. He has an MS in Applied Economics from Johns Hopkins University and a BA with distinction in Ethics, Politics, and Economics from Yale University.

3. This comment letter was not requested or paid for by any client but submitted by market and industry expert economists knowledgeable about the issues on which the SEC seeks information.

One Price,[4] after accounting for transaction costs, frictions, and market structures and microstructures.

b. Analysis of Bitcoin futures contract settlement data quantifying the degree to which the daily and final settlement values of Cboe and CME Bitcoin futures track each other may provide support for the approval of the contracts.

2.) The SEC asked about the use of Bitcoin derivatives besides the futures contracts by the ETFs and asked particularly about their availability in question 2 for all three File Nos. and also in question 1 for File No. SR-CboeBZX-2018-001.

a. The market for Bitcoin derivatives besides Bitcoin exchange-traded futures appears to be developing, as major news organizations report that financial institutions are moving towards launching Bitcoin-related trading desks/operations.[5]

b. All three File Nos. involve offerings of both long and short ETFs, which raises the possibility that market makers in Bitcoin derivatives could make two-sided markets if interest in both the long and short ETFs is similar in magnitude.

c. In addition, even absent sufficient interest from the ETFs, there exists a substantial possibility that interest outside of the ETFs may be sufficient to motivate market makers to maintain Bitcoin derivatives desks.[6]

d. One sub-question raised by the SEC asked whether Bitcoin derivatives could be used in the event of a market disruption in the futures markets. Questions about the liquidity of Bitcoin derivatives markets can be addressed through market depth analyses, discussions with potential Bitcoin derivatives liquidity providers, and analyses of order and trade data across both the CME and Cboe to determine the plausibility of simultaneous liquidity collapses on both Bitcoin futures markets.

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[4] See, for example, Levy Yeyati, E., Schmukler, S. L., & Van Horen, N. (2009). International financial integration through the law of one price: The role of liquidity and capital controls. Journal of Financial Intermediation, 18(3), 432-463.

[5] See, for example, Nathaniel Popper, “Goldman Sachs to Open a Bitcoin Trading Operation,” *The New York Times*, May 2, 2018, available at https://www.nytimes.com/2018/05/02/technology/bitcoin-goldman-sachs.html.

[6] See, for example, Nathaniel Popper, “Bitcoin Sees Wall Street Warm to Trading Virtual Currency,” *The New York Times*, May 7, 2018, available at https://www.nytimes.com/2018/05/07/technology/bitcoin-new-york-stock-exchange.html.

3.) In all three File Nos., the SEC's third question relates to the ability of funds to adequately value Bitcoin financial instruments to determine an appropriate NAV for the funds.

   a. In the event of a disruption of CME or Cboe Bitcoin futures contracts, the NYSE Arca[7] rule change submissions indicate that the Sponsor may choose to fair value assets based on available inputs about the current value of the underlying assets based on principles consistent with industry standards. The Cboe[8] rule change submission indicates that assets can be valued at "the then-current disseminated levels for" Bitcoin futures or "the applicable reference price for bitcoin." Both CME and Cboe Bitcoin futures contracts settle against regularly provided spot market prices such as the Bitcoin Reference Rate[9] or the Gemini Auction,[10] and thus the NYSE Arca ETFs could use those spot market prices as available inputs and the Cboe ETFs could use them as applicable reference prices. Given the existence of two separate futures contracts on two distinct exchanges settling against two distinct spot market reference rates, there are multiple potential available inputs and/or reference prices to allow the ETFs to determine an appropriate NAV absent a simultaneous disruption across both multiple spot markets and multiple futures markets.

   b. Detailed analysis of daily trade volumes over time could provide further comfort, particularly if there is no single recent trading day on which both exchanges showed zero or near-zero trading volume on the leading month Bitcoin futures contract.

4.) In all three File Nos., the SEC's fourth, tenth, and eleventh questions ask about the potential impact of manipulation in the underlying Bitcoin spot markets on Bitcoin financial instruments and the funds' NAVs.

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[7] NYSE Arca, Inc., "Form 19b-4 File No. SR-2018-02," January 4, 2018, p. 11, available at https://www.nyse.com/publicdocs/nyse/markets/nyse-arca/rule-filings/filings/2018/NYSEArca-2018-02.pdf; NYSE Arca, Inc., "Form 19b-4 File No. SR-2017-139," December 4, 2017, p. 10, available at https://www.nyse.com/publicdocs/nyse/markets/nyse-arca/rule-filings/filings/2017/NYSEArca-2017-139.pdf.

[8] Cboe BZX Exchange, Inc., "Form 19b-4 SR-2018-001," January 5, 2018, pp. 13 and 42, available at http://cdn.batstrading.com/resources/regulation/rule_filings/pending/2018/SR-CboeBZX-2018-001.pdf.

[9] CME Group, "CME Bitcoin Futures Frequently Asked Questions," December 15, 2017, available at http://www.cmegroup.com/education/bitcoin/cme-bitcoin-futures-frequently-asked-questions.html; CME Group, "CME CF Cryptocurrency Reference Rates," May 3, 2018, available at http://www.cmegroup.com/education/bitcoin/bitcoin-reference-rate-methodology.html.

[10] Cboe, "Summary Product Specifications Chart for Cboe Bitcoin (USD) Futures," December 10, 2017, available at http://cfe.cboe.com/cfe-products/xbt-cboe-bitcoin-futures/contract-specifications; Gemini Trust Company, "Marketplace," April 8, 2018, available at https://gemini.com/marketplace/#introduction.

a. The CME and Cboe rule change submissions reference several reasons why they believe Bitcoin ETFs are not particularly susceptible to manipulation. One commonly cited factor mitigating possible susceptibility to manipulation is the securities exchanges' own surveillance procedures, as well as the futures exchanges' surveillance procedures and market surveillance and oversight by the CFTC.[11]

b. The Commodity Futures Trading Commission (CFTC) asserted authority over virtual currencies like Bitcoin as commodities under the Commodity Exchange Act in 2014. It worked with futures exchanges regarding the launch of Bitcoin futures referencing Bitcoin spot markets, and following the launch of the futures contracts the CFTC published documents stating "the CFTC not only has clear legal authority, but now also will have the means to police certain underlying spot markets for fraud and manipulation" through "heightened review" collaboration with exchanges, including exchanges "providing the CFTC surveillance team with trade settlement data upon request" and exchanges entering "information-sharing agreements with spot market platforms to allow access to trade and trader data" and monitoring the spot markets data for "anomalies and disproportionate moves" relative to the futures markets.[12] In another announcement, the CFTC stated its expectation that "the futures exchanges, through information sharing agreements, will be monitoring the trading activity on the relevant cash platforms for potential impacts on the futures contracts' price discovery process, including potential market manipulation and market dislocations."[13]

c. In addition, Gemini, the digital currency exchange whose Bitcoin auction is used to determine the settlement price of the Bitcoin XBT futures contracts that trade on Cboe's CFE Exchange, announced on April 25, 2018 that it would use Nasdaq's SMARTS Market Surveillance system to "monitor [its] marketplace" and "become a market

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11 Cboe BZX Exchange, Inc., "Form 19b-4 SR-2018-001," January 5, 2018, pp. 41-42, available at http://cdn.batstrading.com/resources/regulation/rule_filings/pending/2018/SR-CboeBZX-2018-001.pdf; NYSE Arca, Inc., "Form 19b-4 File No. SR-2018-02," January 4, 2018, p. 10, 15-16, 18, available at https://www.nyse.com/publicdocs/nyse/markets/nyse-arca/rule-filings/filings/2018/NYSEArca-2018-02.pdf; NYSE Arca, Inc., "Form 19b-4 File No. SR-2017-139," December 4, 2017, pp. 9-10, 14, 17, available at https://www.nyse.com/publicdocs/nyse/markets/nyse-arca/rule-filings/filings/2017/NYSEArca-2017-139.pdf.

12 Commodity Futures Trading Commission, "CFTC Backgrounder on Oversight of and Approach to Virtual Currency Futures Markets," January 4, 2018, p. 3, available at https://www.cftc.gov/sites/default/files/idc/groups/public/%40customerprotection/documents/file/backgrounder_virtualcurrency01.pdf.

13 Commodity Futures Trading Commission, "CFTC Statement on Self-Certification of Bitcoin Products by CME, CFE and Cantor Exchange," December 1, 2017, available at https://www.cftc.gov/PressRoom/PressReleases/pr7654-17.

leader in custom surveillance rule creation and alerting for the crypto-asset market" in order to build "a rules-based marketplace."[14]

d. Some sort of market surveillance is generally a prerequisite to identifying potential market manipulation, as well as creating incentives to discourage market manipulation. The emergence of institutionalized market surveillance on both futures and spot markets in Bitcoin products is thus a positive sign for the long-term future of Bitcoin markets.

e. As a result of reinvigorated harmonization efforts, the SEC, in coordination with the CFTC, self-regulatory organizations (SROs), Bitcoin futures exchanges, and Bitcoin spot market platforms, can gather the market surveillance data to support an independent analysis of trade and settlement patterns. This analysis could be used to determine the extent, if any, to which potentially manipulative trading practices occur on Bitcoin spot and futures markets, and compare that analysis to an analysis of longstanding markets under the SEC or CFTC's jurisdiction.

5.) In all three File Nos., the SEC's seventh question asks about how the substantial margin requirements for Bitcoin futures, combined with the volatility of Bitcoin prices, might affect the ability to meet redemption orders or a fund's ability to use available cash to achieve its investment strategy.

a. Bitcoin futures have high margin requirements, such as maintenance margin of 43% on CME.[15]

b. The SEC's question can be answered by both historical and hypothetical scenario modeling, combining elements of liquidity stress tests and financial performance stress tests. Using historical daily and final settlement values from futures markets and historical trade data from Bitcoin spot market platforms, economists can conduct stress tests to quantify the cash flow impact of the margin requirements for Bitcoin futures.

6.) Finally, the SEC's questions taken collectively suggest that many of the SEC's concerns could be addressed by working with self-regulatory organizations (SROs), particularly FINRA, to create Bitcoin/cryptocurrency-related asset suitability requirements. Suitability requirements

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14 Cameron Winklevoss, "Introducing Marketplace Surveillance Technology," *Gemini Trust Company*, April 25, 2018, available at https://gemini.com/blog/introducing-marketplace-surveillance-technology/.

15 CME Group, "CME Bitcoin Futures Frequently Asked Questions," December 15, 2017, available at http://www.cmegroup.com/education/bitcoin/cme-bitcoin-futures-frequently-asked-questions.html.

could be paired with targeted disclosure requirements to require that investors are made aware of the volatility involved, retail investors are discouraged from investing more than a small portion of their portfolio in cryptocurrency-related assets, and historical scenarios are presented to retail investors demonstrating how a hypothetical cryptocurrency-related investment like a given Bitcoin ETF would have performed over a historical time horizon. Suitability requirements are less prescriptive than an effective ban on a class of product, and could balance the SEC's interest in protecting retail investors against the SEC's interest in allowing cryptocurrency-related asset markets to continue to develop in regulated markets where the SEC can observe their performance closely.

The authors thank the SEC for the opportunity to comment on these matters, and are happy to discuss further with the Commission, its staff, or other interested parties.

Sincerely,

Dr. Sharon Brown-Hruska
Managing Director
Washington, DC: +[redacted]

Trevor Wagener
Consultant
Washington, DC: +[redacted]

The opinions expressed herein do not necessarily represent the views of NERA Economic Consulting or any other NERA consultant. Questions are welcome and should be directed to the authors.