

Required fields are shown with yellow backgrounds and asterisks.

Page 1 of * 196		SECURITIES AND EXCHANGE COMMISSION WASHINGTON, D.C. 20549 Form 19b-4		File No. * SR 2023 - * 044 Amendment No. (req. for Amendments *) 1	
Filing by Cboe BZX Exchange, Inc. Pursuant to Rule 19b-4 under the Securities Exchange Act of 1934					
Initial * <input type="checkbox"/>		Amendment * <input checked="" type="checkbox"/>		Withdrawal <input type="checkbox"/>	
Section 19(b)(2) * <input checked="" type="checkbox"/>		Section 19(b)(3)(A) * <input type="checkbox"/>		Section 19(b)(3)(B) * <input type="checkbox"/>	
Pilot <input type="checkbox"/>		Extension of Time Period for Commission Action * <input type="checkbox"/>		Date Expires * <input type="text"/>	
		Rule			
		<input type="checkbox"/> 19b-4(f)(1)		<input type="checkbox"/> 19b-4(f)(4)	
		<input type="checkbox"/> 19b-4(f)(2)		<input type="checkbox"/> 19b-4(f)(5)	
		<input type="checkbox"/> 19b-4(f)(3)		<input type="checkbox"/> 19b-4(f)(6)	
Notice of proposed change pursuant to the Payment, Clearing, and Settlement Act of 2010 Section 806(e)(1) * <input type="checkbox"/>			Security-Based Swap Submission pursuant to the Securities Exchange Act of 1934 Section 3C(b)(2) * <input type="checkbox"/>		
Exhibit 2 Sent As Paper Document <input type="checkbox"/>			Exhibit 3 Sent As Paper Document <input type="checkbox"/>		
Description Provide a brief description of the action (limit 250 characters, required when Initial is checked *). <div></div>					
Contact Information Provide the name, telephone number, and e-mail address of the person on the staff of the self-regulatory organization prepared to respond to questions and comments on the action. First Name * Kyle Last Name * Murray Title * VP, Associate General Counsel E-mail * kmurray@cboe.com Telephone * (913) 815-7121 Fax					
Signature Pursuant to the requirements of the Securities Exchange of 1934, Cboe BZX Exchange, Inc. has duly caused this filing to be signed on its behalf by the undersigned thereunto duly authorized. Date 07/11/2023 (Title *) By Kyle Murray VP, Associate General Counsel (Name *) NOTE: Clicking the signature block at right will initiate digitally signing the form. A digital signature is as legally binding as a physical signature, and once signed, this form cannot be changed. <div><div>Kyle Murray</div><div>Date: 2023.07.11 08:24:03 -05'00'</div></div>					

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SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

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

Form 19b-4 Information *

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23-044 19b-4 (Fidelity Bitcoin) Am. 1.c

The self-regulatory organization must provide all required information, presented in a clear and comprehensible manner, to enable the public to provide meaningful comment on the proposal and for the Commission to determine whether the proposal is consistent with the Act and applicable rules and regulations under the Act.

Exhibit 1 - Notice of Proposed Rule Change *

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23-044 Exhibit 1 (Fidelity Bitcoin).docx

The Notice section of this Form 19b-4 must comply with the guidelines for publication in the Federal Register as well as any requirements for electronic filing as published by the Commission (if applicable). The Office of the Federal Register (OFR) offers guidance on Federal Register publication requirements in the Federal Register Document Drafting Handbook, October 1998 Revision. For example, all references to the federal securities laws must include the corresponding cite to the United States Code in a footnote. All references to SEC rules must include the corresponding cite to the Code of Federal Regulations in a footnote. All references to Securities Exchange Act Releases must include the release number, release date, Federal Register cite, Federal Register date, and corresponding file number (e.g., SR-[SRO]-xx-xx). A material failure to comply with these guidelines will result in the proposed rule change being deemed not properly filed. See also Rule 0-3 under the Act (17 CFR 240.0-3)

Exhibit 1A - Notice of Proposed Rule Change, Security-Based Swap Submission, or Advanced Notice by Clearing Agencies *

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The Notice section of this Form 19b-4 must comply with the guidelines for publication in the Federal Register as well as any requirements for electronic filing as published by the Commission (if applicable). The Office of the Federal Register (OFR) offers guidance on Federal Register publication requirements in the Federal Register Document Drafting Handbook, October 1998 Revision. For example, all references to the federal securities laws must include the corresponding cite to the United States Code in a footnote. All references to SEC rules must include the corresponding cite to the Code of Federal Regulations in a footnote. All references to Securities Exchange Act Releases must include the release number, release date, Federal Register cite, Federal Register date, and corresponding file number (e.g., SR-[SRO]-xx-xx). A material failure to comply with these guidelines will result in the proposed rule change being deemed not properly filed. See also Rule 0-3 under the Act (17 CFR 240.0-3)

Exhibit 2- Notices, Written Comments, Transcripts, Other Communications

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Copies of notices, written comments, transcripts, other communications. If such documents cannot be filed electronically in accordance with Instruction F, they shall be filed in accordance with Instruction G.

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Exhibit Sent As Paper Document

Exhibit 3 - Form, Report, or Questionnaire

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Copies of any form, report, or questionnaire that the self-regulatory organization proposes to use to help implement or operate the proposed rule change, or that is referred to by the proposed rule change.

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Exhibit Sent As Paper Document

Exhibit 4 - Marked Copies

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The full text shall be marked, in any convenient manner, to indicate additions to and deletions from the immediately preceding filing. The purpose of Exhibit 4 is to permit the staff to identify immediately the changes made from the text of the rule with which it has been working.

Exhibit 5 - Proposed Rule Text

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The self-regulatory organization may choose to attach as Exhibit 5 proposed changes to rule text in place of providing it in Item I and which may otherwise be more easily readable if provided separately from Form 19b-4. Exhibit 5 shall be considered part of the proposed rule change

Partial Amendment

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If the self-regulatory organization is amending only part of the text of a lengthy proposed rule change, it may, with the Commission's permission, file only those portions of the text of the proposed rule change in which changes are being made if the filing (i.e. partial amendment) is clearly understandable on its face. Such partial amendment shall be clearly identified and marked to show deletions and additions.

Item 1. Text of the Proposed Rule Change

(a) Pursuant to the provisions of Section 19(b)(1) under the Securities Exchange Act of 1934 (“Exchange Act” or the “Act”),¹ and Rule 19b-4 thereunder,² Cboe BZX Exchange, Inc. (“BZX” or the “Exchange”) is filing with the Securities and Exchange Commission (“Commission” or “SEC”) a proposed rule change to list and trade shares of the Wise Origin Bitcoin Trust (the “Trust”),³ under BZX Rule 14.11(e)(4), Commodity-Based Trust Shares. The shares of the Trust are referred to herein as the “Shares.”

(b) Not applicable.

(c) Not applicable.

Item 2. Procedures of the Self-Regulatory Organization

(a) The Exchange’s President (or designee) pursuant to delegated authority approved the proposed rule change on June 28, 2023.

(b) Please refer questions and comments on the proposed rule change to Pat Sexton, Executive Vice President, General Counsel, and Corporate Secretary, (312) 786-7467, or Kyle Murray, Vice President, Associate General Counsel, (913) 815-7121, Cboe BZX Exchange, Inc., 466 West Van Buren Street, Chicago, Illinois 60607.

¹ 15 U.S.C. 78s(b)(1).

² 17 CFR 240.19b-4.

³ The Trust was formed as a Delaware statutory trust on March 17, 2021, and is operated as a grantor trust for U.S. federal tax purposes. The Trust has no fixed termination date.

Item 3. Self-Regulatory Organization’s Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

(a) Purpose

This Amendment No. 1 to SR-CboeBZX-2023-044 amends and replaces in its entirety the proposal as originally submitted on June 30, 2023. The Exchange submits this Amendment No. 1 in order to clarify certain points and add additional details to the proposal.

The Exchange proposes to list and trade the Shares under BZX Rule 14.11(e)(4),⁴ which governs the listing and trading of Commodity-Based Trust Shares on the Exchange.⁵ FD Funds Management LLC is the sponsor of the Trust (“Sponsor”). The Shares will be registered with the Commission by means of the Trust’s registration statement on Form S-1 (the “Registration Statement”).⁶ Fidelity Digital Assets Services, LLC (“FDAS”), a regulated custodian licensed by the New York Department of Financial Services, will be responsible for custody of the Trust’s bitcoin (the “Custodian”). The Trust is not permitted or required to register under the Investment Company Act of 1940, as amended (the “1940 Act”), and therefore is not subject to regulation under the 1940 Act.⁷ Further, the Registration Statement states that the Trust will not hold or trade in

⁴ The Commission approved BZX Rule 14.11(e)(4) in Securities Exchange Act Release No. 65225 (August 30, 2011), 76 FR 55148 (September 6, 2011) (SR-BATS-2011-018).

⁵ All statements and representations made in this filing regarding (a) the description of the portfolio, (b) limitations on portfolio holdings or reference assets, or (c) the applicability of Exchange rules and surveillance procedures shall constitute continued listing requirements for listing the Shares on the Exchange.

⁶ See draft Registration Statement on Form S-1, dated March 24, 2021, submitted to the Commission by the Sponsor on behalf of the Trust. The descriptions of the Trust, the Shares, and the Index (as defined below) contained herein are based, in part, on information in the Registration Statement. The Registration Statement is not yet effective, and the Shares will not trade on the Exchange until such time that the Registration Statement is effective.

⁷ See above.

commodity interests regulated by the Commodity Exchange Act of 1936, as amended (the “CEA”), and therefore is not a commodity pool for purposes of the CEA.⁸ The Exchange represents that the Shares satisfy the requirements of BZX Rule 14.11(e)(4) and thereby qualify for listing on the Exchange.

As further discussed below, the Commission has historically approved or disapproved exchange filings to list and trade series of Trust Issued Receipts, including spot-based Commodity-Based Trust Shares, on the basis of whether the listing exchange has in place a comprehensive surveillance sharing agreement with a regulated market of significant size related to the underlying commodity to be held.⁹ Prior orders from the Commission have pointed out that in every prior approval order for Commodity-Based Trust Shares, there has been a derivatives market that represents the regulated market of significant size, generally a Commodity Futures Trading Commission (the “CFTC”) regulated futures market.¹⁰ Further to this point, the Commission’s prior orders have

⁸ See above.

⁹ See Securities Exchange Act Release No. 83723 (July 26, 2018), 83 FR 37579 (August 1, 2018). This proposal was subsequently disapproved by the Commission. See Securities Exchange Act Release No. 83723 (July 26, 2018), 83 FR 37579 (August 1, 2018) (the “Winklevoss Order”).

¹⁰ See streetTRACKS Gold Shares, Exchange Act Release No. 50603 (Oct. 28, 2004), 69 FR 64614, 64618–19 (Nov. 5, 2004) (SR-NYSE-2004-22) (the “First Gold Approval Order”); iShares COMEX Gold Trust, Exchange Act Release No. 51058 (Jan. 19, 2005), 70 FR 3749, 3751, 3754–55 (Jan. 26, 2005) (SR-Amex-2004-38); iShares Silver Trust, Exchange Act Release No. 53521 (Mar. 20, 2006), 71 FR 14967, 14968, 14973–74 (Mar. 24, 2006) (SR-Amex-2005-072); ETFS Gold Trust, Exchange Act Release No. 59895 (May 8, 2009), 74 FR 22993, 22994–95, 22998, 23000 (May 15, 2009) (SR-NYSEArca-2009-40); ETFS Silver Trust, Exchange Act Release No. 59781 (Apr. 17, 2009), 74 FR 18771, 18772, 18775–77 (Apr. 24, 2009) (SR-NYSEArca-2009-28); ETFS Palladium Trust, Exchange Act Release No. 61220 (Dec. 22, 2009), 74 FR 68895, 68896 (Dec. 29, 2009) (SR-NYSEArca-2009-94) (notice of proposed rule change included NYSE Arca’s representation that “[t]he most significant palladium futures exchanges are the NYMEX and the Tokyo Commodity Exchange,” that “NYMEX is the largest exchange in the world for trading precious metals futures and options,” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which NYMEX is a member, Exchange Act Release No. 60971 (Nov. 9, 2009), 74 FR 59283, 59285–86, 59291 (Nov. 17, 2009)); ETFS Platinum Trust, Exchange Act Release No. 61219 (Dec. 22, 2009), 74 FR 68886, 68887–88 (Dec. 29, 2009) (SR-NYSEArca-2009-95) (notice of proposed rule change included NYSE Arca’s representation that “[t]he most significant platinum futures exchanges are the NYMEX and the

Tokyo Commodity Exchange,” that “NYMEX is the largest exchange in the world for trading precious metals futures and options,” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which NYMEX is a member, Exchange Act Release No. 60970 (Nov. 9, 2009), 74 FR 59319, 59321, 59327 (Nov. 17, 2009)); Sprott Physical Gold Trust, Exchange Act Release No. 61496 (Feb. 4, 2010), 75 FR 6758, 6760 (Feb. 10, 2010) (SR-NYSEArca-2009-113) (notice of proposed rule change included NYSE Arca’s representation that the COMEX is one of the “major world gold markets,” that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” and that NYMEX, of which COMEX is a division, is a member of the Intermarket Surveillance Group, Exchange Act Release No. 61236 (Dec. 23, 2009), 75 FR 170, 171, 174 (Jan. 4, 2010)); Sprott Physical Silver Trust, Exchange Act Release No. 63043 (Oct. 5, 2010), 75 FR 62615, 62616, 62619, 62621 (Oct. 12, 2010) (SR-NYSEArca-2010-84); ETFs Precious Metals Basket Trust, Exchange Act Release No. 62692 (Aug. 11, 2010), 75 FR 50789, 50790 (Aug. 17, 2010) (SR-NYSEArca-2010-56) (notice of proposed rule change included NYSE Arca’s representation that “the most significant gold, silver, platinum and palladium futures exchanges are the COMEX and the TOCOM” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which COMEX is a member, Exchange Act Release No. 62402 (Jun. 29, 2010), 75 FR 39292, 39295, 39298 (July 8, 2010)); ETFs White Metals Basket Trust, Exchange Act Release No. 62875 (Sept. 9, 2010), 75 FR 56156, 56158 (Sept. 15, 2010) (SR-NYSEArca-2010-71) (notice of proposed rule change included NYSE Arca’s representation that “the most significant silver, platinum and palladium futures exchanges are the COMEX and the TOCOM” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which COMEX is a member, Exchange Act Release No. 62620 (July 30, 2010), 75 FR 47655, 47657, 47660 (Aug. 6, 2010)); ETFs Asian Gold Trust, Exchange Act Release No. 63464 (Dec. 8, 2010), 75 FR 77926, 77928 (Dec. 14, 2010) (SR-NYSEArca-2010-95) (notice of proposed rule change included NYSE Arca’s representation that “the most significant gold futures exchanges are the COMEX and the Tokyo Commodity Exchange,” that “COMEX is the largest exchange in the world for trading precious metals futures and options,” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which COMEX is a member, Exchange Act Release No. 63267 (Nov. 8, 2010), 75 FR 69494, 69496, 69500–01 (Nov. 12, 2010)); Sprott Physical Platinum and Palladium Trust, Exchange Act Release No. 68430 (Dec. 13, 2012), 77 FR 75239, 75240–41 (Dec. 19, 2012) (SR-NYSEArca-2012-111) (notice of proposed rule change included NYSE Arca’s representation that “[f]utures on platinum and palladium are traded on two major exchanges: The New York Mercantile Exchange ... and Tokyo Commodities Exchange” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which COMEX is a member, Exchange Act Release No. 68101 (Oct. 24, 2012), 77 FR 65732, 65733, 65739 (Oct. 30, 2012)); APMEEX Physical—1 oz. Gold Redeemable Trust, Exchange Act Release No. 66930 (May 7, 2012), 77 FR 27817, 27818 (May 11, 2012) (SR-NYSEArca-2012-18) (notice of proposed rule change included NYSE Arca’s representation that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which COMEX is a member, and that gold futures are traded on COMEX and the Tokyo Commodity Exchange, with a cross-reference to the proposed rule change to list and trade shares of the ETFs Gold Trust, in which NYSE Arca represented that COMEX is one of the “major world gold markets,” Exchange Act Release No. 66627 (Mar. 20, 2012), 77 FR 17539, 17542–43, 17547 (Mar. 26, 2012)); JPM XF Physical Copper Trust, Exchange Act Release No. 68440 (Dec. 14, 2012), 77 FR 75468, 75469–70, 75472, 75485–86 (Dec. 20, 2012) (SR-NYSEArca-2012-28); iShares Copper Trust, Exchange Act Release No. 68973 (Feb. 22, 2013), 78 FR 13726, 13727, 13729–30, 13739–40 (Feb. 28, 2013) (SR-NYSEArca-2012-66); First Trust Gold Trust, Exchange Act Release No. 70195 (Aug. 14, 2013), 78 FR 51239, 51240 (Aug. 20, 2013) (SR-NYSEArca-2013-61) (notice of proposed rule change included NYSE Arca’s representation that FINRA, on behalf of the exchange, may obtain trading information regarding gold futures and options on gold futures from members of the Intermarket Surveillance Group, including COMEX, or from markets “with which [NYSE Arca] has in place a comprehensive surveillance sharing agreement,” and that gold futures are traded on COMEX and the Tokyo Commodity Exchange, with a cross-reference to the proposed rule change

noted that the spot commodities and currency markets for which it has previously approved spot ETPs are generally unregulated and that the Commission relied on the underlying futures market as the regulated market of significant size that formed the basis for approving the series of Currency and Commodity-Based Trust Shares, including gold, silver, platinum, palladium, copper, and other commodities and currencies. The Commission specifically noted in the Winklevoss Order that the First Gold Approval Order “was based on an assumption that the currency market and the spot gold market were largely unregulated.”¹¹

As such, the regulated market of significant size test does not require that the spot bitcoin market be regulated in order for the Commission to approve this proposal, and precedent makes clear that an underlying market for a spot commodity or currency being a regulated market would actually be an exception to the norm. These largely unregulated currency and commodity markets do not provide the same protections as the markets that are subject to the Commission’s oversight, but the Commission has consistently looked to surveillance sharing agreements with the underlying futures market in order to determine whether such products were consistent with the Act. With this in mind, the CME Bitcoin

to list and trade shares of the ETFS Gold Trust, in which NYSE Arca represented that COMEX is one of the “major world gold markets,” Exchange Act Release No. 69847 (June 25, 2013), 78 FR 39399, 39400, 39405 (July 1, 2013)); Merk Gold Trust, Exchange Act Release No. 71378 (Jan. 23, 2014), 79 FR 4786, 4786–87 (Jan. 29, 2014) (SR-NYSEArca-2013-137) (notice of proposed rule change included NYSE Arca’s representation that “COMEX is the largest gold futures and options exchange” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” including with respect to transactions occurring on COMEX pursuant to CME and NYMEX’s membership, or from exchanges “with which [NYSE Arca] has in place a comprehensive surveillance sharing agreement,” Exchange Act Release No. 71038 (Dec. 11, 2013), 78 FR 76367, 76369, 76374 (Dec. 17, 2013)); Long Dollar Gold Trust, Exchange Act Release No. 79518 (Dec. 9, 2016), 81 FR 90876, 90881, 90886, 90888 (Dec. 15, 2016) (SR-NYSEArca-2016-84).

¹¹ See Winklevoss Order at 37592.

Futures market is the proper market to consider in determining whether there is a related regulated market of significant size.

Further to this point, the Exchange notes that the Commission has approved proposals related to the listing and trading of funds that would primarily hold CME Bitcoin Futures that are registered under the Securities Act of 1933.¹² In the Teucrium Approval, the Commission found the CME Bitcoin Futures market to be a regulated market of significant size as it relates to CME Bitcoin Futures, an odd tautological truth that is also inconsistent with prior disapproval orders for ETPs that would hold actual bitcoin instead of derivatives contracts (“Spot Bitcoin ETPs”) that use the exact same pricing methodology as the CME Bitcoin Futures. As further discussed below, both the Exchange and the Sponsor believe that this proposal and the included analysis are sufficient to establish that the CME Bitcoin Futures market represents a regulated market of significant size as it relates both to the CME Bitcoin Futures market and to the spot bitcoin market and that this proposal should be approved.

Finally, as discussed in greater detail below, by using professional custodians and other service providers, the Trust provides investors interested in exposure to bitcoin with important protections that are not always available to investors that invest directly in bitcoin, including protection against insolvency of non-qualified custodians, cyber-attacks, and other risks. If U.S. investors had access to vehicles such as the Trust for their bitcoin investments, instead of directing their bitcoin investments into loosely regulated offshore platforms (such as loosely regulated centralized exchanges that have

¹² See Exchange Act Release No. 94620 (April 6, 2022), 87 FR 21676 (April 12, 2022) (the “Teucrium Approval”) and 94853 (May 5, 2022) (collectively, with the Teucrium Approval, the “Bitcoin Futures Approvals”).

since faced bankruptcy proceedings or other insolvencies), then countless investors could have protected their principal investments in bitcoin and thus benefited.

Background

Bitcoin is a digital asset based on the decentralized, open-source protocol of the peer-to-peer computer network launched in 2009 that governs the creation, movement, and ownership of bitcoin and hosts the public ledger, or “blockchain,” on which all bitcoin transactions are recorded (the “Bitcoin Network” or “Bitcoin”). The decentralized nature of the Bitcoin Network allows parties to transact directly with one another based on cryptographic proof instead of relying on a trusted third party. The protocol also lays out the rate of issuance of new bitcoin within the Bitcoin Network, a rate that is reduced by half approximately every four years with an eventual hard cap of 21 million. It’s generally understood that the combination of these two features – a systemic hard cap of 21 million bitcoin and the ability to transact trustlessly with anyone connected to the Bitcoin Network – gives bitcoin its value.

The first rule filing proposing to list an exchange-traded product to provide exposure to bitcoin in the U.S. was submitted by the Exchange on June 30, 2016.¹³ At that time, blockchain technology, and digital assets that utilized it, were relatively new to the broader public. The market cap of all bitcoin in existence at that time was approximately \$10 billion. No registered offering of digital asset securities or shares in an investment vehicle with exposure to bitcoin or any other cryptocurrency had yet been conducted, and the regulated infrastructure for conducting a digital asset securities

¹³ See Winklevoss Order.

offering had not begun to develop.¹⁴ Similarly, regulated U.S. bitcoin futures contracts did not exist. The CFTC had determined that bitcoin is a commodity,¹⁵ but had not engaged in significant enforcement actions in the space. The New York Department of Financial Services (“NYDFS”) adopted its final BitLicense regulatory framework in 2015, but had only approved four entities to engage in activities relating to virtual currencies (whether through granting a BitLicense or a limited-purpose trust charter) as of June 30, 2016.¹⁶ While the first over-the-counter bitcoin fund launched in 2013, public trading was limited and the fund had only \$60 million in assets.¹⁷ There were very few, if any, traditional financial institutions engaged in the space, whether through investment or providing services to digital asset companies. In January 2018, the Staff of the Commission noted in a letter to the Investment Company Institute and SIFMA that it was not aware, at that time, of a single custodian providing fund custodial services for digital assets.¹⁸

¹⁴ Digital assets that are securities under U.S. law are referred to throughout this proposal as “digital asset securities.” All other digital assets, including bitcoin, are referred to interchangeably as “cryptocurrencies” or “virtual currencies.” The term “digital assets” refers to all digital assets, including both digital asset securities and cryptocurrencies, together.

¹⁵ See “In the Matter of Coinflip, Inc.” (“Coinflip”) (CFTC Docket 15-29 (September 17, 2015)) (order instituting proceedings pursuant to Sections 6(c) and 6(d) of the CEA, making findings and imposing remedial sanctions), in which the CFTC stated: “Section 1a(9) of the CEA defines ‘commodity’ to include, among other things, ‘all services, rights, and interests in which contracts for future delivery are presently or in the future dealt in.’ 7 U.S.C. § 1a(9). The definition of a ‘commodity’ is broad. See, e.g., Board of Trade of City of Chicago v. SEC, 677 F. 2d 1137, 1142 (7th Cir. 1982). Bitcoin and other virtual currencies are encompassed in the definition and properly defined as commodities.”

¹⁶ A list of virtual currency businesses that are entities regulated by the NYDFS is available on the NYDFS website. See https://www.dfs.ny.gov/apps_and_licensing/virtual_currency_businesses/regulated_entities.

¹⁷ Data as of March 31, 2016 according to publicly available filings. See Bitcoin Investment Trust Form S-1, dated May 27, 2016, available: <https://www.sec.gov/Archives/edgar/data/1588489/000095012316017801/filename1.htm>.

¹⁸ See letter from Dalia Blass, Director, Division of Investment Management, U.S. Securities and Exchange Commission to Paul Schott Stevens, President & CEO, Investment Company Institute and Timothy W. Cameron, Asset Management Group – Head, Securities Industry and Financial

Fast forward to today and the digital assets financial ecosystem, including bitcoin, has progressed significantly. The development of a regulated market for digital asset securities has significantly evolved, with market participants having conducted registered public offerings of both digital asset securities¹⁹ and shares in investment vehicles holding bitcoin futures, including Bitcoin Futures ETFs (as defined below). Additionally, licensed and regulated service providers have emerged to provide fund custodial services for digital assets, among other services. For example, in May 2021, the Staff of the Commission released a statement permitting open-end mutual funds to invest in cash-settled bitcoin futures; in December 2020, the Commission adopted a conditional no-action position permitting certain special purpose broker-dealers to custody digital asset securities under Rule 15c3-3 under the Exchange Act (the “Custody Statement”);²⁰ in September 2020, the Staff of the Commission released a no-action letter permitting certain broker-dealers to operate a non-custodial Alternative Trading System (“ATS”) for digital asset securities, subject to specified conditions;²¹ in October 2019, the Staff of the Commission granted temporary relief from the clearing agency registration requirement to an entity seeking to establish a securities clearance and settlement system based on

Markets Association (January 18, 2018), available at <https://www.sec.gov/divisions/investment/noaction/2018/cryptocurrency-011818.htm>.

¹⁹ See Prospectus supplement filed pursuant to Rule 424(b)(1) for INX Tokens (Registration No. 333-233363), available at: https://www.sec.gov/Archives/edgar/data/1725882/000121390020023202/ea125858-424b1_inxlimited.htm.

²⁰ See Securities Exchange Act Release No. 90788, 86 FR 11627 (February 26, 2021) (File Number S7-25-20) (Custody of Digital Asset Securities by Special Purpose Broker-Dealers).

²¹ See letter from Elizabeth Baird, Deputy Director, Division of Trading and Markets, U.S. Securities and Exchange Commission to Kris Dailey, Vice President, Risk Oversight & Operational Regulation, Financial Industry Regulatory Authority (September 25, 2020), available at: <https://www.sec.gov/divisions/marketreg/mr-noaction/2020/finra-ats-role-in-settlement-of-digital-asset-security-trades-09252020.pdf>.

distributed ledger technology,²² and multiple transfer agents who provide services for digital asset securities registered with the Commission.²³

Outside the Commission's purview, the regulatory landscape has changed significantly since 2016, and cryptocurrency markets have grown and evolved as well. The market for bitcoin is approximately 100 times larger, having at one point reached a market cap of over \$1 trillion.²⁴ According to the CME Bitcoin Futures Report, from February 13, 2023 through March 27, 2023, CFTC regulated bitcoin futures represented between \$750 million and \$3.2 billion in notional trading volume on Chicago Mercantile Exchange ("CME") ("Bitcoin Futures") on a daily basis and notional volume was never below \$670 million.²⁵ Open interest was over \$1.4 billion for the entirety of the period and at one point was over \$2 billion. ETPs that primarily hold CME Bitcoin Futures have raised over \$1 billion dollars in assets. The CFTC has exercised its regulatory jurisdiction in bringing a number of enforcement actions related to bitcoin and against trading platforms that offer cryptocurrency trading.²⁶ As of February 14, 2023 the NYDFS has

²² See letter from Jeffrey S. Mooney, Associate Director, Division of Trading and Markets, U.S. Securities and Exchange Commission to Charles G. Cascarilla & Daniel M. Burstein, Paxos Trust Company, LLC (October 28, 2019), available at: <https://www.sec.gov/divisions/marketreg/mr-noaction/2019/paxos-trust-company-102819-17a.pdf>.

²³ See, e.g., Form TA-1/A filed by Tokensoft Transfer Agent LLC (CIK: 0001794142) on January 8, 2021, available at: https://www.sec.gov/Archives/edgar/data/1794142/000179414219000001/xslFTA1X01/primary_doc.xml.

²⁴ As of December 1, 2021, the total market cap of all bitcoin in circulation was approximately \$1.08 trillion.

²⁵ Data sourced from the CME Bitcoin Futures Report: 19 Nov 2021, available at: https://www.cmegroup.com/ftp/bitcoinfutures/Bitcoin_Futures_Liquidity_Report.pdf.

²⁶ The CFTC's annual report for Fiscal Year 2020 (which ended on September 30, 2020) noted that the CFTC "continued to aggressively prosecute misconduct involving digital assets that fit within the CEA's definition of commodity" and "brought a record setting seven cases involving digital assets." See CFTC FY2020 Division of Enforcement Annual Report, available at: https://www.cftc.gov/media/5321/DOE_FY2020_AnnualReport_120120/download. Additionally, the CFTC filed on October 1, 2020, a civil enforcement action against the owner/operators of the

granted no fewer than thirty-four BitLicenses,²⁷ including to established public payment companies like PayPal Holdings, Inc. and Square, Inc., and limited purpose trust charters to entities providing cryptocurrency custody services. In addition, the Treasury's Office of Foreign Assets Control ("OFAC") has brought enforcement actions over apparent violations of the sanctions laws in connection with the provision of wallet management services for digital assets.²⁸

In addition to the regulatory developments laid out above, more traditional financial market participants have become more active in cryptocurrency: large insurance companies, asset managers, university endowments, pension funds, and even historically bitcoin skeptical fund managers²⁹ have allocated to bitcoin. In June 2022, PwC estimated that the number of crypto-specialist hedge funds was more than 300 globally, with \$4.1 billion in assets under management. In addition, in a survey PwC found that 38 percent of surveyed traditional hedge funds were currently investing in 'digital assets,' compared to

BitMEX trading platform, which was one of the largest bitcoin derivative exchanges. See CFTC Release No. 8270-20 (October 1, 2020) available at: <https://www.cftc.gov/PressRoom/PressReleases/8270-20>.

²⁷ See https://www.dfs.ny.gov/virtual_currency_businesses.

²⁸ See U.S. Department of the Treasury Enforcement Release: "OFAC Enters Into \$98,830 Settlement with BitGo, Inc. for Apparent Violations of Multiple Sanctions Programs Related to Digital Currency Transactions" (December 30, 2020) available at: https://home.treasury.gov/system/files/126/20201230_bitgo.pdf. See also U.S. Department of the Treasury Enforcement Release: "Treasury Announces Two Enforcement Actions for over \$24M and \$29M Against Virtual Currency Exchange, Bittrex, Inc." (October 11, 2022) available at: <https://home.treasury.gov/news/press-releases/jy1006>. See also U.S. Department of Treasury Enforcement Release "OFAC Settles with Virtual Currency Exchange Kraken for \$362,158.70 Related to Apparent Violations of the Iranian Transactions and Sanctions Regulations" (November 28, 2022) available at: https://home.treasury.gov/system/files/126/20221128_kraken.pdf.

²⁹ See e.g., "Bridgewater: Our Thoughts on Bitcoin" (January 28, 2021) available at: <https://www.bridgewater.com/research-and-insights/our-thoughts-on-bitcoin> and "Paul Tudor Jones says he likes bitcoin even more now, rally still in the 'first inning'" (October 22, 2020) available at: <https://www.cnbc.com/2020/10/22/-paul-tudor-jones-says-he-likes-bitcoin-even-more-now-rally-still-in-the-first-inning.html>.

21 percent the year prior.”³⁰ The largest over-the-counter bitcoin fund previously filed a Form 10 registration statement, which the Staff of the Commission reviewed and which took effect automatically, and is now a reporting company.³¹ Established companies like Tesla, Inc., MicroStrategy Incorporated, and Square, Inc., among others, have made substantial investments in bitcoin. The foregoing examples demonstrate that bitcoin has gained mainstream usage and recognition.

Despite these developments, access for U.S. retail investors to gain exposure to bitcoin via a transparent and U.S. regulated, U.S. exchange-traded vehicle remains limited. Instead current options include: (i) facing the counter-party risk, legal uncertainty, technical risk, and complexity associated with accessing spot bitcoin; (ii) over-the-counter bitcoin funds (“OTC Bitcoin Funds”) with high management fees and potentially volatile premiums and discounts;³² (iii) purchasing shares of operating companies that they believe will provide proxy exposure to bitcoin with limited

³⁰ See the FSOC “Report on Digital Asset Financial Stability Risks and Regulation 2022” (October 3, 2022) (at footnote 26) at <https://home.treasury.gov/system/files/261/FSOC-Digital-Assets-Report-2022.pdf>.

³¹ See Letter from Division of Corporation Finance, Office of Real Estate & Construction to Barry E. Silbert, Chief Executive Officer, Grayscale Bitcoin Trust (January 31, 2020) <https://www.sec.gov/Archives/edgar/data/1588489/000000000020000953/filename1.pdf>.

³² The largest OTC Bitcoin Fund has an AUM of \$23 billion. The premium and discount for OTC Bitcoin Funds is known to move rapidly. For example, over the period of 12/21/20 to 1/21/20, the premium for the largest OTC Bitcoin Fund went from 40.18% to 2.79%. While the price of bitcoin appreciated significantly during this period and NAV per share increased by 41.25%, the price per share increased by only 3.58%. This means that investors are buying shares of a fund that experiences significant volatility in its premium and discount outside of the fluctuations in price of the underlying asset. Even operating within the normal premium and discount range, it’s possible for an investor to buy shares of an OTC Bitcoin Fund only to have those shares quickly lose 10% or more in dollar value excluding any movement of the price of bitcoin. That is to say – the price of bitcoin could have stayed exactly the same from market close on one day to market open the next, yet the value of the shares held by the investor decreased only because of the fluctuation of the premium. As more investment vehicles, including mutual funds and ETFs, seek to gain exposure to bitcoin, the easiest option for a buy and hold strategy for such vehicles is often an OTC Bitcoin Fund, meaning that even investors that do not directly buy OTC Bitcoin Funds can be disadvantaged by extreme premiums (or discounts) and premium volatility.

disclosure about the associated risks;³³ or (iv) purchasing Bitcoin Futures ETFs, as defined below, which represent a sub-optimal structure for long-term investors that will cost them significant amounts of money every year compared to Spot Bitcoin ETPs, as further discussed below. Meanwhile, investors in many other countries, including Canada and Brazil, are able to use more traditional exchange listed and traded products (including exchange-traded funds holding physical bitcoin) to gain exposure to bitcoin. Similarly, investors in Switzerland and across Europe have access to Exchange Traded Products which trade on regulated exchanges and provide exposure to a broad array of spot crypto assets. U.S. investors, by contrast, are left with fewer and more risky means of getting bitcoin exposure, as described above.³⁴

³³ A number of operating companies engaged in unrelated businesses – such as Tesla (a car manufacturer) and MicroStrategy (an enterprise software company) – have announced investments as large as \$5.3 billion in bitcoin. Without access to bitcoin exchange-traded products, retail investors seeking investment exposure to bitcoin may end up purchasing shares in these companies in order to gain the exposure to bitcoin that they seek. In fact, mainstream financial news networks have written a number of articles providing investors with guidance for obtaining bitcoin exposure through publicly traded companies (such as MicroStrategy, Tesla, and bitcoin mining companies, among others) instead of dealing with the complications associated with buying spot bitcoin in the absence of a bitcoin ETP. See e.g., “7 public companies with exposure to bitcoin” (February 8, 2021) available at: <https://finance.yahoo.com/news/7-public-companies-with-exposure-to-bitcoin-154201525.html>; and “Want to get in the crypto trade without holding bitcoin yourself? Here are some investing ideas” (February 19, 2021) available at: <https://www.cnbc.com/2021/02/19/ways-to-invest-in-bitcoin-without-holding-the-cryptocurrency-yourself-.html>. Such operating companies, however, are imperfect bitcoin proxies and provide investors with partial bitcoin exposure paired with a host of additional risks associated with whichever operating company they decide to purchase. Additionally, the disclosures provided by such operating companies with respect to risks relating to their bitcoin holdings are generally substantially smaller than the registration statement of a bitcoin ETP, including the Registration Statement, typically amounting to a few sentences of narrative description and a handful of risk factors. In other words, investors seeking bitcoin exposure through publicly traded companies are gaining only partial exposure to bitcoin and are not fully benefitting from the risk disclosures and associated investor protections that come from the securities registration process.

³⁴ The Exchange notes that the list of countries above is not exhaustive and that securities regulators in a number of additional countries have either approved or otherwise allowed the listing and trading of Spot Bitcoin ETPs.

To this point, the lack of a Spot Bitcoin ETP exposes U.S. investor assets to significant risk because investors that would otherwise seek crypto asset exposure through a Spot Bitcoin ETP are forced to find alternative exposure through generally riskier means. For instance, many U.S. investors that held their digital assets in accounts at FTX³⁵, Celsius Network LLC,³⁶ BlockFi Inc.³⁷ and Voyager Digital Holdings, Inc³⁸. have become unsecured creditors in the insolvencies of those entities. If a Spot Bitcoin ETP was available, it is likely that at least a portion of the billions of dollars tied up in those proceedings would still reside in the brokerage accounts of U.S. investors, having instead been invested in a transparent, regulated, and well-understood structure – a Spot Bitcoin ETP. To this point, approval of a Spot Bitcoin ETP would represent a major win for the protection of U.S. investors in the cryptoasset space. As further described below, the Trust, like all other series of Commodity-Based Trust Shares, is designed to protect investors against the risk of losses through fraud and insolvency that arise by holding digital assets, including bitcoin, on centralized platforms.

Additionally, investors in other countries, specifically Canada, generally pay lower fees than U.S. retail investors that invest in OTC Bitcoin Funds due to the fee pressure that results from increased competition among available bitcoin investment options. Without an approved and regulated Spot Bitcoin ETP in the U.S. as a viable alternative, U.S. investors could seek to purchase shares of non-U.S. bitcoin vehicles in order to get access to bitcoin exposure. Given the separate regulatory regime and the

³⁵ See FTX Trading Ltd., et al., Case No. 22-11068.

³⁶ See Celsius Network LLC, et al., Case No. 22-10964.

³⁷ See BlockFi Inc., Case No. 22-19361.

³⁸ See Voyager Digital Holdings, Inc., et al., Case No. 22-10943.

potential difficulties associated with any international litigation, such an arrangement would create more risk exposure for U.S. investors than they would otherwise have with a U.S. exchange listed ETP. Further to this point, the lack of a U.S.-listed Spot Bitcoin ETP is not preventing U.S. funds from gaining exposure to bitcoin - several U.S. exchange-traded funds are using Canadian bitcoin ETPs to gain exposure to spot bitcoin. In addition to the benefits to U.S. investors articulated throughout this proposal, approving this proposal (and others like it) would provide U.S. exchange-traded funds and mutual funds with a U.S.-listed and regulated product to provide such access rather than relying on either flawed products or products listed and primarily regulated in other countries.

Bitcoin Futures ETFs

The Exchange and Sponsor applaud the Commission for allowing the launch of ETFs registered under the 1940 Act and the Bitcoin Futures Approvals that provide exposure to bitcoin primarily through CME Bitcoin Futures (“Bitcoin Futures ETFs”). Allowing such products to list and trade is a productive first step in providing U.S. investors and traders with transparent, exchange-listed tools for expressing a view on bitcoin. The Bitcoin Futures Approvals, however, have created a logical inconsistency in the application of the standard the Commission applies when considering bitcoin ETP proposals.

As discussed further below, the standard applicable to bitcoin ETPs is whether the listing exchange has in place a comprehensive surveillance sharing agreement with a regulated market of significant size in the underlying asset. Previous disapproval orders have made clear that a market that constitutes a regulated market of significant size is

generally a futures and/or options market based on the underlying reference asset rather than the spot commodity markets, which are often unregulated.³⁹ Leaving aside the analysis of that standard until later in this proposal,⁴⁰ the Exchange believes that the following rationale the Commission applied to a Bitcoin Futures ETF should result in the Commission approving this and other Spot Bitcoin ETP proposals:

The CME “comprehensively surveils futures market conditions and price movements on a real-time and ongoing basis in order to detect and prevent price distortions, including price distortions caused by manipulative efforts.” Thus, the CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts, whether that attempt is made by directly trading on the CME bitcoin futures market or indirectly by trading outside of the CME bitcoin futures market. As such, when the CME shares its surveillance information with Arca, the information would assist in detecting and deterring fraudulent or manipulative misconduct related to the non-cash assets held by the proposed ETP.⁴¹

CME Bitcoin Futures pricing is based on pricing from spot bitcoin markets. The statement from the Teucrium Approval that “CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME

³⁹ See Winklevoss Order at 37593, specifically footnote 202, which includes the language from numerous approval orders for which the underlying futures markets formed the basis for approving series of ETPs that hold physical metals, including gold, silver, palladium, platinum, and precious metals more broadly; and 37600, specifically where the Commission provides that “when the spot market is unregulated – the requirement of preventing fraudulent and manipulative acts may possibly be satisfied by showing that the ETP listing market has entered into a surveillance-sharing agreement with a regulated market of significant size in derivatives related to the underlying asset.” As noted above, the Exchange believes that these citations are particularly helpful in making clear that the spot market for a spot commodity ETP need not be “regulated” in order for a spot commodity ETP to be approved by the Commission, and in fact that it’s been the common historical practice of the Commission to rely on such derivatives markets as the regulated market of significant size because such spot commodities markets are largely unregulated.

⁴⁰ As further outlined below, both the Exchange and the Sponsor believe that the Bitcoin Futures market represents a regulated market of significant size and that this proposal and others like it should be approved on this basis.

⁴¹ See Teucrium Approval at 21679.

bitcoin futures contracts...indirectly by trading outside of the CME bitcoin futures market,” makes clear that the Commission believes that CME’s surveillance can capture the effects of trading on the relevant spot markets on the pricing of Bitcoin Futures. If CME is able to detect such attempts at manipulation in the complex and interconnected spot bitcoin market, how would such an ability to detect attempted manipulation and the utility in sharing that information with the listing exchange apply only to Bitcoin Futures ETFs and not Spot Bitcoin ETPs? Stated a different way, given that there is significant trading volume on numerous bitcoin exchanges that are not part of the CME CF Bitcoin Reference Rate and that arbitrage opportunities across bitcoin exchanges means that such trading volume will influence spot bitcoin prices across the market and, despite this, the Commission still believes that CME can detect attempted manipulation of the Bitcoin Futures through “trading outside of the CME bitcoin futures market,” it is clear that such ability would apply equally to both Bitcoin Futures ETFs and Spot Bitcoin ETPs. To take it a step further, such an ability would also seem to be a strong indication that the CME Bitcoin Futures market represents a regulated market of significant size. The Exchange agrees with the Commission on this point and notes that the pricing mechanism applicable to the Shares is similar to that of the CME CF Bitcoin Futures.

Further to this point, a Bitcoin Futures ETF is potentially more susceptible to potential manipulation than a Spot Bitcoin ETP that offers only in-kind creation and redemption because settlement of CME Bitcoin Futures pricing (and thus the value of the underlying holdings of a Bitcoin Futures ETF) occurs at a single price derived from spot bitcoin pricing, while shares of a Spot Bitcoin ETP would represent interest in bitcoin directly and authorized participants for a Spot Bitcoin ETP (as proposed herein) would be

able to source bitcoin from any exchange and create or redeem with the applicable trust regardless of the price of the underlying index. It is not logically possible to conclude that the CME Bitcoin Futures market represents a significant market for a futures-based product, but also conclude that the CME Bitcoin Futures market does not represent a significant market for a spot-based product.

In addition to potentially being more susceptible to manipulation than a Spot Bitcoin ETP, the structure of Bitcoin Futures ETFs provides negative outcomes for buy and hold investors as compared to a Spot Bitcoin ETP.⁴² Specifically, the cost of rolling CME Bitcoin Futures contracts will cause the Bitcoin Futures ETFs to lag the performance of bitcoin itself and, at over a billion dollars in assets under management, would cost U.S. investors significant amounts of money on an annual basis compared to Spot Bitcoin ETPs. Such rolling costs would not be required for Spot Bitcoin ETPs that hold bitcoin. Further, Bitcoin Futures ETFs could potentially hit CME position limits, which would force a Bitcoin Futures ETF to invest in non-futures assets for bitcoin exposure and cause potential investor confusion and lack of certainty about what such Bitcoin Futures ETFs are actually holding to try to get exposure to bitcoin, not to mention completely changing the risk profile associated with such an ETF. While Bitcoin Futures ETFs represent a useful trading tool, they are clearly a sub-optimal structure for U.S. investors that are looking for long-term exposure to bitcoin that will, based on the calculations above, unnecessarily cost U.S. investors significant amounts of money every

⁴² See e.g., “Bitcoin ETF’s Success Could Come at Fundholders’ Expense,” Wall Street Journal (October 24, 2021), available at: <https://www.wsj.com/articles/bitcoin-etfs-success-could-come-at-fundholders-expense-11635080580>; “Physical Bitcoin ETF Prospects Accelerate,” ETF.com (October 25, 2021), available at: https://www.etf.com/sections/blog/physical-bitcoin-etf-prospects-shine?nopaging=1&__cf_chl_jschl_tk__=pmd_JsK.fjXz9eAQW9zol0qpzhXDrrlpIVdoCloLXbLjl44-1635476946-0-gqNtZGzNAPCjcnBszQql.

year compared to Spot Bitcoin ETPs and the Exchange believes that any proposal to list and trade a Spot Bitcoin ETP should be reviewed by the Commission with this important investor protection context in mind.

Based on the foregoing, the Exchange and Sponsor believe that any objective review of the proposals to list Spot Bitcoin ETPs compared to the Bitcoin Futures ETFs and the Bitcoin Futures Approvals would lead to the conclusion that Spot Bitcoin ETPs should be available to U.S. investors and, as such, this proposal and other comparable proposals to list and trade Spot Bitcoin ETPs should be approved by the Commission. Stated simply, U.S. investors will continue to lose significant amounts of money from holding Bitcoin Futures ETFs as compared to Spot Bitcoin ETPs, losses which could be prevented by the Commission approving Spot Bitcoin ETPs. Additionally, any concerns related to preventing fraudulent and manipulative acts and practices related to Spot Bitcoin ETPs would apply equally to the spot markets underlying the futures contracts held by a Bitcoin Futures ETF. While the 1940 Act does offer certain investor protections, those protections do not relate to mitigating potential manipulation of the holdings of an ETF in a way that warrants distinction between Bitcoin Futures ETFs and Spot Bitcoin ETPs. To be clear, both the Exchange and Sponsor believe that the Bitcoin Futures market is a regulated market of significant size and that such manipulation concerns are mitigated as described throughout this proposal. After issuing the Bitcoin Futures Approvals which conclude the CME Bitcoin Futures market is a regulated market of significant size as it relates to Bitcoin Futures, the only consistent outcome would be approving Spot Bitcoin ETPs on the basis that the CME Bitcoin Futures market is also a regulated market of significant size as it relates to the bitcoin spot market. Given the

current landscape, approving this proposal (and others like it) and allowing Spot Bitcoin ETPs to be listed and traded alongside Bitcoin Futures ETFs would establish a consistent regulatory approach, provide U.S. investors with choice in product structures for bitcoin exposure, and offer flexibility in the means of gaining exposure to bitcoin through transparent, regulated, U.S. exchange-listed vehicles.

Spot and Proxy Exposure to Bitcoin

Exposure to bitcoin through an ETP also presents certain advantages for retail investors compared to buying spot bitcoin directly. The most notable advantage from the Sponsor's perspective is the elimination of the need for an individual retail investor to either manage their own private keys or to hold bitcoin through a cryptocurrency exchange that lacks sufficient protections. Typically, retail exchanges hold most, if not all, retail investors' bitcoin in "hot" (Internet-connected) storage and do not make any commitments to indemnify retail investors or to observe any particular cybersecurity standard. Meanwhile, a retail investor holding spot bitcoin directly in a self-hosted wallet may suffer from inexperience in private key management (*e.g.*, insufficient password protection, lost key, etc.), which could cause them to lose some or all of their bitcoin holdings. Thus, with respect to custody of the Trust's bitcoin assets, the Trust presents advantages from an investment protection standpoint for retail investors compared to owning spot bitcoin directly.

Finally, as described in the Background section above, a number of operating companies largely engaged in unrelated businesses – such as Tesla (a car manufacturer) and MicroStrategy (an enterprise software company) – have announced significant investments in bitcoin. Without access to bitcoin exchange-traded products, retail

investors seeking investment exposure to bitcoin may end up purchasing shares in these companies in order to gain the exposure to bitcoin that they seek.⁴³ In fact, mainstream financial news networks have written a number of articles providing investors with guidance for obtaining bitcoin exposure through publicly traded companies (such as MicroStrategy, Tesla, and bitcoin mining companies, among others) instead of dealing with the complications associated with buying spot bitcoin in the absence of a bitcoin ETP.⁴⁴ Such operating companies, however, are imperfect bitcoin proxies and provide investors with partial bitcoin exposure paired with a host of additional risks associated with whichever operating company they decide to purchase. Additionally, the disclosures provided by the aforementioned operating companies with respect to risks relating to their bitcoin holdings are generally substantially smaller than the registration statement of a bitcoin ETP, including the Registration Statement, typically amounting to a few sentences of narrative description and a handful of risk factors.⁴⁵ In other words, investors seeking bitcoin exposure through publicly traded companies are gaining only partial exposure to bitcoin and are not fully benefitting from the risk disclosures and associated investor protections that come from the securities registration process.

Bitcoin Futures

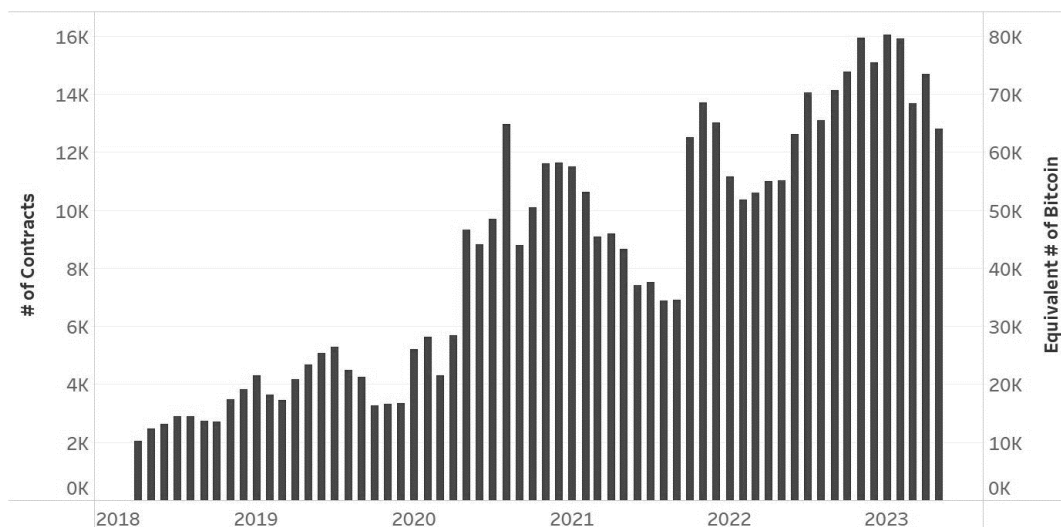
⁴³ In August 2017, the Commission's Office of Investor Education and Advocacy warned investors about situations where companies were publicly announcing events relating to digital coins or tokens in an effort to affect the price of the company's publicly traded common stock. See https://www.sec.gov/oiea/investor-alerts-and-bulletins/ia_icorelatedclaims.

⁴⁴ See e.g., “7 public companies with exposure to bitcoin” (February 8, 2021) available at: <https://finance.yahoo.com/news/7-public-companies-with-exposure-to-bitcoin-154201525.html>; and “Want to get in the crypto trade without holding bitcoin yourself? Here are some investing ideas” (February 19, 2021) available at: <https://www.cnbc.com/2021/02/19/ways-to-invest-in-bitcoin-without-holding-the-cryptocurrency-yourself-.html>.

⁴⁵ *See, e.g.*, Tesla 10-K for the year ended December 31, 2020, which mentions bitcoin just nine times: https://www.sec.gov/ix?doc=/Archives/edgar/data/1318605/000156459021004599/tsla-10k_20201231.htm.

CME began offering trading in Bitcoin Futures in 2017. Each contract represents five bitcoin and is based on the CME CF Bitcoin Reference Rate.⁴⁶ The contracts trade and settle like other cash-settled commodity futures contracts. Nearly every measurable metric related to Bitcoin Futures has generally trended up since launch, although certain notional volume calculations have decreased roughly in line with the decrease in the price of bitcoin. For example, there were 143,215 Bitcoin Futures contracts traded in April 2023 (approximately \$20.07 billion) compared to 193,182 (\$5 billion), 104,713 (\$3.9 billion) 118714 (\$42.7b billion), and 111,964 (\$23.2b billion) contracts traded in April 2019, April 2020, and April 2021, and April 2022, respectively.⁴⁷

CME Bitcoin Futures Open Interest (OI)

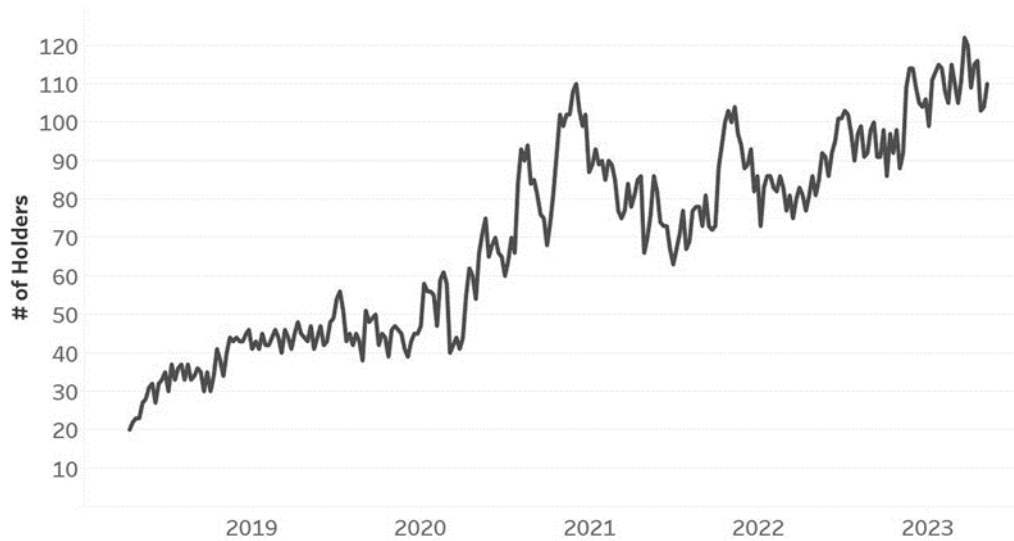


⁴⁶ The CME CF Bitcoin Reference Rate is based on a publicly available calculation methodology based on pricing sourced from several crypto exchanges and trading platforms, including Bitstamp, Coinbase, Gemini, itBit, Kraken, and LMAX Digital.

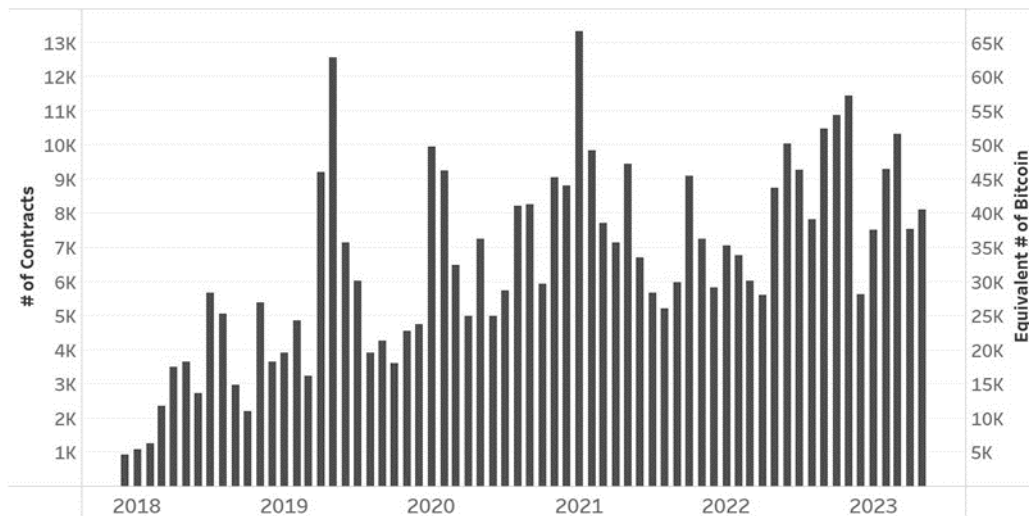
⁴⁷ Source: CME, Yahoo Finance 4/30/23.

The number of large open interest holders⁴⁸ and unique accounts trading Bitcoin Futures have both increased, even in the face of heightened Bitcoin price volatility.

CME Bitcoin Futures Large Open Interest Holders (LOIH)



CME Bitcoin Futures Average Daily Volume (ADV)



⁴⁸

A large open interest holder in Bitcoin Futures is an entity that holds at least 25 contracts, which is the equivalent of 125 bitcoin. At a price of approximately \$29,268.81 per bitcoin on 4/30/2023, more than 100 firms had outstanding positions of greater than \$3.65 million in Bitcoin Futures.

The Sponsor further believes that publicly available research, including research done as part of rule filings proposing to list and trade shares of Spot Bitcoin ETPs, corroborates the overall trend outlined above and supports the thesis that the Bitcoin Futures pricing leads the spot market and, thus, a person attempting to manipulate the Shares would also have to trade on that market to manipulate the ETP. Specifically, the Sponsor believes that such research indicates that bitcoin futures lead the bitcoin spot market in price formation.⁴⁹

Section 6(b)(5) and the Applicable Standards

The Commission has approved numerous series of Trust Issued Receipts,⁵⁰ including Commodity-Based Trust Shares,⁵¹ to be listed on U.S. national securities exchanges. In order for any proposed rule change from an exchange to be approved, the Commission must determine that, among other things, the proposal is consistent with the requirements of Section 6(b)(5) of the Act, specifically including: (i) the requirement that a national securities exchange's rules are designed to prevent fraudulent and manipulative

⁴⁹ See Exchange Act Releases No. 94080 (January 27, 2022), 87 FR 5527 (April 12, 2022) (specifically "Amendment No. 1 to the Proposed Rule Change To List and Trade Shares of the Wise Origin Bitcoin Trust Under BZX Rule 14.11(3)(4), Commodity-Based Trust Shares"); 94982 (May 25, 2022), 87 FR 33250 (June 1, 2022); 94844 (May 4, 2022), 87 FR 28043 (May 10, 2022); and 93445 (October 28, 2021), 86 FR 60695 (November 3, 2021). See also Hu, Y., Hou, Y. and Oxley, L. (2019). "What role do futures markets play in Bitcoin pricing? Causality, cointegration and price discovery from a time-varying perspective" (available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7481826/>). This academic research paper concludes that "There exist no episodes where the Bitcoin spot markets dominates the price discovery processes with regard to Bitcoin futures. This points to a conclusion that the price formation originates solely in the Bitcoin futures market. We can, therefore, conclude that the Bitcoin futures markets dominate the dynamic price discovery process based upon time-varying information share measures. Overall, price discovery seems to occur in the Bitcoin futures markets rather than the underlying spot market based upon a time-varying perspective."

⁵⁰ See Exchange Rule 14.11(f).

⁵¹ Commodity-Based Trust Shares, as described in Exchange Rule 14.11(e)(4), are a type of Trust Issued Receipt.

acts and practices;⁵² and (ii) the requirement that an exchange proposal be designed, in general, to protect investors and the public interest. The Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the Act and that this filing sufficiently demonstrates that the CME Bitcoin Futures market represents a regulated market of significant size and that, on the whole, the manipulation concerns previously articulated by the Commission are sufficiently mitigated to the point that they are outweighed by quantifiable investor protection issues that would be resolved by approving this proposal.

(i) Designed to Prevent Fraudulent and Manipulative Acts and Practices

In order to meet this standard in a proposal to list and trade a series of Commodity-Based Trust Shares, the Commission requires that an exchange demonstrate that there is a comprehensive surveillance-sharing agreement in place⁵³ with a regulated market of significant size. Specifically, the Commission has previously stated that:

⁵² As the Exchange has stated in a number of other public documents, it continues to believe that bitcoin is resistant to price manipulation and that “other means to prevent fraudulent and manipulative acts and practices” exist to justify dispensing with the requisite surveillance sharing agreement. The geographically diverse and continuous nature of bitcoin trading render it difficult and prohibitively costly to manipulate the price of bitcoin. The fragmentation across bitcoin platforms, the relatively slow speed of transactions, and the capital necessary to maintain a significant presence on each trading platform make manipulation of bitcoin prices through continuous trading activity challenging. To the extent that there are bitcoin exchanges engaged in or allowing wash trading or other activity intended to manipulate the price of bitcoin on other markets, such pricing does not normally impact prices on other exchange because participants will generally ignore markets with quotes that they deem non-executable. Moreover, the linkage between the bitcoin markets and the presence of arbitrageurs in those markets means that the manipulation of the price of bitcoin price on any single venue would require manipulation of the global bitcoin price in order to be effective. Arbitrageurs must have funds distributed across multiple trading platforms in order to take advantage of temporary price dislocations, thereby making it unlikely that there will be strong concentration of funds on any particular bitcoin exchange or OTC platform. As a result, the potential for manipulation on a trading platform would require overcoming the liquidity supply of such arbitrageurs who are effectively eliminating any cross-market pricing differences.

⁵³ As previously articulated by the Commission, “The standard requires such surveillance-sharing agreements since “they provide a necessary deterrent to manipulation because they facilitate the availability of information needed to fully investigate a manipulation if it were to occur.” The

...when the spot market is unregulated – the requirement of preventing fraudulent and manipulative acts may possibly be satisfied by showing that the ETP listing market has entered into a surveillance-sharing agreement with a regulated market of significant size in derivatives related to the underlying asset. That is because, where a market of significant size exists with respect to derivatives on the asset underlying the commodity-trust ETP, the Commission believes that there is a reasonable likelihood that a person attempting to manipulate the ETP by manipulating the underlying spot market would also have to trade in the derivatives market in order to succeed, since arbitrage between the derivative and spot markets would tend to counter an attempt to manipulate the spot market alone.⁵⁴

The Commission has provided illustrative guidance in interpreting the terms “significant market” and “market of significant size” to include “a market (or group of markets) as to which (a) there is a reasonable likelihood that a person attempting to manipulate the ETP would also have to trade on that market to successfully manipulate the ETP, so a surveillance-sharing agreement would assist the ETP listing market in detecting and deterring misconduct, and (b) it is unlikely that trading in the ETP would be the predominant influence on prices in that market.”⁵⁵

Commission has emphasized that it is essential for an exchange listing a derivative securities product to enter into a surveillance-sharing agreement with markets trading underlying securities for the listing exchange to have the ability to obtain information necessary to detect, investigate, and deter fraud and market manipulation, as well as violations of exchange rules and applicable federal securities laws and rules. The hallmarks of a surveillance-sharing agreement are that the agreement provides for the sharing of information about market trading activity, clearing activity, and customer identity; that the parties to the agreement have reasonable ability to obtain access to and produce requested information; and that no existing rules, laws, or practices would impede one party to the agreement from obtaining this information from, or producing it to, the other party.” The Commission has historically held that joint membership in the Intermarket Surveillance Group (“ISG”) constitutes such a surveillance sharing agreement. See Securities Exchange Act Release No. 88284 (February 26, 2020), 85 FR 12595 (March 3, 2020) (SR-NYSEArca-2019-39) (the “Wilshire Phoenix Disapproval”).

⁵⁴ Self-Regulatory Organizations; Bats BZX Exchange, Inc.; Order Setting Aside Action by Delegated Authority and Disapproving a Proposed Rule Change, as Modified by Amendments No. 1 and 2, To List and Trade Shares of the Winklevoss Bitcoin trust, 83 Fed. Reg. 37579, 37600 (Aug 1, 2018).

⁵⁵ Id.

The Commission has stated in a prior disapproval order that “the lead-lag relationship between the bitcoin futures market and the spot market...is central to understanding whether it is reasonably likely that a would-be manipulator of the ETP would need to trade on the bitcoin futures market to successfully manipulate prices on those spot platforms that feed into the proposed ETP’s pricing mechanism.”⁵⁶ The Commission further noted that “in particular, if the spot market leads the futures market, this would indicate that it would not be necessary to trade on the futures market to manipulate the proposed ETP, even if arbitrage worked efficiently, because the futures price would move to meet the spot price.”⁵⁷

The Commission has also recognized that the “regulated market of significant size” standard is not the only means for satisfying Section 6(b)(5) of the act, specifically providing that a listing exchange could demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement.⁵⁸

The Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the Act and that the Sponsor’s analysis demonstrates that the Exchange can meet such requirements in that the CME Bitcoin Futures Market (i) is a regulated

⁵⁶ Self-Regulatory Organizations; NYSE Arca, Inc.; Order Disapproving a Proposed Rule Change, as Modified by Amendment No. 1, Relating to the Listing and Trading of Shares of the Bitwise Bitcoin ETF Trust Under NYSE Arca Rule 8.201-E, 84 Fed. Reg. 55382, 55411 (Oct 16, 2019).

⁵⁷ Id.

⁵⁸ See Winklevoss Order at 37580. The Commission has also specifically noted that it “is not applying a ‘cannot be manipulated’ standard; instead, the Commission is examining whether the proposal meets the requirements of the Exchange Act and, pursuant to its Rules of Practice, places the burden on the listing exchange to demonstrate the validity of its contentions and to establish that the requirements of the Exchange Act have been met.” Id. at 37582.

market; (ii) has a comprehensive surveillance-sharing agreement with the Exchange; and (iii) satisfies the Commission’s “significant market” definition.”

1. The CME Bitcoin Futures Market is a Regulated Market and ISG Member

The CME is regulated by the CFTC and is a member of the Intermarket Surveillance Group (“ISG”), which was established to provide a framework for sharing information and coordinating regulatory efforts among exchanges trading securities and related products and to address potential intermarket manipulations and trading abuses. The Commission has previously stated that membership by a regulated futures exchange in ISG is sufficient to meet the surveillance-sharing requirement.⁵⁹ Both the Exchange and CME are members of the Intermarket Surveillance Group (the “ISG”).⁶⁰

2. The CME Bitcoin Futures Market is a Market of Significant Size

Based on the Commission’s prior guidance, Sponsor conducted a detailed price discovery study through its lead-lag analysis of bitcoin spot and futures trading across markets located globally. As discussed below, Sponsor’s analysis concludes that the CME Bitcoin Futures market is consistently the leading market for price discovery across USD bitcoin markets located globally, including bitcoin spot markets and offshore, unregulated bitcoin futures markets. Thus, Sponsor’s analysis supports the conclusion that there is a reasonable likelihood that a person attempting to manipulate the Shares would also have to trade on the CME Bitcoin Futures market to manipulate the Trust. Sponsor also conducted an additional lead-lag analysis including data from a recently launched bitcoin futures-based ETF to evaluate the likelihood of whether trading in the

⁵⁹ See Winklevoss Order at 37594.

⁶⁰ For a list of the current members and affiliate members of ISG, see www.isgportal.com.

Trust could become the predominant influence on prices in the CME Bitcoin Futures market and concluded that it is unlikely that trading in the Trust would be the predominant influence on prices in the CME Bitcoin Futures market.

Sponsor's analysis on price discovery in the Bitcoin spot and futures markets is described below.

Data Description and Sources

Sponsor obtained tick level trade data for Bitcoin spot prices and futures prices used in its analysis from Coin Metrics for the period spanning from January 1, 2019, to March 31, 2021. Table 1 summarizes the dataset by exchange, market type, and quote currency.

Sponsor aggregated the tick level trades to the one second floor level using a volume weighted average price (VWAP) approach. Compared to the daily/minute level granularity of timestamps, Sponsor believes the second level can capture more intra-day price dynamics and is more useful here to investigate price discovery, as both arbitrage and manipulative activities can occur within a matter of seconds. To preprocess the tick level trade data to second level granularity, two typical methods are often used. One is to use the last observed trade price within a second, and the other is to use VWAP within a second. Since multiple trades can occur with simultaneous timestamps but with different transaction prices, a VWAP can represent the price information from each trade instead of randomly selecting the last price. It is worth mentioning that although the price time series' have second level resolution (timestamped to seconds), this does not mean that the price time series' values are evenly spaced at each second since a market may not have trades within every second. Given this non-synchronous nature of trading and the

potential model issues arising from utilizing data with numerous imputed values, Sponsor's analysis leverages a method that eliminates the need for imputation for the timestamps without trades. This approach allows the model inputs of price time series from different markets to stay non-synchronous without further data processing.

In order to exclude any impacts caused by exchange rate movements, Sponsor limited the dataset to BTC-USD and BTC-USDT trades. Markets with an average correlation lower than 0.1 to other bitcoin markets, in any given quarter, were removed from the analysis. For futures markets, Sponsor included both ordinary futures and perpetuals. Contract frequencies were validated and recorded via respective exchange websites, and, for CME data, the sponsor compared data from the exchange directly with data provided by Coin Metrics to verify accuracy.

Within the ordinary futures market, one exchange, quote and contract lifespan combination can often have same-day trading on contracts with different expiration dates. To remove price gaps in this market, Sponsor constructed a continuous time-series of prices by choosing the contract with the highest volume per day within an exchange, quote, and contract lifespan combination. For each combination, successive contracts are backwards adjusted using the price difference between the two contracts at the time of rollover.

Table 1 Summary of Instruments

	Spot		Ordinary Futures*		Perpetual Futures	
Exchange	USD	USDT	USD	USDT	USD	USDT
Binance		✓	✓	✓	✓	✓
Binance.US	✓					
Bitfinex	✓	✓				✓

bitFlyer	✓					
BitMEX			✓		✓	
Bitstamp	✓					
Bittrex	✓					
Bybit					✓	✓
CEX.IO	✓					
CME			✓			
Coinbase	✓					
Deribit			✓		✓	
FTX	✓		✓		✓	
Gemini	✓					
HitBTC		✓				
Huobi		✓	✓		✓	✓
itBit	✓					
Kraken	✓	✓	✓		✓	
LBank		✓				
Liquid	✓					
OKEx		✓	✓	✓	✓	✓
ZB.COM		✓				
* One exchange with the same market type and quote currency can have multiple ordinary futures contracts with different expiration cycles/lifespans.						

Legend:	CME Bitcoin Futures	USD Spot	USDT Spot	Futures (Excluding CME)	USDT Futures	USD Perpetual Futures	USDT Perpetual Futures
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Research Design

Price discovery between spot and futures markets plays an important role in financial research due to its association with market maturity. In theory, the futures market is expected to lead price discovery in established asset classes due to its inherent features, such as lower transaction fees, built-in leverage, unconstrained short-selling, and greater transparency. Since bitcoin futures contracts began trading on regulated

exchanges in December 2017, several academic and market research papers have studied spot-futures price discovery in bitcoin markets. Sponsor started its research by reviewing the existing literature. Table 2 summarizes the metrics, data ranges, frequency levels, and conclusions for thirteen papers.

Table 2: Previous bitcoin spot/futures price discovery research

Author	Article Name (Year)	Journal	Metrics	Data Range	Frequency Level	Conclusion
Corbet, et al.	Bitcoin Futures - What use are they? (2018)	Economics Letters	Information Share, Component Share, Information Leadership Share (Yan) Information Leadership Share (Putnins)	09/26/2017 - 02/22/2018	Minute	finding that the bitcoin spot market leads price discovery
Kapoor and Ojha	An analysis of price discovery between Bitcoin futures and spot markets (2018)	Economics Letters	Information Share, Component Share	12/12/2017 - 05/16/2018	Daily	finding that the bitcoin futures market leads price discovery
Baur and Dimpfl	Price Discovery in Bitcoin Spot or Futures? (2019)	Journal of Futures Markets	Information Share, Component Share	12/10/2017 - 10/18/2018	15-Minute	finding that the bitcoin spot market leads price discovery
Hu, et al.	What role do futures markets play in Bitcoin pricing? Causality, cointegration and price discovery from a time-varying perspective (2019)	International Review of Financial Analysis	Time-varying version of Information Share and Generalized information Share	12/18/2017 - 06/16/2019	Daily	finding that the bitcoin futures market leads price discovery
Alexander and Heck	Price discovery, high-frequency trading and jumps in bitcoin markets (2019)	Available at SSRN: https://ssrn.com/abstract=3383147	Generalized Information Share, Component Share	12/18/2017 - 06/30/2019	30-Minute	finding that the bitcoin futures market leads price discovery
Fassas, et al.	Price Discovery in Bitcoin Futures (2020)	Research in International Business and Finance	Common Factor Weight, Information Share, Component Share, Information Leadership Share (Putnins)	01/01/2018 - 12/31/2018	Hourly	finding that bitcoin futures play a more important role in price discovery
Entrop, et al.	The determinants of price discovery on bitcoin markets (2020)	Journal of Futures Markets	Information Share, Component Share	12/17/2017 - 03/31/2019	Minute	finding that price discovery measures vary significantly over time without one market being clearly dominant over the other
Abulidom, et al.	The development of Bitcoin futures: Exploring the interactions between	Finance Research Letters	Information Share, Component Share, Information Leadership Share (Yan)	12/18/2017 - 02/26/2018	Minute	finding that futures dominate price discovery relative to spot market, and CBOE futures are found to be the

	cryptocurrency derivatives (2020)		Information Leadership Share (Putoins)			lead source compared to CME
Alexander, et al.	Price Discovery in Bitcoin: The Impact of Unregulated Markets (2020)	Journal of Financial Stability	Generalized Information Share	04/01/2019 - 01/30/2020	Minute	finding that, in a multi-dimensional setting, including the main price leaders within futures, perpetuals, and spot markets, CME bitcoin futures have a very minor effect on price discovery and that faster speed of adjustment and information absorption occurs on the unregulated spot and derivatives platforms than on CME bitcoin futures
Alajl and Mizrahi	Bitcoin spot and futures market microstructure (2020)	Journal of Futures Markets	Information Share, Component Share	01/02/2019 - 02/28/2019	5-Minute	finding that relatively more price discovery occurs on CME as compared to four spot exchanges
Chang, et al.	Efficient price discovery in the bitcoin markets (2020)	Available at SSRN: https://ssrn.com/abstract=3733924	Component Share	07/01/2019 - 12/31/2019	Minute	finding that CME bitcoin futures dominate price discovery
Hung, et al.	Trading activity and price discovery in Bitcoin futures markets (2021)	Journal of Empirical Finance	Modified Information Share	12/26/2017 - 04/30/2019	15-Minute	finding that the bitcoin spot market dominates price discovery
Wu, et al.	Fractional cointegration in bitcoin spot and futures markets (2021)	Journal of Futures Markets	Fractional Version of Component Share	12/18/2017 - 7/31/2020	Minute	finding that CME bitcoin futures dominate price discovery

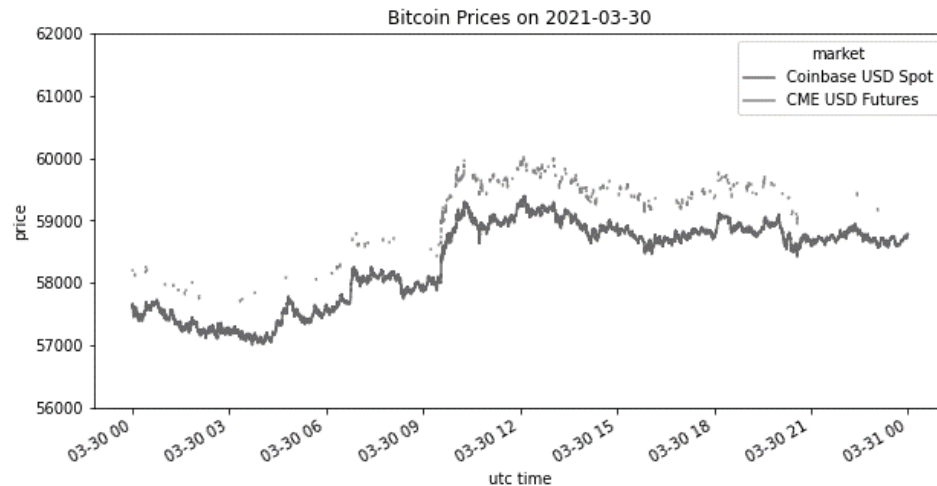
Sponsor noted that each of the studies reviewed used metrics derived from the Vector Error Correction Model (VECM) or an extension of VECM to examine price discovery. Within the column of metrics, Information Share (IS) proposed by Hasbrouk (1995) and Component Share (CS) pioneered by Gonzalo and Granger (1995) are mostly used. Hasbrouk transforms the VECM into a vector moving average with a common factor component and transitory component and defines the metric IS to measure the proportion of the variance of the permanent component of prices coming from each market with Cholesky factorization. The IS is not unique if switching the order of input price data of the underlying two markets. To overcome it, Lien and Shrestha (2009) use

eigenvalue decomposition instead of Cholesky factorization - this metric is called Modified Information Share. Both Information Share and Modified Information Share are used for pair-wise analysis. The extension of Modified Information Share to more than two markets is called Generalized Information Share (Lien and Shrestha, 2014). Component Share is calculated from the normalized orthogonal coefficients to the vector of the lagged error correlation term in the VECM. Fractional Component Share is derived similarly to CS but from a version of VECM that uses a fractional difference operator instead of the first order difference operator. Information Leadership Share (Yan and Zivot, 2010) and Information Leadership Share (Putniņš, 2013) combine Information Share and Component Share non-linearly.

Although the metrics used in reviewed studies are similar, the conclusions from these papers are mixed as to which markets lead or lag in price discovery. Buccheri (2021)⁶¹ discussed the limitations for VECM derived metrics and noted that when price observations are sparse (See CME price observations in Figure 1 as an example), a lot of zero returns are produced through imputation; therefore, the time series of prices strongly deviate from the standard semi-martingale assumption and sample covariances can be downward biased. The authors in Buccheri (2021) conclude that when the prices have a high level of sparsity, the VECM is clearly mis-specified and the estimates are potentially biased.

Figure 1: Bitcoin Price Observations

⁶¹ Buccheri, Giuseppe, Giacomo Bormetti, Fulvio Corsi, and Fabrizio Lillo. "Comment on: Price discovery in high resolution." *Journal of Financial Econometrics* 19, no. 3 (2021): 439-451. <https://doi.org/10.1093/jfinec/nbz008>. The authors comment on the limitations of using information share within markets with trades on high resolution frequencies. The paper illustrates why the application of a VECM methodology like information share would be mis-specified and the OLS estimates could be biased because of high sparsity in the data.



This conclusion in Buccheri (2021) provides theoretical support on why VECM derived metrics are not suitable to use when the underlying data has high level of sparsity but does not quantify the actual impact in practice. In “Suitable Price Discovery Measurement of Bitcoin Spot and Futures Markets”⁶² (Robertson and Zhang, 2022), the authors demonstrate that the conclusions of Buccheri (2019) are of high importance by quantifying the impact of sparsity. within bitcoin markets.

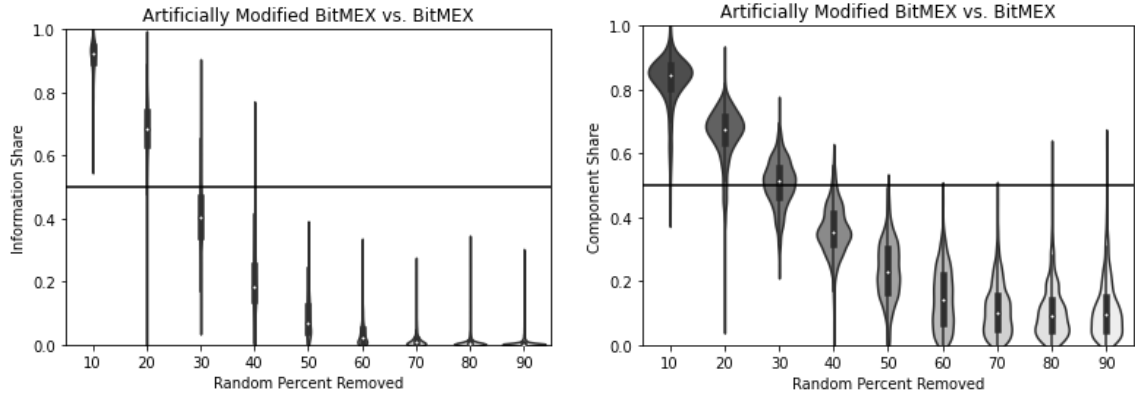
The authors show IS and CS are sensitive to input data’s level of sparsity with numerical experiments. When the sparsity level is about 10% for a designed-to-lead market, IS and CS show the known-leading market clearly contributes a majority to price discovery. However, as the sparsity is increased, the known-leading market begins to contribute less to price discovery and, when the level of sparsity is higher than 30%, using IS and CS produces mixed results or the opposite conclusion of what is true.

⁶² Robertson, Kevin, and Jiani Zhang. (2022) "Suitable Price Discovery Measurement of Bitcoin Spot and Futures Markets." Available at SSRN: <https://ssrn.com/abstract=4012165> or <http://dx.doi.org/10.2139/ssrn.4012165>.

Buccheri explains the effect of using VECM based metrics with violation of model assumptions from theoretical perspective, and Robertson and Zhang show the effect with numerical experiments and provide empirical evidence about to what extent using VECM can give unreliable results. Both emphasize that sparsity level is important regarding price discovery measurement using VECM based metrics.

Although Robertson and Zhang state that the choice of market to create the experiment data does not change the conclusion, Sponsor replicated their experiment using a different market to provide additional evidence on the impact of sparsity on VECM based metrics. Sponsor calculates the IS and CS every day from Q1 2019 through Q1 2021 (821 days) between the artificially leading (by 3 seconds) version of the BitMEX USD perpetual futures market at 9 different levels of sparsity (measured by the percent of random data removed, 10% increments starting at 10% and ending at 90%) and the original BitMEX USD perpetual futures market. To satisfy the VECM assumption that prices/returns are synchronous, Sponsor used the typical and commonly used form of forward filling using previous second values. Figure 2 shows the distributions of daily IS and CS values for the designed-to-lead market. The x axis is the sparsity level, and the y axis is IS/CS. The plotted results show that, as the level of sparsity is increased, the known leading market begins to contribute less to price discovery causing mixed results (both IS and CS dropped from above 0.8 to less than 0.2) and the opposite conclusion of what is true. The market is considered leading when IS/CS is above 0.5.

Figure 2: Effect of Sparsity on Information Share and Component Share



The observations from Sponsor’s experiment confirm the conclusions of Buccheri (2019) and Robertson and Zhang (2022) that VECM derived metrics are sensitive to the level of sparsity within market data.

Robertson and Zhang (2022) show that only about half of the markets included in the quarter of 2021 have trades for every second increment. Taking the CME USD futures market, Coinbase USD spot market, and BitMEX USD perpetual futures markets as representatives of bitcoin futures market, spot market, and perpetual market, Table 3 shows their comparison in average time in seconds between trades in each quarter. In the first quarter of 2019, on average, CME records a trade every 111 seconds (~2 minutes) while Coinbase records a trade every 3 seconds. In more recent time periods, the sparsity level decreases for CME, but is still 25 times higher than the Coinbase USD spot market and BitMEX USD perpetual futures market in the first quarter of 2021.

Table 3: Average Time Between Trades

Exchange	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1
CME	111	36	57	68	34	53	43	37	25
Coinbase	3	2	2	2	2	2	2	1	1
BitMEX	2	1	1	1	1	1	2	2	1

Due to the high sparsity of CME Bitcoin futures data, the Sponsor attributes the “mixed results” in previous academic studies that have failed to demonstrate that the CME bitcoin futures market constitutes a market of significant size to the problems associated with using econometric models without considering the suitability. When analyzing information flow with daily data that has low sparsity level, the analysis using metrics derived from VECM (e.g., Hu, et al., 2019) is convincing. However, for analyzing intraday information flow and accounting for the varying levels of sparsity among the bitcoin market, the sponsor believes the framework of correlation-based lead-lag analysis using the Hayashi-Yoshida (HY) estimator⁶³ to compute correlation and its extension by other academic researchers, including Hoffman (2013)⁶⁴ and Huth (2011),⁶⁵ to obtain the lead-lag seconds and lead-lag ratio is more suitable.

Lead-lag seconds and lead-lag ratio are the typical output metrics in correlation-based lead-lag analysis. The former measures the relative time in lead or lag between two markets and the latter measures the relative strength of the lead-lag relationship between

⁶³ Hayashi, Takaki, and Nakahiro Yoshida. "On covariance estimation of non-synchronously observed diffusion processes." *Bernoulli* 11, no. 2 (2005): 359-379. <http://www.jstor.org/stable/3318933>. The authors proposed a novel method (HY estimator) of estimating the covariance of two diffusion processes when they are observed only at discrete times in a non-synchronous manner. This methodology addresses the issue that the traditional realized covariance estimator encounters, which is that the choice of regular interval size and data interpolation scheme can lead to unreliable estimation. The new method Hayashi and Yoshida introduced in this paper is free from any interpolation and therefore avoids the bias and other problems caused by it.

⁶⁴ Hoffmann, Marc, Mathieu Rosenbaum, and Nakahiro Yoshida. "Estimation of the lead-lag parameter from non-synchronous data." *Bernoulli* 19, no. 2 (2013): 426-461. <http://www.jstor.org/stable/23525731>. The authors propose a methodology for modeling the lead-lag effect between two financial assets with non-synchronous data based on Hayashi and Yoshida's work (2015). It has been applied in various price discovery research publications. The Sponsor's analysis utilized this methodology to obtain pairwise lead-lag seconds between two markets.

⁶⁵ Huth, Nicolas, and Frédéric Abergel. "High frequency lead/lag relationships—empirical facts." *Journal of Empirical Finance* 26 (2014): 41-58. <https://doi.org/10.1016/j.jempfin.2014.01.003>.

two markets. They are both free from any imputation or sampling within non-synchronous and/or infrequent data and have proven to be useful in price discovery research in other markets. Dao (2018)⁶⁶ applied the Hayashi-Yoshida estimator in a lead-lag framework with these two metrics on price discovery research of the S&P 500 index and the two most liquid ETFs that track it. This academic study is the first to analyze the effect of information arrival on the lead-lag relationship among related spot instruments and concludes that sophisticated investors have a more significant effect on the lead-lag relationship. The analysis from this study confirms that using the Hayashi-Yoshida estimator in a lead-lag framework is suitable for analyzing high frequency, tick level, non-synchronous data even timestamped to milliseconds. Sponsor notes that there is academic research studying high-frequency lead-lag relationships between multiple bitcoin spot markets using the Hayashi-Yoshida estimator with lead-lag seconds and lead-lag ratio from *Schei (2019)*⁶⁷. The suitability test performed by Robertson and Zhang (2022) shows that these two metrics are not sensitive to the level of sparsity within markets. Their experiment shows that the accuracy of lead-lag seconds is consistent across the varying levels of sparsity and the lead-lag ratio moves closer to 1 (i.e., provides less certainty about the result) when the level of sparsity increases. Lead-lag ratio quantifies how strong the relationship is, and the strength can be considered as the confidence level associated with the conclusion that one market leads or lags another.

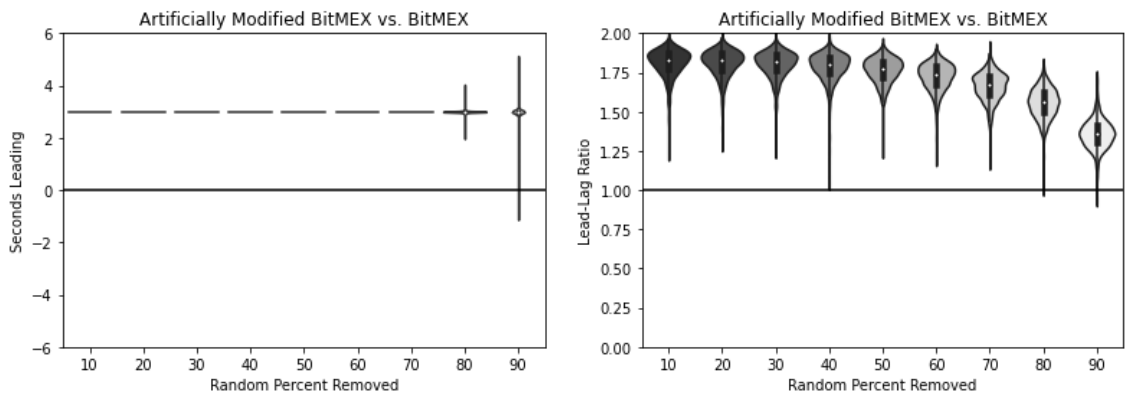
⁶⁶ Dao, Thong Minh, Frank McGroarty, and Andrew Urquhart. "Ultra-high-frequency lead-lag relationship and information arrival." *Quantitative Finance* 18, no. 5 (2018): 725-735. <https://doi.org/10.1080/14697688.2017.1414484>.

⁶⁷ Schei, Norheim Schei. "High Frequency Lead-Lag Relationships in the Bitcoin Market." (unpublished master's thesis, 2019). Copenhagen Business School, Copenhagen, Denmark.

The closer the lead-lag ratio is to 1, the less certain one can conclude the relationship is of one market's lead/lag over the other market.

Again, Sponsor replicated the suitability test using the HY estimator in a lead-lag framework performed by Robertson and Zhang (2022) but on the BitMEX USD perpetual futures market. As mentioned by the authors, no interpolation is needed in this version of the experiment because the HY estimator computes directly from non-synchronous data. Figure 3 shows the distribution of daily lead-lag seconds and daily lead-lag ratios between the artificially leading and sparse versions of the BitMEX USD perpetual futures market and the original BitMEX USD perpetual futures market.

Figure 3: Effect of Sparsity on Lead-Lag Seconds and Lead-Lag Ratio



The observations from Sponsor's experiment match those of Robertson and Zhang (2022) that the HY estimator used in a lead-lag framework is not sensitive to the level of sparsity within market data. The distribution of lead-lag seconds shows that the time shift parameter that maximizes the HY estimator is consistently +3 seconds – which is the amount of time the artificial market was advanced by. The distribution of the lead-lag ratios are consistently above 1, showing that the leading relationship of the artificial market over the original is strong. As Robertson and Zhang also noted, the lead-lag ratios

decay towards the level of 1 with increasing levels of sparsity, which matches the expectation that the lead-lag relationship becomes weak when one of the markets rarely has data.

Sponsor's analysis expands the research of *Schei* by using the Hayashi-Yoshida estimator with a lead-lag framework and the same metrics but on both bitcoin spot and futures markets. It is worth mentioning, the lead-lag framework is different than a VECM based approach. A VECM based approach, for example IS, measures the proportion of the variance of the permanent component of prices coming from each market and the total variance and the variance proportion change when the number of markets included changes. Therefore, "omitting substantial information flows from other markets [by using a two-dimensional methodology] can produce misleading results", which Alexander and Heck (2020)⁶⁸ state in their study as the motivation to use Generalized Information Share instead of the original Information Share metric. This is a limitation for two-dimensional VECM based metrics and does not apply to Sponsor's correlation-based lead-lag analysis. This is because VECM based metrics measure the proportion of price discovery among markets while a lead-lag framework measures how much time one market leads/lags another without the need to compute the total variance of the permanent component of prices.

Lead-Lag Analysis

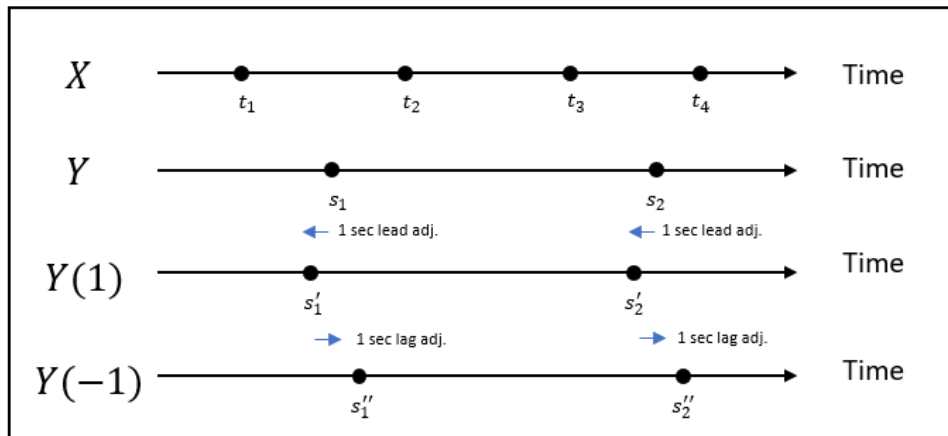
In the lead-lag analysis, Sponsor examined the pairwise lead-lag relationship within the spot market and futures market, as well as across them. For each pair, Sponsor

⁶⁸ C. Alexander & D. Heck "Price discovery in Bitcoin: The impact of unregulated markets", 50 J. Financial Stability 100776 (2020).

computed the correlation coefficients using the HY estimator between one market price time series and a second market price time series as well as timestamp-adjusted (leading/lagging) versions of the second market to find the time delta that maximizes their correlation. The range of time deltas is from $-N$ seconds to N seconds in one second increments. In the Sponsor's analysis, the parameter N is set as 15. For illustration below, Sponsor uses the pair of CME USD Futures (denoted as price time series X) and Coinbase USD Spot (denoted as price time series Y) as an example to describe the process.

Step 1: Fix the timestamp of CME and adjust the timestamps of Coinbase from N seconds lagging to N seconds leading. Figure 4 shows this process with time deltas equal to 1 and -1 for illustration purpose.

Figure 4: Adjustment of Timestamps



Notes: Each dot is a price observation; t_i and s_j are the observation timestamps of X and Y ; $Y(1)$ and $Y(-1)$ are timestamp adjusted price time series with 1 second backward shift and 1 second forward shift respectively.

Step 2: Compute the correlation coefficients between CME price time series and each of timestamp-adjusted time series of Coinbase with l seconds ($l \in [-N, N]$) lead/lag using HY estimator. The correlation coefficient is defined as (Hayashi & Yoshida 2005):

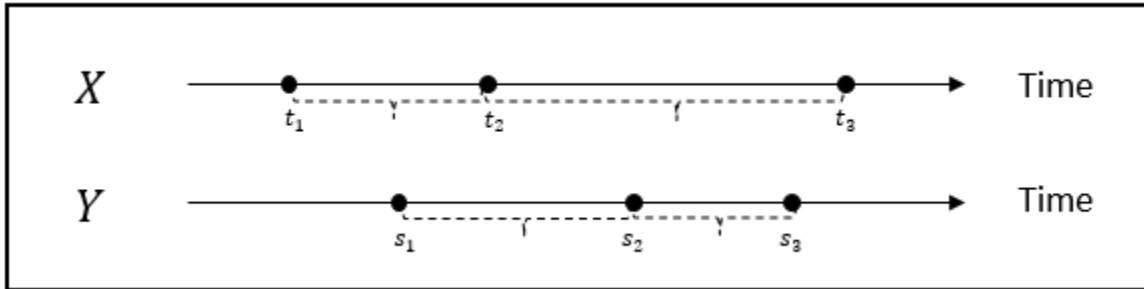
$$\hat{\rho} = \frac{\sum_{i,j} r_X^i r_Y^j \mathbb{I}_{\{O_{ij} \neq \emptyset\}}}{\sqrt{\sum_i (r_X^i)^2 \sum_j (r_Y^j)^2}}$$

where

- X and Y are trade prices on two different markets
- $r_X^i = X_{t_i} - X_{t_{i-1}}$ and t_i is the i_{th} observed time of X
- $r_Y^j = Y_{s_j} - Y_{s_{j-1}}$ and s_j is the j_{th} observed time of Y
- The observed times, t_i and s_j for X and Y are independent
- O_{ij} is the overlapping time between interval (t_{i-1}, t_i) and interval (s_{j-1}, s_j)
- \mathbb{I} is defined as an indicator function, $\mathbb{I} = \begin{cases} 1, & O_{ij} \neq \emptyset \\ 0, & O_{ij} = \emptyset \end{cases}$

The numerator of $\hat{\rho}$ is the covariance between CME and Coinbase, which equates to the sum of every product of price changes that share a time overlap. Figure 5 shows this process with a simple example.

Figure 5: Data Points Used in HY Estimator



Notes: The interval (t_1, t_2) is overlapped with the interval (s_1, s_2) , and the interval (t_2, t_3) is overlapped with both the interval (s_1, s_2) and the interval (s_2, s_3) . Therefore, the covariance is calculated by summing the products of the following pairs of price changes: $(X_{t_2} - X_{t_1}, Y_{s_2} - Y_{s_1})$, $(X_{t_3} - X_{t_2}, Y_{s_2} - Y_{s_1})$, and $(X_{t_3} - X_{t_2}, Y_{s_3} - Y_{s_2})$.

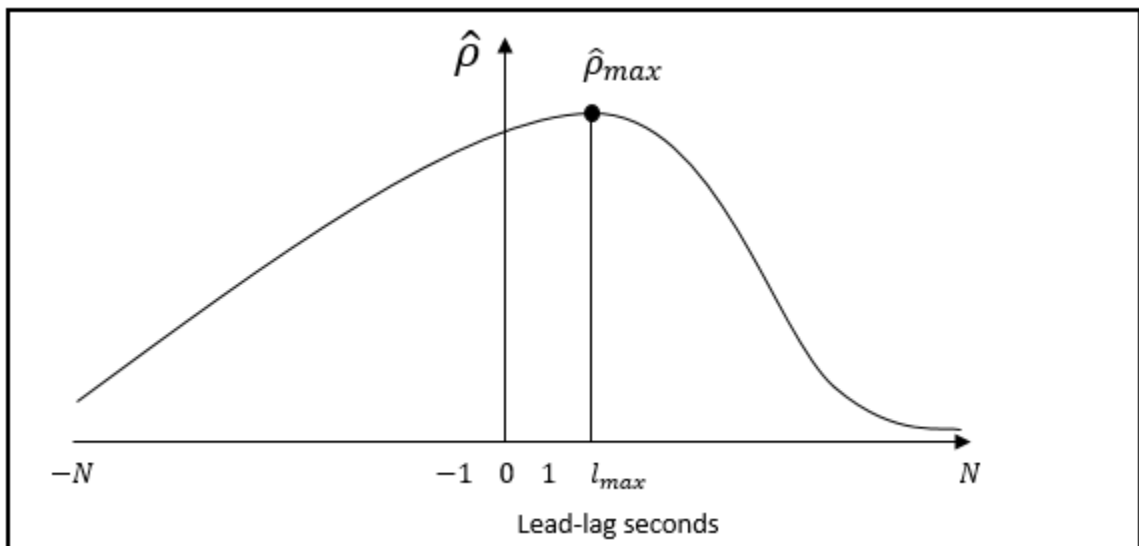
Step 3: Collect the correlation coefficients with different lead-lag seconds as a correlation curve and search for the value l_{max} from $-N$ to N that maximizes their correlation.

Meanwhile, compute the lead-lag ratio between CME and Coinbase, llr , to measure the strength of the lead-lag relationship (Huth & Abergel 2012). It is defined as

$$llr = \frac{\sum_{i=1}^N \hat{\rho}^2(l_i)}{\sum_{i=1}^N \hat{\rho}^2(-l_i)}.$$

The further the llr is from 1, the stronger the relationship is of one market's lead/lag over the other market. The llr is used in conjunction with the HY correlation coefficient and the lead-lag seconds to provide a more comprehensive analysis. If $llr \in [0.95, 1.05]$ or l_{max} is zero, we conclude neither market leads. If llr is not in the range $[0.95, 1.05]$ and l_{max} is positive, CME leads Coinbase by l_{max} seconds and vice versa. Figure 6 shows an example of the correlation curve.

Figure 6: Example of the Correlation Curve



Notes: The l_{max} is the lead-lag seconds, and $\hat{\rho}_{max}$ is the corresponding maximum HY correlation.

These three steps provide the pairwise lead-lag seconds between two markets. To measure a market's overall price discovery leadership, the results are aggregated by taking the average lead-lag seconds it has with all other markets included in a quarter.

Conclusion of Reasonable Likelihood – Lead Lag Analysis

Sponsor's results suggest that, out of the 20 spot markets and 26 futures markets analyzed, the CME bitcoin futures market plays the most important role in price discovery during each quarter spanning from the first quarter of 2019 to the first quarter

Figure 7: Pairwise Lead-Lag Seconds of CME Bitcoin Futures Market

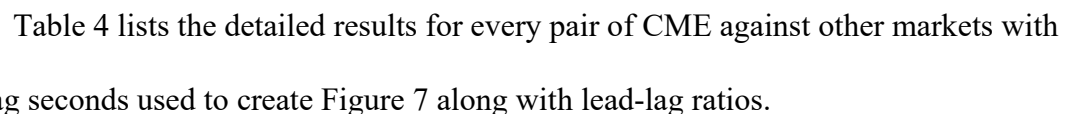


Table 4: Pairwise Lead-Lag Leadership (Lead-Lag Seconds | Lead-Lag Ratio) of CME Bitcoin Futures Market

Category	Exchange	Lead-Lag Seconds Lead-Lag Ratio								
		2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1
USD Ordinary Futures	Binance						1 1.48	1 1.44	1 1.15	1 1.20
USD Ordinary Futures	BitMEX	9 1.34	6 1.35	5 1.50	5 1.38	3 1.39	4 1.44	3 1.72	2 1.18	1 1.21
USD Ordinary Futures	Deribit	5 1.27	3 1.27	3 1.31	2 1.26	1 1.25	1 1.31	1 1.32	1 1.10	1 1.12
USD Ordinary Futures	FTX					0 0.96	0 0.99	1 1.08	0 1.04	1 1.10
USD Ordinary Futures	Huobi (Bi-Quarterly)				2 1.25	1 1.26	1 1.32	1 1.52	1 1.16	1 1.20
USD Ordinary Futures	Huobi (Weekly)				2 1.25	1 1.27	1 1.27	1 1.43	1 1.12	1 1.15
USD Ordinary Futures	Huobi (Quarterly)						2 1.49	1 1.40	1 1.12	1 1.16
USD Ordinary Futures	Huobi (Bi-Weekly)				2 1.20	1 1.22	1 1.23	1 1.35	1 1.09	1 1.13
USD Ordinary Futures	Kraken							2 1.11	0 1.01	0 1.02
USD Ordinary Futures	Okex						1 1.28	1 1.47	1 1.14	1 1.19
USD Perpetual Futures	Binance							1 1.54	1 1.17	1 1.23
USD Perpetual Futures	BitMEX	8 1.36	4 1.31	4 1.45	4 1.40	2 1.39	3 1.47	3 1.92	2 1.24	1 1.38
USD Perpetual Futures	Bybit				4 1.42	2 1.39	2 1.44	1 1.86	1 1.26	1 1.41
USD Perpetual Futures	Deribit	6 1.37	3 1.28	2 1.38	2 1.33	1 1.31	1 1.37	1 1.61	1 1.16	1 1.22
USD Perpetual Futures	FTX	0 0.99	0 1.02	2 1.07	2 1.15	1 1.11	1 1.24	1 1.55	1 1.16	1 1.21
USD Perpetual Futures	Huobi							1 1.84	1 1.23	1 1.33
USD Perpetual Futures	Kraken							2 1.87	1 1.13	1 1.12
USD Perpetual Futures	Okex							1 1.54	1 1.14	1 1.20
USD Spot	Binance.us			4 1.16	3 1.19	3 1.17	2 1.26	3 1.45	2 1.20	2 1.28
USD Spot	Bitfinex	5 1.33	4 1.29	3 1.44	3 1.34	2 1.35	3 1.41	2 1.68	2 1.22	1 1.32
USD Spot	Bitflyer		13 1.06	0 1.03	2 1.05	6 1.07	0 1.02	0 1.02	0 1.04	0 1.00
USD Spot	Bitstamp	3 1.19	3 1.24	3 1.31	3 1.24	1 1.21	1 1.19	1 1.26	1 1.13	1 1.19
USD Spot	Bittrex	15 1.22	6 1.25	5 1.35	4 1.18	2 1.25	2 1.25	2 1.38	3 1.19	2 1.29
USD Spot	CEX.IO	13 1.23	11 1.17	14 1.24	4 1.12	6 1.18	3 1.15	3 1.22	3 1.12	3 1.22
USD Spot	Coinbase	2 1.46	2 1.30	2 1.40	2 1.34	1 1.32	1 1.35	1 1.62	1 1.20	1 1.28
USD Spot	FTX			0 1.05	0 1.05	0 0.99	0 1.02	1 1.26	1 1.16	1 1.23
USD Spot	Gemini	4 1.19	3 1.21	2 1.25	2 1.21	1 1.22	1 1.22	1 1.37	1 1.15	1 1.20
USD Spot	iBit	4 1.28	3 1.20	3 1.24	2 1.23	2 1.08	2 1.18	2 1.27	2 1.22	2 1.34
USD Spot	Kraken	9 1.37	8 1.31	6 1.47	3 1.30	2 1.35	2 1.33	3 1.66	2 1.25	2 1.41
USD Spot	Liquid	5 1.13	4 1.12	2 1.09	2 1.07	1 1.06	0 1.05	1 1.05	0 1.03	0 1.05
USDT Ordinary Futures	Binance									1 1.08
USDT Ordinary Futures	Okex						1 1.29	1 1.39	1 1.14	1 1.19
USDT Perpetual Futures	Binance				1 1.23	1 1.22	1 1.27	1 1.43	1 1.13	0 1.17
USDT Perpetual Futures	Bitfinex			0 1.01	1 1.05	4 1.15	2 1.10	2 1.23	2 1.15	2 1.16
USDT Perpetual Futures	Bybit					2 1.08	2 1.36	1 1.71	1 1.23	1 1.35
USDT Perpetual Futures	Huobi								1 1.16	1 1.27
USDT Perpetual Futures	Okex							1 1.52	1 1.15	1 1.20

USDT Spot	Binance	5 1.29	2 1.23	2 1.31	1 1.27	1 1.25	1 1.28	1 1.47	1 1.15	1 1.20
USDT Spot	Bitfinex	0 1.00	3 1.05	3 1.10	3 1.13	2 1.14	2 1.20	1 1.19	1 1.12	1 1.21
USDT Spot	Hitbtc	4 1.27	2 1.25	2 1.35	1 1.24	1 1.22	1 1.22	1 1.36	1 1.12	1 1.22
USDT Spot	Huobi	7 1.24	3 1.27	2 1.33		1 1.27	1 1.29	1 1.50	1 1.15	1 1.20
USDT Spot	Kraken					0 1.01	0 1.04	3 1.08	2 1.08	2 1.14
USDT Spot	Libank			5 1.55	4 1.37		4 1.40			
USDT Spot	Okex					1 1.13	1 1.28	1 1.52	1 1.16	1 1.20
USDT Spot	Zb.com	6 1.20	5 1.26	3 1.37	4 1.35	2 1.40	2 1.37	1 1.64	1 1.18	1 1.23

Additionally, Sponsor compared the CME bitcoin futures market's leadership with other markets by aggregating each market's lead-lag by taking the average of each markets lead-lag seconds over all other markets in a quarter.

Figure 8 shows that, while other category leaders can change rank each quarter, they consistently rank below CME futures in average seconds leading. This consistency, along with the Sponsor's inclusion standards of strict overall average market correlations and demonstrative lead-lag ratios, speaks to the strength of CME futures' leadership across spot and futures markets globally.⁶⁹

⁶⁹ For more information, see Memorandum from the Division of Trading and Markets regarding a September 8, 2021 meeting with representatives from Fidelity Digital Assets, et al. (Sept. 8, 2021) available at <https://www.sec.gov/comments/sr-cboebzx-2021-039/srcboebzx2021039-250110.pdf>.

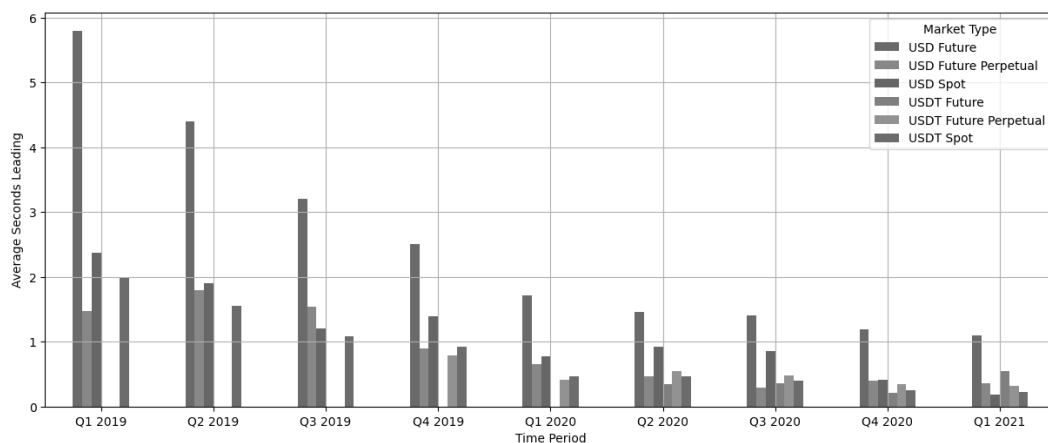
Figure 8: Leading Market Category – Based on the Leading Market within each Category

Leading Category	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures
1 st Lagging Category	USD Spot	USD Spot	USD Perpetual Futures	USD Spot	USD Futures	USD Futures	USD Spot	USD Futures	USD Futures
2 nd Lagging Category	USDT Spot	USD Perpetual Futures	USD Spot	USDT Spot	USD Spot	USD Spot	USD Futures	USD Spot	USDT Futures
3 rd Lagging Category	USD Perpetual Futures	USDT Spot	USDT Spot	USD Futures	USD Perpetual Futures	USDT Perpetual Futures	USDT Perpetual Futures	USD Perpetual Futures	USD Perpetual Futures
4 th Lagging Category	USD Futures	USD Futures	USD Futures	USD Perpetual Futures	USDT Spot	USDT Spot	USDT Spot	USDT Perpetual Futures	USDT Perpetual Futures
5 th Lagging Category	N/A	N/A	N/A	USDT Perpetual Futures	USDT Perpetual Futures	USD Perpetual Futures	USDT Futures	USDT Spot	USDT Spot
6 th Lagging Category	N/A	N/A	N/A	N/A	N/A	USDT Futures	USD Perpetual Futures	USDT Futures	USD Spot
	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021



Figure 9 shows the average lead over all other markets for each market category leader by quarter. For example, the market leader within the USD Futures category (which is consistently CME) leads all other markets by an average of ~5.8 seconds in Q1 2019.

Figure 9: Category Leaders' Average Lead Among All Markets

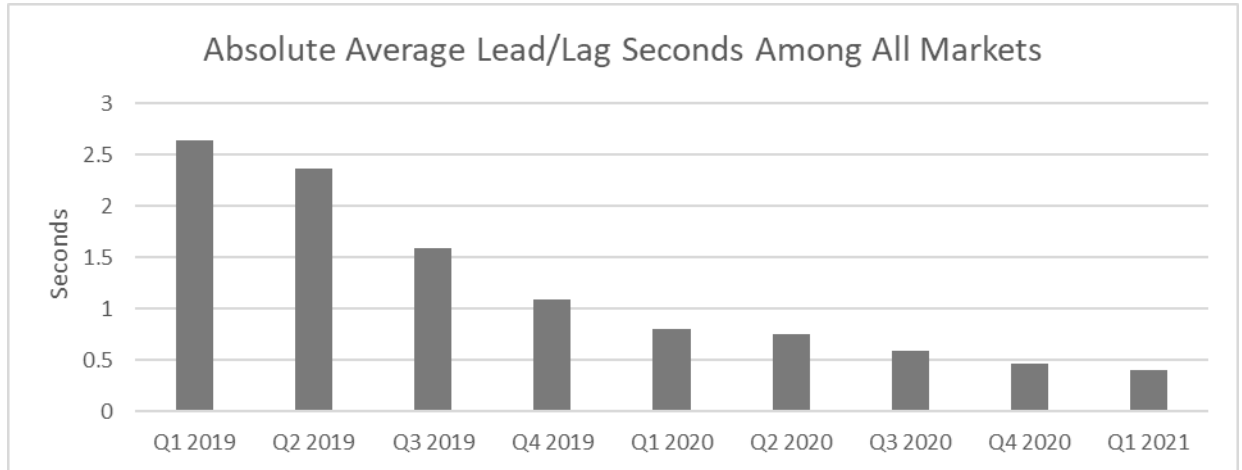


Another observation from Figure 9 is that there is a clear decline in seconds-leading through time for these market category leaders. As discussed further below (Figure 10 & 11), this declining lead-lag time does not mean that a particular market category leader's strength in leadership is deteriorating, as it is not only evident for market category leaders, but all markets, and suggests efficiency within the bitcoin markets has continued to improve.

The lead-lag relationships between and among bitcoin futures and spot markets provide insights into the directional influences of markets on price discovery, with the CME Bitcoin futures market playing the most important role in price discovery during each quarter spanning from the first quarter of 2019 to the first quarter of 2021, as noted above. Arbitrage between the CME Bitcoin futures market and spot markets would tend to counter an attempt to manipulate the spot market alone. Thus, the Sponsor's analysis supports the conclusion that there is a reasonable likelihood that a person attempting to manipulate the Shares would also have to trade on the CME Bitcoin futures market to manipulate the ETP.

Figure 10 shows that the absolute average of every market's overall lead-lag seconds (average lead-lag seconds over all other markets) has steadily decreased from the first quarter of 2019 to the first quarter of 2021. This suggests that the efficiency within bitcoin markets has continued to improve, and the window of arbitrage opportunity has closed with increasing speed.

Figure 10: Absolute Average Lead/Lag Seconds Among All Markets



While average lead/lag among markets has decreased over time, this does not mean that relative leadership among markets has decreased over time. To understand relative leadership among markets during different time periods, Sponsor standardizes each market's average lead/lag with other markets by dividing the market's average lead with other markets by the average of every market's absolute average lead with other markets. This relative leadership score (RLS) of market x is defined as:

$$rls_x = \frac{\mu_x}{\sum_n^i |\mu_i| / n}$$

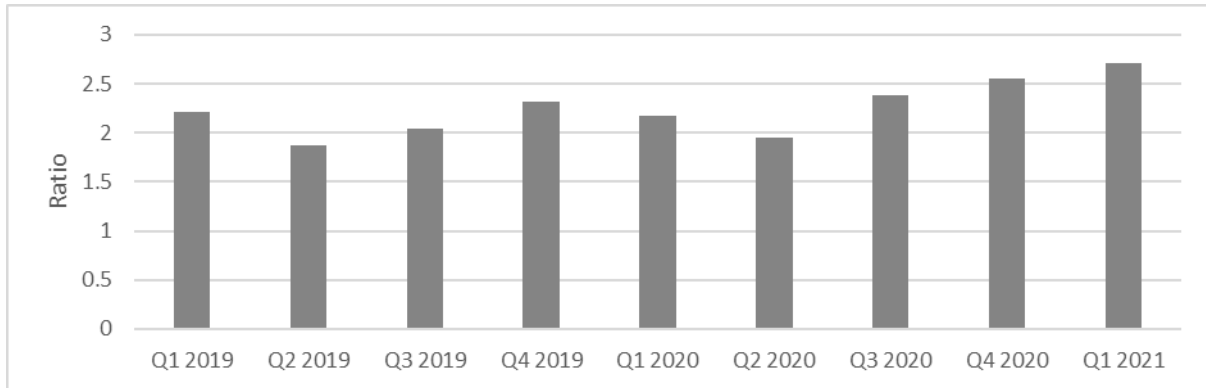
where

- x is a market
- μ_x is the average lead of market x over all other markets
- $\sum_i^n |\mu_i|$ is the sum of each market's absolute lead over all other markets
- n is the number of markets included in the time period

The RLS of the CME bitcoin futures market indicates that the strength of CME leadership has not deteriorated, shown in Figure 11. The RLS for the CME USD futures market is relatively stable – indicating that there is no deterioration in the strength of this

market and even a slight increase in strength during the last three quarters observed – even the average lead/lag (the denominator of RLS plotted in Figure 10) among markets has decreased over time.

Figure 11: CME Bitcoin Futures Market Relative Leadership Score



To summarize, the top rank in average leading seconds and the pairwise leading results with confidence intervals for the CME bitcoin futures market, support the conclusion that there is a reasonable likelihood that a person attempting to manipulate the Shares would also have to trade on the CME bitcoin futures market to manipulate the ETP. The RLS of the CME bitcoin futures market provides evidence that that likelihood has stayed consistent while the efficiency within the bitcoin markets has continued to improve.

3. Trading in the Shares Unlikely to be Predominant Influence on Prices in CME Bitcoin Futures Market

As described above, the Commission requires the Exchange to conclude that it is unlikely that trading in the Shares would become the predominant influence on prices in

the CME Bitcoin Futures market. In a recent approval order⁷⁰ of a bitcoin-futures ETP, the Commission concluded that it is unlikely that trading in the proposed bitcoin-futures ETP would be the predominant influence on prices in the CME bitcoin futures market. The Commission specifies as reasons for its conclusion “the maturation of the CME bitcoin futures market since its inception in 2017-including, but not limited to, the overall size, volume, liquidity, and number of years of trading in the CME bitcoin futures market and evidence from the 1940 Act-registered Bitcoin Futures ETFs”. Sponsor agrees with the Commission’s remarks on the maturation of the CME bitcoin futures market and would also add “price discovery leadership”, as discussed above, to the list of maturation evidence. As evidence from the 1940 Act-registered Bitcoin Futures ETFs, the Commission states it “has neither observed any disruption to the CME bitcoin futures market, nor any evidence that the Bitcoin Futures ETFs have exerted dominant influence on CME bitcoin futures prices.” Through its own analysis, Sponsor again agrees with the Commission’s remarks and, as discussed below, also found that the level of price discovery leadership associated with the CME bitcoin futures market remained unchanged since the launch of Bitcoin Futures ETFs.

In considering the question of whether the proposed bitcoin-spot ETP would be the predominant influence on prices in the CME bitcoin futures market, Sponsor conducted a numerical experiment to best estimate the effect since it is not feasible to directly evaluate the effect for the proposed ETP before its existence. The experiment is designed to observe whether the price discovery leadership of the CME bitcoin futures

⁷⁰ See Exchange Act Release No. 94620 (April 6, 2022), 87 FR 21676 (April 12, 2022) (the “Teucrium Approval”) and 94853 (May 5, 2022) (collectively, with the Teucrium Approval, the “Bitcoin Futures Approvals”).

market can be changed by a new market (specifically an ETP) entering with high trade activity. If it is, it is reasonable to assume that the proposed bitcoin-spot ETP could be the predominant influence on prices in the CME bitcoin futures market if it has high trade activity. However, if it is not, it is also reasonable to assume that the proposed bitcoin-spot ETP would not be the predominant influence. From the numerical experiment, Sponsor aims to demonstrate that high trade activity or volume is not the key factor in price discovery.

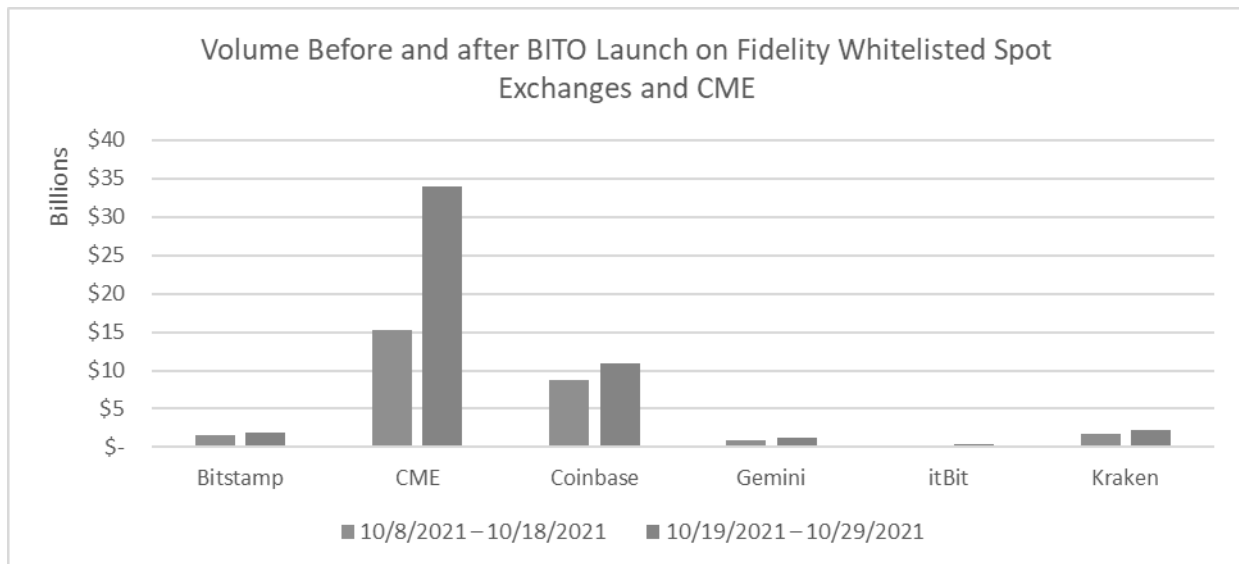
Sponsor used trade data from a recently launched bitcoin futures-based ETF, ProShares Bitcoin Strategy ETF (“BITO”), which caused high trading activity after its launch, as the model in its experiment. BITO is a Commission-registered ETF that is listed and traded on a US regulated national securities exchange and was launched on October 18, 2021. As described in its prospectus, BITO seeks to invest primarily in CME Bitcoin futures contracts.

Sponsor selected two periods, representing a regular period with normal trading activity and a period with new information and heightened trading activity (from approximately \$15 billion to \$34 billion) in the CME Bitcoin futures market as seen from Figure 12. The experiment is to compare whether the leadership of CME increased during the second period. If not, it is reasonable to conclude the heightened trading activity in the futures market did not increase the leadership of the futures market. With that same logic, the potential heightened trading activity in the spot market would not increase the leadership of the spot market.

Sponsor obtained tick level data from Coin Metrics for all markets included in the lead-lag analysis described above spanning two specific periods: 11 days before the

launch of BITO (10/8/2021 – 10/18/2021) and 11 days after the launch (10/19/2021 – 10/29/2021). For the 11 days after the launch of BITO, Sponsor obtained tick-level trade data on BITO via Bloomberg and aggregated to the one second floor level using the same method described above.

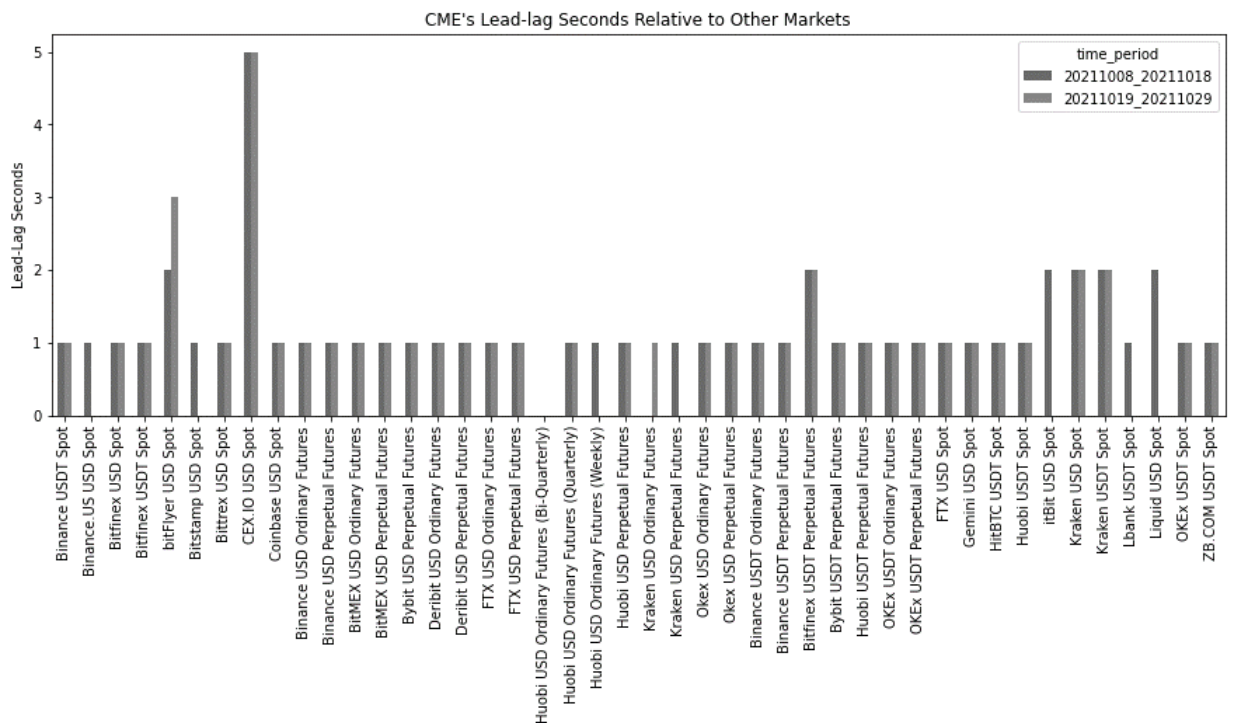
Figure 12: Volume Comparison Before and After BITO Launch on Fidelity Whitelisted Spot Exchanges and CME



Sponsor examined the pairwise lead-lag relationship between CME bitcoin futures and all other markets included. For each pair, Sponsor computed the correlation coefficients using the same lead-lag framework and HY estimator between CME bitcoin futures and the second market price timeseries as well as timestamp-adjusted (leading/lagging) versions of the second market to find the time delta that maximized their correlation. The only differences between Sponsor's BITO analysis and the quarterly analysis spanning Q1 2019 through Q1 2021 discussed above are the timeframes and a stricter average correlation threshold (.2 instead of .1) in the BITO analysis given the shorter timeframe.

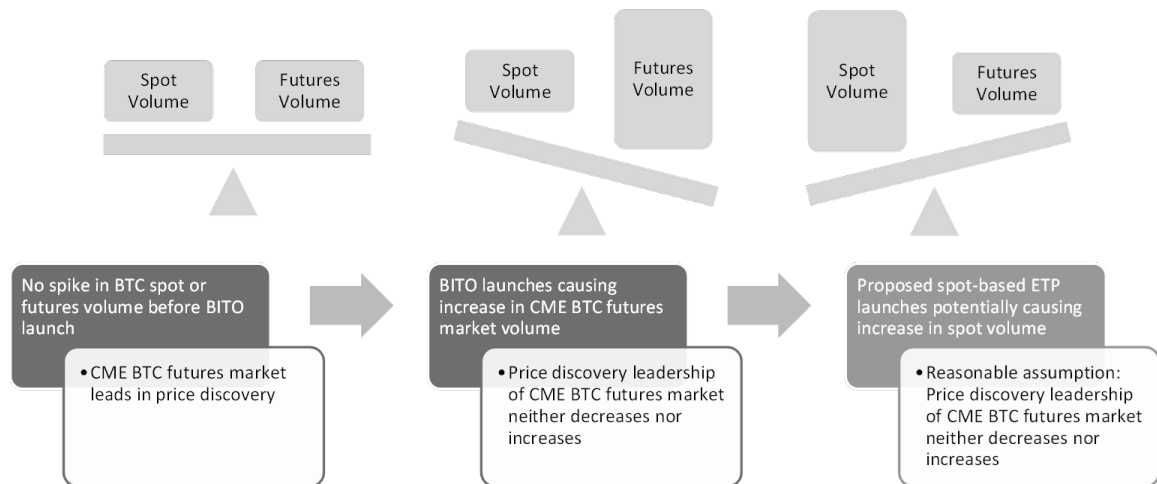
The results of this experiment in Figure 13 show the CME bitcoin futures market leading all markets for the period of 11 days prior to the launch of BITO. The price discovery leadership of the CME bitcoin futures market still leads after BITO's launch in the period of 10/19/2021 to 10/29/2020, but CME's leadership does not become stronger even though the trading volume increased significantly.

Figure 13: CME's Lead-lag Seconds Relative to Other Market Before and After BITO's Launch



Given that the CME bitcoin futures market did not see an increase in price discovery leadership even during a period of heightened activity (trading volume increased from 15 billion to 34 billion) on that market after BITO's launch, Sponsor believes it would be unreasonable to assume that the level of the spot markets' leadership would increase (CME bitcoin futures market price leadership would deteriorate) due to the potential heightened trade activity in the spot markets after the proposed spot-based ETP launch. This dynamic is illustrated in Figure 14.

Figure 14: Impact of heightened market activity on CME BTC futures market price discovery leadership



Based on the experiment, Sponsor concludes the inherent features of futures are more important factors in price discovery and allow this market to dominate even with lower or changing levels of volume. This conclusion is also supported in academic research⁷¹ studying similar patterns in other asset classes. It is worth mentioning that it is not feasible to directly evaluate the effect for the proposed ETP before its existence. The numerical experiment above is to best estimate the effect and eliminate the concern on the potential high trade activity in spot markets caused by the proposed ETP.

Moreover, Sponsor believes that there will be no material effect of the Shares' trade prices on CME bitcoin futures prices from secondary market trading activities. To estimate this effect, Sponsor uses BITO in its analysis as the first ETP launched in US and a reasonable example of a general ETP. Sponsor examined the pairwise lead-lag

⁷¹ Futures with much smaller trading volumes compared to the underlying spot market can still dominate price discovery. See Hauptfleisch, Martin, Tālis J. Putniņš, and Brian Lucey. "Who sets the price of gold? London or New York." *Journal of Futures Markets* 36, no. 6 (2016): 564-586. <https://doi.org/10.1002/fut.21775> for more information.

relationship between BITO and all other markets included in previous analysis. As seen in Table 5, only four markets have a lead-lag ratio (the strength measurement of the lead-lag relationship) outside the range of $[0.95, 1.05]$ and non-zero lead-lag seconds to conclude they are leading or lagging. Sponsor interprets this result as BITO's lead-lag relationship with other bitcoin markets is not significant.

Table 5: Markets with significant lead/lag relationships to BITO

	BITO Leadership (Lead-lag Seconds)	Lead-Lag Ratio
CME USD Ordinary Futures	-1	0.909
Kraken USD Ordinary Futures	-1	0.926
Huobi USD Ordinary Futures (Bi-Quarterly)	-1	0.933
CEX.IO USD Spot	12	1.067

Regarding BITO's price discovery contribution measured by lead-lag seconds, it does not lead any bitcoin markets except CEX.IO USD spot market, which not only lags BITO but also lags all other bitcoin markets. More importantly, the CME bitcoin futures market leads BITO with the highest level of certainty as seen from the lead-lag ratio. As such, Sponsor concludes that the proposed ETP would have no material impact on CME bitcoin futures prices.

The gold market shares certain characteristics with the bitcoin market – both gold and bitcoin have a finite supply, are traded globally in various market venues against various currency pairs and have a robust futures market. In addition, many investors view bitcoin as a form of digital gold and in looking to determine the potential impact of price discovery in trading in the ETP shares on the secondary market, the Sponsor looks to the

gold market as an analogous market to bitcoin when looking to determine the impact of price discovery. According to a previous study⁷² the Sponsor reviewed, the authors analyzed intraday data on gold prices from 1997-2014 and concluded that futures markets tend to lead price discovery in the gold market despite the spot market having ten times more volume than the US futures market. A second study⁷³ that the sponsor analyzed, came to the same conclusion that futures are the global leader in price discovery for gold, with a growing influence of ETPs.

Further, Sponsor believes that Shares of the Trust trading on the secondary market could have a positive impact on the CME Bitcoin Futures market leading position. Sponsor believes this due to the use of CME Bitcoin Futures in hedging activities by market participants. One such example, is when Authorized Participants transact on both the secondary and primary markets. In order to arbitrage or fulfill large basket trades on behalf of clients, Authorized Participants may transact in the primary market with the ETP by creating and/or redeeming and then immediately offsetting that transaction in the secondary market. Because the primary market is settled in-kind (meaning the exchange of shares and bitcoin) and the secondary market is settled in cash (meaning the exchange of shares and fiat currency), the Authorized Participant needs to transact in the bitcoin spot market. Given there is a lag between the secondary market transaction, the striking of the NAV per Share in the primary market and the settlement of the primary market transaction, the Authorized Participants will look to hedge their exposure to the bitcoin

⁷² See Hauptfleisch, et. al.

⁷³ Sehgal, Sanjay, Neharika Sobti, and Florent Diesting. "Who leads in intraday gold price discovery and volatility connectedness: Spot, futures, or exchange-traded fund?" *Journal of Futures Markets* 41, no. 7 (2021): 1092-1123. <https://doi.org/10.1002/fut.22208>.

market using bitcoin futures. For the reasons discussed throughout this document such as the transparency, low fees, and leverage capabilities, many market participants look to hedge themselves using futures and Sponsor believes that will be the case with Authorized Participant transactions in respect of the Trust as well.

The Exchange also believes that trading in the Shares would not be the predominant force on prices in the Bitcoin Futures market (or spot market) for several additional reasons, including the significant volume in the Bitcoin Futures market, the size of bitcoin's market cap (approximately \$1 trillion), and the significant liquidity available in the spot market. According to the Sponsor's analysis, in the second quarter of 2021, bitcoin futures volume greatly exceeded volumes in the spot markets. The volume of the bitcoin futures market was approximately \$7.1 trillion where the volume of the bitcoin spot markets was approximately \$1.4 trillion.⁷⁴ In addition to the Bitcoin Futures market data points cited above, the spot market for bitcoin is also very liquid. According to data from CoinRoutes from February 2021, the cost to buy or sell \$5 million worth of bitcoin averages roughly 10 basis points with a market impact of 30 basis points.⁷⁵ For a \$10 million market order, the cost to buy or sell is roughly 20 basis points with a market impact of 50 basis points. Stated another way, a market participant could enter a market buy or sell order for \$10 million of bitcoin and only move the market 0.5%. More strategic purchases or sales (such as using limit orders and executing

⁷⁴ For more information, see Memorandum from the Division of Trading and Markets regarding a September 8, 2021 meeting with representatives from Fidelity Digital Assets, et al. (Sept. 8, 2021) available at <https://www.sec.gov/comments/sr-cboebzx-2021-039/srcboebzx2021039-250110.pdf>.

⁷⁵ These statistics are based on samples of bitcoin liquidity in USD (excluding stablecoins or Euro liquidity) based on executable quotes on Coinbase Pro, Gemini, Bitstamp, Kraken, LMAX Exchange, BinanceUS, and OKCoin during February 2021.

through OTC bitcoin trade desks) would likely have less obvious impact on the market—which is consistent with MicroStrategy, Tesla, and Square being able to collectively purchase billions of dollars in bitcoin. As such, the combination of Bitcoin Futures leading price discovery, the overall size of the bitcoin market, and the ability for market participants, including authorized participants creating and redeeming with the Trust, to buy or sell large amounts of bitcoin without significant market impact will help prevent the Shares from becoming the predominant force on pricing in either the bitcoin spot or Bitcoin Futures markets, satisfying part (b) of the test outlined above.

(b) SEC Approval of Bitcoin Futures ETFs and CME Surveillance

Bitcoin Futures represent a growing influence on pricing in the spot bitcoin market as has been laid out above and in other proposals to list and trade Spot Bitcoin ETPs. Pricing in Bitcoin Futures is based on pricing from spot bitcoin markets. As noted above, the statement from the Teucrium Approval that “CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts...indirectly by trading outside of the CME bitcoin futures market,” makes clear that the Commission believes that CME’s surveillance can capture the effects of trading on the relevant spot markets on the pricing of Bitcoin Futures. While the Commission makes clear in the Teucrium Approval that the analysis only applies to the Bitcoin Futures market as it relates to an ETP that invests in Bitcoin Futures as its only non-cash or cash equivalent holding, if CME’s surveillance is sufficient to mitigate concerns related to trading in Bitcoin Futures for which the pricing is based directly on pricing from spot bitcoin markets, it’s not clear how such a

conclusion could apply only to ETPs based on Bitcoin Futures and not extend to Spot Bitcoin ETPs.

Additionally, a Bitcoin Futures ETF is actually potentially more susceptible to manipulation than a Spot Bitcoin ETP where the underlying trust offers only in-kind creation and redemption. Specifically, the pricing of Bitcoin Futures is based on prices from spot bitcoin markets, while shares of a Spot Bitcoin ETP would represent an interest in bitcoin directly and authorized participants for a Spot Bitcoin ETP would be able to source bitcoin from any exchange and create or redeem with the applicable trust regardless of the price of the underlying index. Potential manipulation of a Bitcoin Futures ETF would require manipulation on the spot markets on which the pricing for Bitcoin Futures are based while the in-kind creation and redemption process and fungibility of bitcoin means that a would be manipulator of a Spot Bitcoin ETP would need to manipulate the price across all bitcoin markets or risk simply providing arbitrage opportunities for authorized participants. Further to this point, this arbitrage opportunity also acts to reduce any incentives to manipulate the price of a Spot Bitcoin ETP because the underlying trust will create and redeem shares at set rates of bitcoin per share without regard to the price that the ETP is trading at in the secondary market or the price of the underlying index. As such, the Exchange believes that part (a) of the significant market test outlined above is satisfied and that common membership in ISG between the Exchange and CME would assist the listing exchange in detecting and deterring misconduct in the Shares.

Recently, the Commission allowed three ETFs primarily invested in CME Bitcoin futures to register and list on a national securities exchange (“Bitcoin Futures ETFs”).⁷⁶ As described in its prospectus, BITO does not invest directly in bitcoin but rather seeks to provide capital appreciation primarily through managed exposure to cash-settled bitcoin futures contracts traded on commodity exchanges registered with the Commodity Futures Trading Commission (“CFTC”). Currently, the only such contracts that are traded on, or subject to the rules of, the CME. CME Bitcoin futures are cash-settled in US dollars based on the CME DF Bitcoin Reference Rate (“BRR”), which is a volume-weighted composite of U.S. dollar-bitcoin trading activity on certain constituent exchanges including Bitstamp, Coinbase, Gemini, itBit, Kraken, and LMAX Digital.⁷⁷

The CME reference rate is based on substantially the same pricing data from digital asset trading platforms as the Index used by the Trust. The Index is designed to reflect the performance of bitcoin in U.S. dollars and the current constituent exchange composition of the Index is Bitstamp, Coinbase, Gemini, itBit, Kraken, and LMAX Digital. As noted recently by a commenter on another Rule 19b-4 application for a bitcoin spot ETP, Bitcoin Futures ETFs and the Trust are exposed to the same underlying pricing data and the same risks of manipulation.⁷⁸

There is no basis, in law or in fact, for determining that the Bitcoin Futures ETFs satisfy the standards of Section 6(b)(5) of the Exchange Act while the Trust does not.

⁷⁶ ProShares Bitcoin Strategy ETF (BITO); VanEck Bitcoin Strategy ETF (XBTF); Valkyrie Bitcoin Strategy ETF (BTF).

⁷⁷ See CME CF Bitcoin Reference Rate Index data at <https://www.cmegroup.com/trading/cryptocurrency-indices/cf-bitcoin-reference-rate.html>.

⁷⁸ See Letter from Joseph A. Hall et al. to Vanessa Countryman on SR-NYSEArca-2021-90 (Nov. 29, 2021).

Bitcoin pricing, whether in the spot market or the futures market, is determined in the digital asset trading platforms where supply and demand interact; and there is almost complete overlap in the underlying digital asset trading platforms that supply pricing information for the reference indices used by both the CME Bitcoin futures market and the Trust.

Just three weeks after the Bitcoin Futures ETFs began trading, the Commission again rejected a 19b-4 application filed by a spot bitcoin ETP on the grounds that the listing exchange had failed to demonstrate satisfaction of the Section 6(b)(5) standard.⁷⁹ The Commission specifically disagreed with the exchange's premises that (i) it is inconsistent with the Section 6(b)(5) standard for the Commission to permit a Bitcoin Futures ETF registered under the 1940 Act to launch but to disapprove the approval of a bitcoin spot ETP; (ii) it is inconsistent for the Commission to approve a Bitcoin Futures ETF that trades exclusively in CME Bitcoin Futures contracts and conclude that the CME Bitcoin Futures market is not a "market of significant size" under the Section 6(b)(5) standard; and (iii) there is no basis of fact or law that the 1940 Act is designed to prevent market manipulation in the markets in which the Bitcoin Futures ETF trades. Instead, the Commission stated that it considers each proposed rule change on its own merits and noted that the proposed rule did not relate to a product regulated under the 1940 Act and did not relate to the same underlying holdings as the Bitcoin Futures ETFs. In practice, however, the Commission did not address why a bitcoin spot ETP fails to satisfy the

⁷⁹ Order Disapproving a Proposed Rule Change to List and Trade Shares of the VanEck Bitcoin Trust under BZX Rule 14.11(e)(4), Commodity-Based Trust Shares, Securities Exchange Act Release No. 93559 (Nov. 12, 2021), 86 Fed. Reg. 64,539 (Nov. 18, 2021) (SR-CboeBZX-2021-019) ("VanEck Order").

Section 6(b)(5) standard when it is exposed to the same underlying risks of manipulation as the CME Bitcoin Futures contracts primarily held by Bitcoin Futures ETFs, which have been allowed to register and list.

As recently as 2020, the Commission approved new exchange listing rules permitting ETFs registered under the 1940 Act, including Bitcoin Futures ETFs, to list under an exchange's generic listing standards without having to submit separate rule filing pursuant to Section 19(b).⁸⁰ In determining that the rule change was reasonably designed to help prevent fraudulent and manipulative acts and practice, the SEC stated that ETFs would be required to disclose its portfolio holdings under the 1940 Act and that the exchange rule included requirements relating to fire walls and procedures to prevent the use and dissemination of material, non-public information regarding the applicable ETF index and portfolio.⁸¹ Importantly, with regard to surveillance, the Commission stated only that the rule change required the exchange to implement and maintain written surveillance procedures for ETF shares and noted that the exchange would use its existing surveillance procedures applicable to derivative products to monitor trading in ETF shares. In approving the generic listing standards, the SEC did not require in-depth analyses into any particular markets or index components.⁸² While noting the ability of an exchange to rely on FINRA for information related to certain securities held by ETPs, the Commission focused its determination on the exchange's surveillance of the market

⁸⁰ Self-Regulatory Organizations; NYSE Arca, Inc.; Notice of Filing of Amendment No. 2 and Order Granting Accelerated Approval of a Proposed Rule Change, as Modified by Amendment No. 2, to Adopt NYSE Arca Rule 5.2-E(j)(8) Governing the Listing and Trading of Exchange-Traded Fund Shares (Apr. 13, 2020) (SR-NYSEArca-2019-81).

⁸¹ Id.

⁸² Id.

for ETF shares. As a result, Bitcoin Futures ETFs are permitted to list and trade under generic listing standards based solely on the oversight of the underlying futures by the CFTC and futures exchanges with no acknowledgement or assessment by the Commission of the actual risk of fraud or manipulation related to underlying bitcoin spot markets referenced by such bitcoin futures – even when such bitcoin markets mirror those proposed as reference markets in the Index used by the Trust and other spot bitcoin ETP listing proposals.

Because (i) the risks of manipulation in the bitcoin markets impacting the Trust are thus indistinguishable from those same risks impacting Bitcoin Futures ETFs; (ii) the Trust will have the same pricing sources, and (iii) the Trust will be subject to the same risks of manipulation as shares of Bitcoin Futures ETFs; the Exchange believes that the proposed rule change is sufficiently designed to prevent fraudulent and manipulative acts and practice. Approving this change is consistent with the treatment of substantially similar products, and the Exchange believes that any finding to the contrary would result in arbitrarily disparate treatment to the Trust.

(c) Other Means to Prevent Fraudulent and Manipulative Acts and Practices

The Commission has also recognized that the “regulated market of significant size” standard is not the only means for satisfying Section 6(b)(5) of the act, specifically providing that a listing exchange could demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement.⁸³

⁸³ See Winklevoss Order at 37580. The Commission has also specifically noted that it “is not applying a “cannot be manipulated” standard; instead, the Commission is examining whether the proposal meets the requirements of the Exchange Act and, pursuant to its Rules of Practice, places

The Exchange believes that such conditions are present. Specifically, the significant liquidity in the spot market and the impact of market orders on the overall price of bitcoin mean that attempting to move the price of bitcoin is costly and has grown more expensive over the past year. In January 2020, for example, the cost to buy or sell \$5 million worth of bitcoin averaged roughly 30 basis points (compared to 10 basis points in 2/2021) with a market impact of 50 basis points (compared to 30 basis points in 2/2021).⁸⁴ For a \$10 million market order, the cost to buy or sell was roughly 50 basis points (compared to 20 basis points in 2/2021) with a market impact of 80 basis points (compared to 50 basis points in 2/2021). As the liquidity in the bitcoin spot market increases, it follows that the impact of \$5 million and \$10 million orders will continue to decrease the overall impact in spot price.

As noted above, the Commission also permits a listing exchange to demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement. The Exchange and Sponsor believe that such conditions are present.

Surveillance Sharing Agreement

The Commission also permits a listing exchange to demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement. The Exchange and Sponsor believe that such conditions are present. The Exchange is proposing to take additional

the burden on the listing exchange to demonstrate the validity of its contentions and to establish that the requirements of the Exchange Act have been met. *Id.* at 37582.

⁸⁴ These statistics are based on samples of bitcoin liquidity in USD (excluding stablecoins or Euro liquidity) based on executable quotes on Coinbase Pro, Gemini, Bitstamp, Kraken, LMAX Exchange, BinanceUS, and OKCoin during February 2021.

steps to those described above to supplement its ability to obtain information that would be helpful in detecting, investigating, and deterring fraud and market manipulation in the Commodity-Based Trust Shares. On June 21, 2023, the Exchange reached an agreement on terms with Coinbase, Inc. (“Coinbase”), an operator of a United States-based spot trading platform for Bitcoin that represents a substantial portion of US-based and USD denominated Bitcoin trading,⁸⁵ to enter into a surveillance-sharing agreement (“Spot BTC SSA”) and executed an associated term sheet. Based on this agreement on terms, the Exchange and Coinbase will finalize and execute a definitive agreement that the parties expect to be executed prior to allowing trading of the Commodity-Based Trust Shares.

The Spot BTC SSA is expected to be a bilateral surveillance-sharing agreement between the Exchange and Coinbase that is intended to supplement the Exchange’s market surveillance program. The Spot BTC SSA is expected to have the hallmarks of a surveillance-sharing agreement between two members of the ISG, which would give the Exchange supplemental access to data regarding spot Bitcoin trades on Coinbase where the Exchange determines it is necessary as part of its surveillance program for the Commodity-Based Trust Shares.⁸⁶ This means that the Exchange expects to receive market data for orders and trades from Coinbase, which it will utilize in surveillance of the trading of Commodity-Based Trust Shares. In addition, the Exchange can request further information from Coinbase related to spot bitcoin trading activity on the Coinbase exchange platform, if the Exchange determines that such information would be necessary

⁸⁵ According to a Kaiko Research report dated June 26, 2023, Coinbase represented roughly 50% of exchange trading volume in USD-BTC trading on a daily basis during May 2023.

⁸⁶ For additional information regarding ISG and the hallmarks of surveillance-sharing between ISG members, see <https://isgportal.org/overview>.

to detect and investigate potential manipulation in the trading of the Commodity-Based Trust Shares.⁸⁷

In-Kind Creation and Redemption

Further, and consistent with prior points above, offering only in-kind creation and redemption will provide unique protections against potential attempts to manipulate the Shares. While the Sponsor believes that the Benchmark which it uses to value the Trust's bitcoin is itself resistant to manipulation based on the methodology further described below, the fact that creations and redemptions are only available in-kind makes the manipulability of the Benchmark significantly less important. Specifically, because the Trust will not accept cash to buy bitcoin in order to create new shares or, barring a forced redemption of the Trust or under other extraordinary circumstances, be forced to sell bitcoin to pay cash for redeemed shares, the price that the Sponsor uses to value the Trust's bitcoin is not particularly important.⁸⁸ When authorized participants are creating with the Trust, they need to deliver a certain number of bitcoin per share (regardless of the valuation used) and when they're redeeming, they can similarly expect to receive a certain number of bitcoin per share. As such, even if the price used to value the Trust's bitcoin is manipulated (which the Sponsor believes that its methodology is resistant to), the ratio of bitcoin per Share does not change and the Trust will either accept (for creations) or distribute (for redemptions) the same number of bitcoin regardless of the value. This not only mitigates the risk associated with potential manipulation, but also

⁸⁷ The Exchange also notes that it already has in place ISG-like surveillance sharing agreement with Cboe Digital Exchange, LLC and Cboe Clear Digital, LLC.

⁸⁸ While the Benchmark will not be particularly important for the creation and redemption process, it will be used for calculating fees.

discourages and disincentivizes manipulation of the Benchmark because there is little financial incentive to do so.

Wise Origin Bitcoin Trust

The Registration Statement includes the following description of the Trust and its operations. The Trust will issue Shares that represent fractional undivided beneficial interests in and ownership of the Trust. The Trust is a Delaware statutory trust that operates pursuant to the Declaration of Trust and Trust Agreement (the “Trust Agreement”), between Sponsor and Delaware Trust Company, the Delaware trustee of the Trust (the “Trustee”). Sponsor manages the Trust and is responsible for the ongoing registration of the Shares. The Trust will engage Fidelity Service Company, Inc. (“FSC”), a Sponsor affiliate, to be the administrator (“Administrator”). A third-party transfer agent (the “Transfer Agent”) will facilitate the issuance and redemption of Shares of the Trust and respond to correspondence by Trust Shareholders and others relating to its duties, maintain Shareholder accounts, and make periodic reports to the Trust.⁸⁹ Another affiliate of Sponsor, Fidelity Distributors Corporation, will be the marketing agent (“Marketing Agent”) in connection with the creation and redemption of “Baskets” of Shares. The Sponsor will provide assistance in the marketing of the Shares. FDAS, another Sponsor affiliate, will serve as the Custodian.

According to the Registration Statement, the Trust is neither an investment company registered under the Investment Company Act of 1940, as amended (the “1940 Act”),⁹⁰ nor a commodity pool for purposes of the Commodity Exchange Act (“CEA”),

⁸⁹ The Exchange notes that the Sponsor is finalizing negotiations with several service providers, and it will submit an amendment to this proposal upon finalization of those arrangements.

⁹⁰ 15 U.S.C. 80a-1.

and neither the Trust nor the Sponsor is subject to regulation as a commodity pool operator or a commodity trading adviser in connection with the Shares.

The Trust's investment objective is to seek to track the performance of bitcoin, as measured by the performance of the Fidelity Bitcoin Index PR (the "Index"), less the Trust's expenses and other liabilities. In seeking to achieve its investment objective, the Trust will hold bitcoin and will value its Shares daily as of 4:00 p.m. Eastern time using the same methodology used to calculate the Index and process all creations and redemptions in transactions with authorized participants. The Trust is not actively managed.

The Bitcoin Custodian

The Sponsor has selected FDAS to be the Trust's Custodian. FDAS is a New York state limited liability trust⁹¹ that serves as bitcoin custodian to institutional and individual investors. The Custodian maintains a substantial portion of the private keys associated with the Trust's bitcoin in "cold storage" or similarly secure technology. Cold storage is a safeguarding method with multiple layers of protections and protocols, by which the private key(s) corresponding to the Trust's bitcoin is (are) generated and stored in an offline manner. Private keys are generated in offline computers that are not connected to the internet so that they are resistant to being hacked. Cold storage of private keys may involve keeping such keys on a non-networked computer or electronic device or storing

⁹¹ New York state trust companies are subject to rigorous oversight similar to other types of entities, such as nationally chartered banking entities, that hold customer assets. Like national banks, they must obtain specific approval of their primary regulator for the exercise of their fiduciary powers. Moreover, limited purpose trust companies engaged in the custody of digital assets are subject to even more stringent requirements than national banks which, following initial approval of trust powers, generally can exercise those powers broadly without further approval of the OCC. In contrast, NYDFS requires in their approval orders that limited purpose trust companies obtain separate approval for all material changes in business.

the public key and private keys on a storage device (for example, a USB thumb drive) or printed medium and deleting the keys from all computers.

The Custodian may receive deposits of bitcoin but may not send bitcoin without use of the corresponding private keys. In order to send bitcoin when the private keys are kept in cold storage, either the private keys must be retrieved from cold storage and entered into a software program to sign the transaction, or the unsigned transaction must be sent to the “cold” server in which the private keys are held for signature by the private keys. At that point, the Custodian can transfer the bitcoin. The Trust’s Transfer Agent will facilitate the settlement of Shares in response to the placement of creation orders and redemption orders from Authorized Participants. The Trust generally does not intend to hold cash or cash equivalents. However, there may be situations where the Trust will hold cash on a temporary basis. The Trust will enter into a cash custody agreement with an unaffiliated regulated bank as custodian of the Trust’s cash and cash equivalents.

The Index

The Index is designed to reflect the performance of bitcoin in U.S. dollars. The current exchange composition of the Index is Bitstamp, Coinbase, Gemini, itBit, Kraken, and LMAX Digital. The Index methodology was developed by Fidelity Product Services, LLC (the “Index Provider”) and is administered by the Fidelity Index Committee. Coin Metrics, Inc. is the third-party calculation agent for the Index.⁹²

The Index is constructed using bitcoin price feeds from eligible bitcoin spot markets and a volume-weighted median price (“VWMP”) methodology, calculated every 15 seconds based on VWMP spot market data over rolling 5-minute increments to

⁹² The Sponsor’s affiliates have an ownership interest in Coin Metrics, Inc.

develop a bitcoin price composite. The Index market value is the volume-weighted median price of bitcoin in U.S. dollars over the previous five minutes, which is calculated by (1) ordering all individual transactions on eligible spot markets over the previous five minutes by price, and then (2) selecting the price associated with the 50th percentile of total volume. Using rolling five-minute segments means malicious actors would need to sustain efforts to manipulate the market over an extended period of time, or such malicious actors would need to replicate efforts multiple times across eligible bitcoin spot markets, potentially triggering review. This extended period also supports authorized participant activity by capturing volume over a longer time period, rather than forcing authorized participants to mark an individual close or auction. The use of a median price reduces the ability of outlier prices to impact the NAV, as it systematically excludes those prices from the NAV calculation. The use of a volume-weighted median (as opposed to a traditional median) serves as an additional protection against attempts to manipulate the NAV by executing a large number of low-dollar trades, because any manipulation attempt would have to involve a majority of global spot bitcoin volume in a three-minute window to have any influence on the NAV. Further, removing the highest and lowest prices further protects against attempts to manipulate the NAV, requiring bad actors to act on multiple eligible bitcoin spot markets at once to have any ability to influence the price.

Availability of Information

In addition to the price transparency of the Index, the Trust will provide information regarding the Trust's bitcoin holdings as well as additional data regarding the Trust. The Trust will provide an Intraday Indicative Value ("IIV") per Share updated

every 15 seconds, as calculated by the Exchange or a third-party financial data provider during the Exchange's Regular Trading Hours (9:30 a.m. to 4:00 p.m. Eastern time). The IIV will be calculated by using the prior day's closing NAV per Share as a base and updating that value during Regular Trading Hours to reflect changes in the value of the Trust's bitcoin holdings during the trading day.

The IIV disseminated during Regular Trading Hours should not be viewed as an actual real-time update of the NAV, which will be calculated only once at the end of each trading day. The IIV will be widely disseminated on a per Share basis every 15 seconds during the Exchange's Regular Trading Hours by one or more major market data vendors. In addition, the IIV will be available through on-line information services.

The website for the Trust, which will be publicly accessible at no charge, will contain the following information: (a) the current NAV per Share daily and the prior business day's NAV and the reported closing price; (b) the BZX Official Closing Price⁹³ in relation to the NAV as of the time the NAV is calculated and a calculation of the premium or discount of such price against such NAV; (c) data in chart form displaying the frequency distribution of discounts and premiums of the Official Closing Price against the NAV, within appropriate ranges for each of the four previous calendar quarters (or for the life of the Trust, if shorter); (d) the prospectus; and other applicable quantitative information. The Trust will also disseminate the Trust's holdings on a daily basis on the Trust's website. The value of the Index will be made available by one or

⁹³ As defined in Rule 11.23(a)(3), the term "BZX Official Closing Price" shall mean the price disseminated to the consolidated tape as the market center closing trade.

more major market data vendors, updated at least every 15 seconds during Regular Trading Hours.

The NAV for the Trust will be calculated by the Administrator once a day and will be disseminated daily to all market participants at the same time. Quotation and last-sale information regarding the Shares will be disseminated through the facilities of the Consolidated Tape Association (“CTA”).

Quotation and last sale information for bitcoin is widely disseminated through a variety of major market data vendors, including Bloomberg and Reuters, as well as the Index.

Information relating to trading, including price and volume information, in bitcoin is available from major market data vendors and from the exchanges on which bitcoin are traded. Depth of book information is also available from bitcoin exchanges. The normal trading hours for bitcoin exchanges are 24 hours per day, 365 days per year.

Net Asset Value

As described in the Registration Statement, for purposes of calculating the Trust’s NAV per Share, the Trust’s holdings of bitcoin will be valued using the same methodology as used to calculate the Index. NAV means the total assets of the Trust including, but not limited to, all bitcoin and cash, if any, less total liabilities of the Trust, each determined on the basis of generally accepted accounting principles. The NAV of the Trust is calculated by taking the fair market value of its total assets based on the volume-weighted median price of bitcoin used for the calculation of the Index, subtracting any liabilities (which include accrued expenses), and dividing that total by the total number of outstanding Shares. The Administrator calculates the NAV of the Trust

once each Exchange trading day. The NAV for a normal trading day will be released after 4:00 p.m. Eastern time. Trading during the core trading session on the Exchange typically closes at 4:00 p.m. Eastern time. However, NAVs are not officially struck until later in the day (often by 5:30 p.m. Eastern time and almost always by 8:00 p.m. Eastern time). The pause between 4:00 p.m. Eastern time and 5:30 p.m. Eastern time (or later) provides an opportunity to algorithmically detect, flag, investigate, and correct unusual pricing should it occur.

Creation and Redemption of Shares

When the Trust sells or redeems its Shares, it will do so in “in-kind” transactions in blocks of Shares (a “Creation Basket”) at the Trust’s NAV. Authorized participants will deliver, or facilitate the delivery of, bitcoin to the Trust’s account with the Custodian in exchange for Shares when they purchase Shares, and the Trust, through the Custodian, will deliver bitcoin to such authorized participants when they redeem Shares with the Trust. Authorized participants may then offer Shares to the public at prices that depend on various factors, including the supply and demand for Shares, the value of the Trust’s assets, and market conditions at the time of a transaction. Shareholders who buy or sell Shares during the day from their broker may do so at a premium or discount relative to the NAV of the Shares of the Trust.

According to the Registration Statement, on any business day, an authorized participant may place an order to create one or more baskets. Purchase orders must be placed by the time noted in the Authorized Participant Agreement or as provided separately to all Authorized Participants. The day on which an order is received is considered the purchase order date. The total deposit of bitcoin required is an amount of

bitcoin that is in the same proportion to the total assets of the Trust, net of accrued expenses and other liabilities, on the date the order to purchase is properly received, as the number of Shares to be created under the purchase order is in proportion to the total number of Shares outstanding on the date the order is received. Each night, the Sponsor will publish the amount of bitcoin that will be required in exchange for each creation order. The Administrator determines the required deposit for a given day by dividing the number of bitcoin held by the Trust as of the opening of business on that business day, adjusted for the amount of bitcoin constituting estimated accrued but unpaid fees and expenses of the Trust as of the opening of business on that business day, by the quotient of the number of Shares outstanding at the opening of business divided by the aggregation of Shares associated with a Creation Basket. The procedures by which an authorized participant can redeem one or more Creation Baskets mirror the procedures for the creation of Creation Baskets.

Rule 14.11(e)(4) – Commodity-Based Trust Shares

The Shares will be subject to BZX Rule 14.11(e)(4), which sets forth the initial and continued listing criteria applicable to Commodity-Based Trust Shares. The Exchange will obtain a representation that the Trust's NAV will be calculated daily and that these values and information about the assets of the Trust will be made available to all market participants at the same time. The Exchange notes that, as defined in Rule 14.11(e)(4)(C)(i), the Shares will be: (a) issued by a trust that holds a specified commodity⁹⁴ deposited with the trust; (b) issued by such trust in a specified aggregate

⁹⁴ For purposes of Rule 14.11(e)(4), the term commodity takes on the definition of the term as provided in the Commodity Exchange Act. As noted above, the CFTC has opined that Bitcoin is a commodity as defined in Section 1a(9) of the Commodity Exchange Act. See Coinflip.

minimum number in return for a deposit of a quantity of the underlying commodity; and (c) when aggregated in the same specified minimum number, may be redeemed at a holder's request by such trust which will deliver to the redeeming holder the quantity of the underlying commodity.

Upon termination of the Trust, the Shares will be removed from listing. The Trustee, Delaware Trust Company, is a trust company having substantial capital and surplus and the experience and facilities for handling corporate trust business, as required under Rule 14.11(e)(4)(E)(iv)(a) and that no change will be made to the trustee without prior notice to and approval of the Exchange. The Exchange also notes that, pursuant to Rule 14.11(e)(4)(F), neither the Exchange nor any agent of the Exchange shall have any liability for damages, claims, losses or expenses caused by any errors, omissions or delays in calculating or disseminating any underlying commodity value, the current value of the underlying commodity required to be deposited to the Trust in connection with issuance of Commodity-Based Trust Shares; resulting from any negligent act or omission by the Exchange, or any agent of the Exchange, or any act, condition or cause beyond the reasonable control of the Exchange, its agent, including, but not limited to, an act of God; fire; flood; extraordinary weather conditions; war; insurrection; riot; strike; accident; action of government; communications or power failure; equipment or software malfunction; or any error, omission or delay in the reports of transactions in an underlying commodity. Finally, as required in Rule 14.11(e)(4)(G), the Exchange notes that any registered market maker ("Market Maker") in the Shares must file with the Exchange in a manner prescribed by the Exchange and keep current a list identifying all accounts for trading in an underlying commodity, related commodity futures or options

on commodity futures, or any other related commodity derivatives, which the registered Market Maker may have or over which it may exercise investment discretion. No registered Market Maker shall trade in an underlying commodity, related commodity futures or options on commodity futures, or any other related commodity derivatives, in an account in which a registered Market Maker, directly or indirectly, controls trading activities, or has a direct interest in the profits or losses thereof, which has not been reported to the Exchange as required by this Rule. In addition to the existing obligations under Exchange rules regarding the production of books and records (see, e.g., Rule 4.2), the registered Market Maker in Commodity-Based Trust Shares shall make available to the Exchange such books, records or other information pertaining to transactions by such entity or registered or non-registered employee affiliated with such entity for its or their own accounts for trading the underlying physical commodity, related commodity futures or options on commodity futures, or any other related commodity derivatives, as may be requested by the Exchange.

Trading Halts

With respect to trading halts, the Exchange may consider all relevant factors in exercising its discretion to halt or suspend trading in the Shares. The Exchange will halt trading in the Shares under the conditions specified in BZX Rule 11.18. Trading may be halted because of market conditions or for reasons that, in the view of the Exchange, make trading in the Shares inadvisable. These may include: (1) the extent to which trading is not occurring in the bitcoin underlying the Shares; or (2) whether other unusual conditions or circumstances detrimental to the maintenance of a fair and orderly market

are present. Trading in the Shares also will be subject to Rule 14.11(e)(4)(E)(ii), which sets forth circumstances under which trading in the Shares may be halted.

Trading Rules

The Exchange deems the Shares to be equity securities, thus rendering trading in the Shares subject to the Exchange's existing rules governing the trading of equity securities. BZX will allow trading in the Shares during all trading sessions on the Exchange. The Exchange has appropriate rules to facilitate transactions in the Shares during all trading sessions. As provided in BZX Rule 11.11(a) the minimum price variation for quoting and entry of orders in securities traded on the Exchange is \$0.01 where the price is greater than \$1.00 per share or \$0.0001 where the price is less than \$1.00 per share.

Surveillance

The Exchange believes that its surveillance procedures are adequate to properly monitor the trading of the Shares on the Exchange during all trading sessions and to deter and detect violations of Exchange rules and the applicable federal securities laws. Trading of the Shares through the Exchange will be subject to the Exchange's surveillance procedures for derivative products, including Commodity-Based Trust Shares. The issuer has represented to the Exchange that it will advise the Exchange of any failure by the Trust or the Shares to comply with the continued listing requirements, and, pursuant to its obligations under Section 19(g)(1) of the Exchange Act, the Exchange will surveil for compliance with the continued listing requirements. If the Trust or the Shares are not in compliance with the applicable listing requirements, the Exchange will commence delisting procedures under Exchange Rule 14.12. The

Exchange may obtain information regarding trading in the Shares and Bitcoin Futures via ISG, from other exchanges who are members or affiliates of the ISG, or with which the Exchange has entered into a comprehensive surveillance sharing agreement.⁹⁵

Information Circular

Prior to the commencement of trading, the Exchange will inform its members in an Information Circular of the special characteristics and risks associated with trading the Shares. Specifically, the Information Circular will discuss the following: (i) the procedures for the creation and redemption of Baskets (and that the Shares are not individually redeemable); (ii) BZX Rule 3.7, which imposes suitability obligations on Exchange members with respect to recommending transactions in the Shares to customers; (iii) how information regarding the IIV and the Trust's NAV are disseminated; (iv) the risks involved in trading the Shares outside of Regular Trading Hours⁹⁶ when an updated IIV will not be calculated or publicly disseminated; (v) the requirement that members deliver a prospectus to investors purchasing newly issued Shares prior to or concurrently with the confirmation of a transaction; and (vi) trading information.

In addition, the Information Circular will advise members, prior to the commencement of trading, of the prospectus delivery requirements applicable to the Shares. Members purchasing the Shares for resale to investors will deliver a prospectus to such investors. The Information Circular will also discuss any exemptive, no-action and interpretive relief granted by the Commission from any rules under the Act.

⁹⁵ For a list of the current members and affiliate members of ISG, see www.isgportal.com.

⁹⁶ Regular Trading Hours is the time between 9:30 a.m. and 4:00 p.m. Eastern Time.

(b) Statutory Basis

The Exchange believes that the proposal is consistent with Section 6(b) of the Act⁹⁷ in general and Section 6(b)(5) of the Act⁹⁸ in particular in that it is designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, to foster cooperation and coordination with persons engaged in facilitating transactions in securities, 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.

The Commission has approved numerous series of Trust Issued Receipts,⁹⁹ including Commodity-Based Trust Shares,¹⁰⁰ to be listed on U.S. national securities exchanges. In order for any proposed rule change from an exchange to be approved, the Commission must determine that, among other things, the proposal is consistent with the requirements of Section 6(b)(5) of the Act, specifically including: (i) the requirement that a national securities exchange's rules are designed to prevent fraudulent and manipulative acts and practices;¹⁰¹ and (ii) the requirement that an exchange proposal be designed, in

⁹⁷ 15 U.S.C. 78f.

⁹⁸ 15 U.S.C. 78f(b)(5).

⁹⁹ See Exchange Rule 14.11(f).

¹⁰⁰ Commodity-Based Trust Shares, as described in Exchange Rule 14.11(e)(4), are a type of Trust Issued Receipt.

¹⁰¹ As the Exchange has stated in a number of other public documents, it continues to believe that bitcoin is resistant to price manipulation and that "other means to prevent fraudulent and manipulative acts and practices" exist to justify dispensing with the requisite surveillance sharing agreement. The geographically diverse and continuous nature of bitcoin trading render it difficult and prohibitively costly to manipulate the price of bitcoin. The fragmentation across bitcoin platforms, the relatively slow speed of transactions, and the capital necessary to maintain a significant presence on each trading platform make manipulation of bitcoin prices through continuous trading activity challenging. To the extent that there are bitcoin exchanges engaged in or allowing wash trading or other activity intended to manipulate the price of bitcoin on other markets, such pricing does not normally impact prices on other exchange because participants will generally ignore markets with quotes that they deem non-executable. Moreover, the linkage

general, to protect investors and the public interest. The Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the and, as described and discussed above, the Sponsor's analysis demonstrates that the Exchange has satisfied the requirements under the Act that the CME Bitcoin Futures Market (i) is a regulated market, (ii) has a comprehensive surveillance-sharing agreement with the Exchange; and (iii) satisfies the Commission's "significant market" definition." In addition, the Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the Act because this filing sufficiently demonstrates that the standard that has previously been articulated by the Commission applicable to Commodity-Based Trust Shares has been met as outlined below.

Designed to Prevent Fraudulent and Manipulative Acts and Practices

In order for a proposal to list and trade a series of Commodity-Based Trust Shares to be deemed consistent with the Act, the Commission requires that an exchange demonstrate that there is a comprehensive surveillance-sharing agreement in place¹⁰²

between the bitcoin markets and the presence of arbitrageurs in those markets means that the manipulation of the price of bitcoin price on any single venue would require manipulation of the global bitcoin price in order to be effective. Arbitrageurs must have funds distributed across multiple trading platforms in order to take advantage of temporary price dislocations, thereby making it unlikely that there will be strong concentration of funds on any particular bitcoin exchange or OTC platform. As a result, the potential for manipulation on a trading platform would require overcoming the liquidity supply of such arbitrageurs who are effectively eliminating any cross-market pricing differences.

¹⁰² As previously articulated by the Commission, "The standard requires such surveillance-sharing agreements since "they provide a necessary deterrent to manipulation because they facilitate the availability of information needed to fully investigate a manipulation if it were to occur." The Commission has emphasized that it is essential for an exchange listing a derivative securities product to enter into a surveillance- sharing agreement with markets trading underlying securities for the listing exchange to have the ability to obtain information necessary to detect, investigate, and deter fraud and market manipulation, as well as violations of exchange rules and applicable federal securities laws and rules. The hallmarks of a surveillance-sharing agreement are that the agreement provides for the sharing of information about market trading activity, clearing activity, and customer identity; that the parties to the agreement have reasonable ability to obtain access to and produce requested information; and that no existing rules, laws, or practices would impede one party to the agreement from obtaining this information from, or producing it to, the other

with a regulated market of significant size. Both the Exchange and CME are members of ISG.¹⁰³ As such, the only remaining issue to be addressed is whether the Bitcoin Futures market constitutes a market of significant size, which the Exchange believes that it does. The terms “significant market” and “market of significant size” include a market (or group of markets) as to which: (a) there is a reasonable likelihood that a person attempting to manipulate the ETP would also have to trade on that market to manipulate the ETP, so that a surveillance-sharing agreement would assist the listing exchange in detecting and deterring misconduct; and (b) it is unlikely that trading in the ETP would be the predominant influence on prices in that market.¹⁰⁴

The Commission has also recognized that the “regulated market of significant size” standard is not the only means for satisfying Section 6(b)(5) of the act, specifically providing that a listing exchange could demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement.¹⁰⁵

(a) Reasonable likelihood that a person attempting to manipulate the ETP would also have to trade on that market to manipulate the ETP

Bitcoin Futures represent a growing influence on pricing in the spot bitcoin market as has been laid out above and in other proposals to list and trade Spot Bitcoin

party.” The Commission has historically held that joint membership in ISG constitutes such a surveillance sharing agreement. See Wilshire Phoenix Disapproval.

¹⁰³ For a list of the current members and affiliate members of ISG, see www.isgportal.com.

¹⁰⁴ See Wilshire Phoenix Disapproval.

¹⁰⁵ See Winklevoss Order at 37580. The Commission has also specifically noted that it “is not applying a “cannot be manipulated” standard; instead, the Commission is examining whether the proposal meets the requirements of the Exchange Act and, pursuant to its Rules of Practice, places the burden on the listing exchange to demonstrate the validity of its contentions and to establish that the requirements of the Exchange Act have been met. Id. at 37582.

ETPs. Pricing in Bitcoin Futures is based on pricing from spot bitcoin markets. As noted above, the statement from the Teucrium Approval that “CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts...indirectly by trading outside of the CME bitcoin futures market,” makes clear that the Commission believes that CME’s surveillance can capture the effects of trading on the relevant spot markets on the pricing of Bitcoin Futures. While the Commission makes clear in the Teucrium Approval that the analysis only applies to the Bitcoin Futures market as it relates to an ETP that invests in Bitcoin Futures as its only non-cash or cash equivalent holding, if CME’s surveillance is sufficient to mitigate concerns related to trading in Bitcoin Futures for which the pricing is based directly on pricing from spot bitcoin markets, it’s not clear how such a conclusion could apply only to ETPs based on Bitcoin Futures and not extend to Spot Bitcoin ETPs.

Additionally, a Bitcoin Futures ETF is actually potentially more susceptible to manipulation than a Spot Bitcoin ETP where the underlying trust offers only in-kind creation and redemption. Specifically, the pricing of Bitcoin Futures is based on prices from spot bitcoin markets, while shares of a Spot Bitcoin ETP would represent an interest in bitcoin directly and authorized participants for a Spot Bitcoin ETP would be able to source bitcoin from any exchange and create or redeem with the applicable trust regardless of the price of the underlying index. Potential manipulation of a Bitcoin Futures ETF would require manipulation on the spot markets on which the pricing for Bitcoin Futures are based while the in-kind creation and redemption process and

fungibility of bitcoin means that a would be manipulator of a Spot Bitcoin ETP would need to manipulate the price across all bitcoin markets or risk simply providing arbitrage opportunities for authorized participants. Further to this point, this arbitrage opportunity also acts to reduce any incentives to manipulate the price of a Spot Bitcoin ETP because the underlying trust will create and redeem shares at set rates of bitcoin per share without regard to the price that the ETP is trading at in the secondary market or the price of the underlying index. As such, the Exchange believes that part (a) of the significant market test outlined above is satisfied and that common membership in ISG between the Exchange and CME would assist the listing exchange in detecting and deterring misconduct in the Shares.

(b) Predominant Influence on Prices in Spot and Bitcoin Futures

The Exchange and Sponsor also believe that trading in the Shares would not be the predominant force on prices in the Bitcoin Futures market or spot market for a number of reasons, including the in-kind creation and redemption process, the spot market arbitrage opportunities that such in-kind creation and redemption process creates, the significant volume in the Bitcoin Futures market, the size of bitcoin's market cap, and the significant liquidity available in the spot market. In addition to the Bitcoin Futures market data points cited above, the spot market for bitcoin is also very liquid. According to data from Skew, the cost to buy or sell \$5 million worth of bitcoin averages roughly 48 basis points with a market impact of \$139.08.¹⁰⁶ Stated another way, a market participant could enter a market buy or sell order for \$5 million of bitcoin and only move the market

¹⁰⁶ These statistics are based on samples of bitcoin liquidity in USD (excluding stablecoins or Euro liquidity) based on executable quotes on Coinbase, FTX and Kraken during the one-year period ending May 2022.

0.48%. More strategic purchases or sales (such as using limit orders and executing through OTC bitcoin trade desks) would likely have less obvious impact on the market – which is consistent with MicroStrategy, Tesla, and Square being able to collectively purchase billions of dollars in bitcoin.

As such, the combination of the in-kind creation and redemption process, the Bitcoin Futures leading price discovery, the overall size of the bitcoin market, and the ability for market participants, including authorized participants creating and redeeming in-kind with the Trust, to buy or sell large amounts of bitcoin without significant market impact will help prevent the Shares from becoming the predominant force on pricing in either the bitcoin spot or Bitcoin Futures markets, satisfying part (b) of the test outlined above.

(c) Other Means to Prevent Fraudulent and Manipulative Acts and Practices

As noted above, the Commission also permits a listing exchange to demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement. The Exchange and Sponsor believe that such conditions are present.

The Exchange also believes that reviewing this proposal through the lens of the Bitcoin Futures Approvals would also lead the Commission to approving this proposal. Previous disapproval orders have made clear that a market that constitutes a regulated market of significant size is generally a futures and/or options market based on the underlying reference asset rather than the spot commodity markets, which are often

unregulated.¹⁰⁷ The Exchange believes that the following excerpt from the Teucrium Approval is particular informative:

The CME “comprehensively surveils futures market conditions and price movements on a real-time and ongoing basis in order to detect and prevent price distortions, including price distortions caused by manipulative efforts.” Thus the CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts, whether that attempt is made by directly trading on the CME bitcoin futures market or indirectly by trading outside of the CME bitcoin futures market. As such, when the CME shares its surveillance information with Arca, the information would assist in detecting and deterring fraudulent or manipulative misconduct related to the non-cash assets held by the proposed ETP.¹⁰⁸

Bitcoin Futures pricing is based on pricing from spot bitcoin markets. The statement from the Teucrium Approval that “CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts...indirectly by trading outside of the CME bitcoin futures market,” makes clear that the Commission believes that CME’s surveillance can capture the effects of trading on the relevant spot markets on the pricing of Bitcoin Futures. If CME is able to detect such attempts at manipulation in the complex and interconnected spot bitcoin market,

¹⁰⁷ See Winklevoss Order at 37593, specifically footnote 202, which includes the language from numerous approval orders for which the underlying futures markets formed the basis for approving series of ETPs that hold physical metals, including gold, silver, palladium, platinum, and precious metals more broadly; and 37600, specifically where the Commission provides that “when the spot market is unregulated – the requirement of preventing fraudulent and manipulative acts may possibly be satisfied by showing that the ETP listing market has entered into a surveillance-sharing agreement with a regulated market of significant size in derivatives related to the underlying asset.” As noted above, the Exchange believes that these citations are particularly helpful in making clear that the spot market for a spot commodity ETP need not be “regulated” in order for a spot commodity ETP to be approved by the Commission, and in fact that it’s been the common historical practice of the Commission to rely on such derivatives markets as the regulated market of significant size because such spot commodities markets are largely unregulated.

¹⁰⁸ See Teucrium Approval at 21679.

how would such an ability to detect attempted manipulation and the utility in sharing that information with the listing exchange apply only to Bitcoin Futures ETFs and not Spot Bitcoin ETPs? Stated a different way, given that there is significant trading volume on numerous bitcoin exchanges that are not part of the CME CF Bitcoin Reference Rate and that arbitrage opportunities across bitcoin exchanges means that such trading volume will influence spot bitcoin prices across the market and, despite this, the Commission still believes that CME can detect attempted manipulation of the Bitcoin Futures through “trading outside of the CME bitcoin futures market,” it is clear that such ability would apply equally to both Bitcoin Futures ETFs and Spot Bitcoin ETPs. To take it a step further, such an ability would also seem to be a strong indication that the CME Bitcoin Futures market represents a regulated market of significant size. To be clear, the Exchange agrees with the Commission on this point (and the implications of their conclusions) and further notes that the pricing mechanism applicable to the Shares is similar to the CME CF Bitcoin Reference Rate.

Surveillance Sharing Agreement

The Exchange is proposing to take additional steps to those described above to supplement its ability to obtain information that would be helpful in detecting, investigating, and deterring fraud and market manipulation in the Commodity-Based Trust Shares. On June 21, 2023, the Exchange reached an agreement on terms with Coinbase, Inc. (“Coinbase”), an operator of a United States-based spot trading platform for Bitcoin that represents a substantial portion of US-based and USD denominated

Bitcoin trading,¹⁰⁹ to enter into a surveillance-sharing agreement (“Spot BTC SSA”) and executed an associated term sheet. Based on this agreement on terms, the Exchange and Coinbase will finalize and execute a definitive agreement that the parties expect to be executed prior to allowing trading of the Commodity-Based Trust Shares.

The Spot BTC SSA is expected to be a bilateral surveillance-sharing agreement between the Exchange and Coinbase that is intended to supplement the Exchange’s market surveillance program. The Spot BTC SSA is expected to have the hallmarks of a surveillance-sharing agreement between two members of the ISG, which would give the Exchange supplemental access to data regarding spot Bitcoin trades on Coinbase where the Exchange determines it is necessary as part of its surveillance program for the Commodity-Based Trust Shares.¹¹⁰ This means that the Exchange expects to receive market data for orders and trades from Coinbase, which it will utilize in surveillance of the trading of Commodity-Based Trust Shares. In addition, the Exchange can request further information from Coinbase related to spot bitcoin trading activity on the Coinbase exchange platform, if the Exchange determines that such information would be necessary to detect and investigate potential manipulation in the trading of the Commodity-Based Trust Shares.¹¹¹

In Kind Creation and Redemption

¹⁰⁹ According to a Kaiko Research report dated June 26, 2023, Coinbase represented roughly 50% of exchange trading volume in USD-BTC trading on a daily basis during May 2023.

¹¹⁰ For additional information regarding ISG and the hallmarks of surveillance-sharing between ISG members, see <https://isgportal.org/overview>.

¹¹¹ The Exchange also notes that it already has in place ISG-like surveillance sharing agreement with Cboe Digital Exchange, LLC and Cboe Clear Digital, LLC.

Further, and consistent with prior points above, offering only in-kind creation and redemption will also provide unique protections against potential attempts to manipulate the price of the Shares. While the Sponsor believes that the Benchmark which it uses to value the Trust's bitcoin is itself resistant to manipulation based on the methodology further described below, the fact that creations and redemptions are only available in-kind makes the manipulability of the Benchmark significantly less important. Specifically, because the Trust will not accept cash to buy bitcoin in order to create new Shares or, barring a forced redemption of the Trust or under other extraordinary circumstances, be forced to sell bitcoin to pay cash for redeemed Shares, the price that the Sponsor uses to value the Trust's bitcoin is not particularly important.¹¹² When authorized participants are creating Shares with the Trust, they need to deliver a certain number of bitcoin per Share (regardless of the valuation used) and when they're redeeming, they can similarly expect to receive a certain number of bitcoin per Share. As such, even if the price used to value the Trust's bitcoin is manipulated (which the Sponsor believes that its methodology is resistant to), the ratio of bitcoin per Share does not change and the Trust will either accept (for creations) or distribute (for redemptions) the same number of bitcoin regardless of the value. This not only mitigates the risk associated with potential manipulation, but also discourages and disincentivizes manipulation of the Benchmark because there is little financial incentive to do so.

(d) Designed to Protect Investors and the Public Interest

¹¹² While the Benchmark will not be particularly important for the creation and redemption process, it will be used for calculating fees.

The Exchange believes that the proposal is designed to protect investors and the public interest. Over the past several years, U.S. investor exposure to bitcoin through OTC Bitcoin Funds has grown into the tens of billions of dollars, including through Bitcoin Futures ETFs. With that growth, so too has grown the quantifiable investor protection issues to U.S. investors through roll costs for Bitcoin Futures ETFs and premium/discount volatility and management fees for OTC Bitcoin Funds. The Exchange believes that the concerns related to the prevention of fraudulent and manipulative acts and practices have been sufficiently addressed to be consistent with the Act and, to the extent that the Commission disagrees with that assertion, such concerns are now outweighed by investor protection concerns. As such, the Exchange believes that approving this proposal (and comparable proposals) provides the Commission with the opportunity to allow U.S. investors with access to bitcoin in a regulated and transparent exchange-traded vehicle that would act to limit risk to U.S. investors by: (i) reducing premium and discount volatility; (ii) reducing management fees through meaningful competition; (iii) reducing risks and costs associated with investing in Bitcoin Futures ETFs and operating companies that are imperfect proxies for bitcoin exposure; and (iv) providing an alternative to custodial spot bitcoin.

Commodity-Based Trust Shares

The Exchange believes that the proposed rule change is designed to prevent fraudulent and manipulative acts and practices in that the Shares will be listed on the Exchange pursuant to the initial and continued listing criteria in Exchange Rule 14.11(e)(4). The Exchange believes that its surveillance procedures are adequate to properly monitor the trading of the Shares on the Exchange during all trading sessions

and to deter and detect violations of Exchange rules and the applicable federal securities laws. Trading of the Shares through the Exchange will be subject to the Exchange's surveillance procedures for derivative products, including Commodity-Based Trust Shares. The issuer has represented to the Exchange that it will advise the Exchange of any failure by the Trust or the Shares to comply with the continued listing requirements, and, pursuant to its obligations under Section 19(g)(1) of the Exchange Act, the Exchange will surveil for compliance with the continued listing requirements. If the Trust or the Shares are not in compliance with the applicable listing requirements, the Exchange will commence delisting procedures under Exchange Rule 14.12. The Exchange may obtain information regarding trading in the Shares and listed bitcoin derivatives via the ISG, from other exchanges who are members or affiliates of the ISG, or with which the Exchange has entered into a comprehensive surveillance sharing agreement.

Availability of Information

The Exchange also believes that the proposal promotes market transparency in that a large amount of information is currently available about bitcoin and will be available regarding the Trust and the Shares. In addition to the price transparency of the Benchmark, the Trust will provide information regarding the Trust's bitcoin holdings as well as additional data regarding the Trust. The Trust will provide an IIV per Share updated every 15 seconds, as calculated by the Exchange or a third-party financial data provider during the Exchange's Regular Trading Hours (9:30 a.m. to 4:00 p.m. E.T.). The IIV will be calculated by using the prior day's closing NAV per Share as a base and

updating that value during Regular Trading Hours to reflect changes in the value of the Trust's bitcoin holdings during the trading day.

The IIV disseminated during Regular Trading Hours should not be viewed as an actual real-time update of the NAV, which will be calculated only once at the end of each trading day. The IIV will be widely disseminated on a per Share basis every 15 seconds during the Exchange's Regular Trading Hours by one or more major market data vendors. In addition, the IIV will be available through on-line information services.

The website for the Trust, which will be publicly accessible at no charge, will contain the following information: (a) the current NAV per Share daily and the prior business day's NAV and the reported closing price; (b) the BZX Official Closing Price in relation to the NAV as of the time the NAV is calculated and a calculation of the premium or discount of such price against such NAV; (c) data in chart form displaying the frequency distribution of discounts and premiums of the Official Closing Price against the NAV, within appropriate ranges for each of the four previous calendar quarters (or for the life of the Trust, if shorter); (d) the prospectus; and (e) other applicable quantitative information. The Trust will also disseminate the Trust's holdings on a daily basis on the Trust's website. The price of bitcoin will be made available by one or more major market data vendors, updated at least every 15 seconds during Regular Trading Hours. Information about the Benchmark, including key elements of how the Benchmark is calculated, will be publicly available at www.mvis-indices.com/.

The NAV for the Trust will be calculated by the Administrator once a day and will be disseminated daily to all market participants at the same time. Quotation and last-

sale information regarding the Shares will be disseminated through the facilities of the CTA.

Quotation and last sale information for bitcoin is widely disseminated through a variety of major market data vendors, including Bloomberg and Reuters, as well as the Benchmark. Information relating to trading, including price and volume information, in bitcoin is available from major market data vendors and from the exchanges on which bitcoin are traded. Depth of book information is also available from bitcoin exchanges. The normal trading hours for bitcoin exchanges are 24 hours per day, 365 days per year.

In sum, the Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the Act, that this filing sufficiently demonstrates that the CME Bitcoin Futures market represents a regulated market of significant size, and that on the whole the manipulation concerns previously articulated by the Commission are sufficiently mitigated to the point that they are outweighed by investor protection issues that would be resolved by approving this proposal.

The Exchange believes that the proposal is, in particular, designed to protect investors and the public interest. Premium and discount volatility, high fees, rolling costs, insufficient disclosures, and technical hurdles are putting U.S. investor money at risk on a daily basis that could potentially be eliminated through access to a Spot Bitcoin ETP. As such, the Exchange believes that this proposal acts to limit the risk to U.S. investors that are increasingly seeking exposure to bitcoin by providing direct, 1-for-1 exposure to bitcoin in a regulated, transparent, exchange-traded vehicle, specifically by: (i) reducing premium volatility; (ii) reducing management fees through meaningful competition; (iii) providing an alternative to Bitcoin Futures ETFs which will eliminate roll cost; (iv)

reducing risks associated with investing in operating companies that are imperfect proxies for bitcoin exposure; and (v) providing an alternative to custodying spot bitcoin. Finally, the Exchange notes that in addition to all of the arguments herein which it believes sufficiently establishes the CME Bitcoin Futures market as a regulated market of significant size, it is logically inconsistent to find that the CME Bitcoin Futures market is a significant market as it relates to the CME Bitcoin Futures market, but not a significant market as it relates to the bitcoin spot market for the numerous reasons laid out above.

For the above reasons, the Exchange believes that the proposed rule change is consistent with the requirements of Section 6(b)(5) of the Act.

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

The Exchange does not believe that the proposed rule change will impose any burden on competition that is not necessary or appropriate in furtherance of the purpose of the Act. The Exchange notes that the proposed rule change, rather will facilitate the listing and trading of an additional exchange-traded product that will enhance competition among both market participants and listing venues, to the benefit of investors and the marketplace.

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

The Exchange neither solicited nor received comments on the proposed rule change.

Item 6. Extension of Time Period for Commission Action

The Exchange does not consent to an extension of the time period for Securities and Exchange Commission (the “Commission”) action on the proposed rule change specified in Section 19(b)(2) of the Act.¹¹³

Item 7. Basis for Summary Effectiveness Pursuant to Section 19(b)(3) or for Accelerated Effectiveness Pursuant to Section 19(b)(2) or Section 19(b)(7)(D)

Not applicable.

Item 8. Proposed Rule Change Based on Rules of Another Self-Regulatory Organization or of the Commission

The proposed rule change is not based on a rule either of another self-regulatory organization or of the Commission.

Item 9. Security-Based Swap Submissions Filed Pursuant to Section 3C of the Act

Not applicable.

Item 10. Advance Notices Filed Pursuant to Section 806(e) of the Payment, Clearing and Settlement Supervision Act

Not applicable.

Item 11. Exhibits

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

Exhibit 2 – 5: Not applicable.

¹¹³ 15 U.S.C. 78s(b)(2).

EXHIBIT 1**SECURITIES AND EXCHANGE COMMISSION**

[Release No. 34- ; File No. SR-CboeBZX-2023-044]

[Insert date]

Self-Regulatory Organizations; Cboe BZX Exchange, Inc.; Notice of Filing of a Proposed Rule Change to List and Trade Shares of the Wise Origin Bitcoin Trust (the “Trust”), Under BZX Rule 14.11(e)(4), Commodity-Based Trust Shares

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (the “Act”),¹ and Rule 19b-4 thereunder,² notice is hereby given that on [insert date], Cboe BZX Exchange, Inc. (the “Exchange” or “BZX”) filed with the Securities and Exchange Commission (the “Commission”) the proposed rule change as described in Items I, II, and III below, which Items have been prepared by the Exchange. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Self-Regulatory Organization’s Statement of the Terms of Substance of the Proposed Rule Change

Cboe BZX Exchange, Inc. (“BZX” or the “Exchange”) is filing with the Securities and Exchange Commission (“Commission” or “SEC”) a proposed rule change to list and trade shares of the Wise Origin Bitcoin Trust (the “Trust”),³ under BZX Rule 14.11(e)(4), Commodity-Based Trust Shares.

¹ 15 U.S.C. 78s(b)(1).

² 17 CFR 240.19b-4.

³ The Trust was formed as a Delaware statutory trust on March 17, 2021, and is operated as a grantor trust for U.S. federal tax purposes. The Trust has no fixed termination date.

The text of the proposed rule change is also available on the Exchange's website (http://markets.cboe.com/us/equities/regulation/rule_filings/bzx/), at the Exchange's Office of the Secretary, and at the Commission's Public Reference Room.

II. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, the Exchange included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. The Exchange has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of such statements.

A. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

This Amendment No. 1 to SR-CboeBZX-2023-044 amends and replaces in its entirety the proposal as originally submitted on June 30, 2023. The Exchange submits this Amendment No. 1 in order to clarify certain points and add additional details to the proposal.

The Exchange proposes to list and trade the Shares under BZX Rule 14.11(e)(4),⁴ which governs the listing and trading of Commodity-Based Trust Shares on the Exchange.⁵ FD Funds Management LLC is the sponsor of the Trust ("Sponsor"). The Shares will be registered with the Commission by means of the Trust's registration

⁴ The Commission approved BZX Rule 14.11(e)(4) in Securities Exchange Act Release No. 65225 (August 30, 2011), 76 FR 55148 (September 6, 2011) (SR-BATS-2011-018).

⁵ All statements and representations made in this filing regarding (a) the description of the portfolio, (b) limitations on portfolio holdings or reference assets, or (c) the applicability of Exchange rules and surveillance procedures shall constitute continued listing requirements for listing the Shares on the Exchange.

statement on Form S-1 (the “Registration Statement”).⁶ Fidelity Digital Assets Services, LLC (“FDAS”), a regulated custodian licensed by the New York Department of Financial Services, will be responsible for custody of the Trust’s bitcoin (the “Custodian”). The Trust is not permitted or required to register under the Investment Company Act of 1940, as amended (the “1940 Act”), and therefore is not subject to regulation under the 1940 Act.⁷ Further, the Registration Statement states that the Trust will not hold or trade in commodity interests regulated by the Commodity Exchange Act of 1936, as amended (the “CEA”), and therefore is not a commodity pool for purposes of the CEA.⁸ The Exchange represents that the Shares satisfy the requirements of BZX Rule 14.11(e)(4) and thereby qualify for listing on the Exchange.

As further discussed below, the Commission has historically approved or disapproved exchange filings to list and trade series of Trust Issued Receipts, including spot-based Commodity-Based Trust Shares, on the basis of whether the listing exchange has in place a comprehensive surveillance sharing agreement with a regulated market of significant size related to the underlying commodity to be held.⁹ Prior orders from the Commission have pointed out that in every prior approval order for Commodity-Based Trust Shares, there has been a derivatives market that represents the regulated market of

⁶ See draft Registration Statement on Form S-1, dated March 24, 2021, submitted to the Commission by the Sponsor on behalf of the Trust. The descriptions of the Trust, the Shares, and the Index (as defined below) contained herein are based, in part, on information in the Registration Statement. The Registration Statement is not yet effective, and the Shares will not trade on the Exchange until such time that the Registration Statement is effective.

⁷ See above.

⁸ See above.

⁹ See Securities Exchange Act Release No. 83723 (July 26, 2018), 83 FR 37579 (August 1, 2018). This proposal was subsequently disapproved by the Commission. See Securities Exchange Act Release No. 83723 (July 26, 2018), 83 FR 37579 (August 1, 2018) (the “Winklevoss Order”).

significant size, generally a Commodity Futures Trading Commission (the “CFTC”) regulated futures market.¹⁰ Further to this point, the Commission’s prior orders have

¹⁰ See streetTRACKS Gold Shares, Exchange Act Release No. 50603 (Oct. 28, 2004), 69 FR 64614, 64618–19 (Nov. 5, 2004) (SR-NYSE-2004-22) (the “First Gold Approval Order”); iShares COMEX Gold Trust, Exchange Act Release No. 51058 (Jan. 19, 2005), 70 FR 3749, 3751, 3754–55 (Jan. 26, 2005) (SR-Amex-2004-38); iShares Silver Trust, Exchange Act Release No. 53521 (Mar. 20, 2006), 71 FR 14967, 14968, 14973–74 (Mar. 24, 2006) (SR-Amex-2005-072); ETFS Gold Trust, Exchange Act Release No. 59895 (May 8, 2009), 74 FR 22993, 22994–95, 22998, 23000 (May 15, 2009) (SR-NYSEArca-2009-40); ETFS Silver Trust, Exchange Act Release No. 59781 (Apr. 17, 2009), 74 FR 18771, 18772, 18775–77 (Apr. 24, 2009) (SR-NYSEArca-2009-28); ETFS Palladium Trust, Exchange Act Release No. 61220 (Dec. 22, 2009), 74 FR 68895, 68896 (Dec. 29, 2009) (SR-NYSEArca-2009-94) (notice of proposed rule change included NYSE Arca’s representation that “[t]he most significant palladium futures exchanges are the NYMEX and the Tokyo Commodity Exchange,” that “NYMEX is the largest exchange in the world for trading precious metals futures and options,” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which NYMEX is a member, Exchange Act Release No. 60971 (Nov. 9, 2009), 74 FR 59283, 59285–86, 59291 (Nov. 17, 2009)); ETFS Platinum Trust, Exchange Act Release No. 61219 (Dec. 22, 2009), 74 FR 68886, 68887–88 (Dec. 29, 2009) (SR-NYSEArca-2009-95) (notice of proposed rule change included NYSE Arca’s representation that “[t]he most significant platinum futures exchanges are the NYMEX and the Tokyo Commodity Exchange,” that “NYMEX is the largest exchange in the world for trading precious metals futures and options,” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which NYMEX is a member, Exchange Act Release No. 60970 (Nov. 9, 2009), 74 FR 59319, 59321, 59327 (Nov. 17, 2009)); Sprott Physical Gold Trust, Exchange Act Release No. 61496 (Feb. 4, 2010), 75 FR 6758, 6760 (Feb. 10, 2010) (SR-NYSEArca-2009-113) (notice of proposed rule change included NYSE Arca’s representation that the COMEX is one of the “major world gold markets,” that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” and that NYMEX, of which COMEX is a division, is a member of the Intermarket Surveillance Group, Exchange Act Release No. 61236 (Dec. 23, 2009), 75 FR 170, 171, 174 (Jan. 4, 2010)); Sprott Physical Silver Trust, Exchange Act Release No. 63043 (Oct. 5, 2010), 75 FR 62615, 62616, 62619, 62621 (Oct. 12, 2010) (SR-NYSEArca-2010-84); ETFS Precious Metals Basket Trust, Exchange Act Release No. 62692 (Aug. 11, 2010), 75 FR 50789, 50790 (Aug. 17, 2010) (SR-NYSEArca-2010-56) (notice of proposed rule change included NYSE Arca’s representation that “the most significant gold, silver, platinum and palladium futures exchanges are the COMEX and the TOCOM” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which COMEX is a member, Exchange Act Release No. 62402 (Jun. 29, 2010), 75 FR 39292, 39295, 39298 (July 8, 2010)); ETFS White Metals Basket Trust, Exchange Act Release No. 62875 (Sept. 9, 2010), 75 FR 56156, 56158 (Sept. 15, 2010) (SR-NYSEArca-2010-71) (notice of proposed rule change included NYSE Arca’s representation that “the most significant silver, platinum and palladium futures exchanges are the COMEX and the TOCOM” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which COMEX is a member, Exchange Act Release No. 62620 (July 30, 2010), 75 FR 47655, 47657, 47660 (Aug. 6, 2010)); ETFS Asian Gold Trust, Exchange Act Release No. 63464 (Dec. 8, 2010), 75 FR 77926, 77928 (Dec. 14, 2010) (SR-NYSEArca-2010-95) (notice of proposed rule change included NYSE Arca’s representation that “the most significant gold futures exchanges are the COMEX and the Tokyo Commodity Exchange,” that “COMEX is the largest exchange in the world for trading precious metals futures and options,” and that NYSE Arca “may obtain trading information via the Intermarket Surveillance Group,” of which COMEX is a member, Exchange Act Release No. 63267 (Nov. 8, 2010), 75 FR 69494, 69496, 69500–01 (Nov. 12, 2010)); Sprott Physical Platinum and Palladium Trust, Exchange Act Release No. 68430 (Dec. 13, 2012), 77 FR 75239, 75240–41 (Dec. 19, 2012) (SR-NYSEArca-2012-111) (notice of proposed rule change included NYSE

noted that the spot commodities and currency markets for which it has previously approved spot ETPs are generally unregulated and that the Commission relied on the underlying futures market as the regulated market of significant size that formed the basis for approving the series of Currency and Commodity-Based Trust Shares, including gold, silver, platinum, palladium, copper, and other commodities and currencies. The Commission specifically noted in the Winklevoss Order that the First Gold Approval

Arca's representation that "[f]utures on platinum and palladium are traded on two major exchanges: The New York Mercantile Exchange ... and Tokyo Commodities Exchange" and that NYSE Arca "may obtain trading information via the Intermarket Surveillance Group," of which COMEX is a member, Exchange Act Release No. 68101 (Oct. 24, 2012), 77 FR 65732, 65733, 65739 (Oct. 30, 2012)); APMEX Physical—1 oz. Gold Redeemable Trust, Exchange Act Release No. 66930 (May 7, 2012), 77 FR 27817, 27818 (May 11, 2012) (SR-NYSEArca-2012-18) (notice of proposed rule change included NYSE Arca's representation that NYSE Arca "may obtain trading information via the Intermarket Surveillance Group," of which COMEX is a member, and that gold futures are traded on COMEX and the Tokyo Commodity Exchange, with a cross-reference to the proposed rule change to list and trade shares of the ETFS Gold Trust, in which NYSE Arca represented that COMEX is one of the "major world gold markets," Exchange Act Release No. 66627 (Mar. 20, 2012), 77 FR 17539, 17542–43, 17547 (Mar. 26, 2012)); JPM XF Physical Copper Trust, Exchange Act Release No. 68440 (Dec. 14, 2012), 77 FR 75468, 75469–70, 75472, 75485–86 (Dec. 20, 2012) (SR-NYSEArca-2012-28); iShares Copper Trust, Exchange Act Release No. 68973 (Feb. 22, 2013), 78 FR 13726, 13727, 13729–30, 13739–40 (Feb. 28, 2013) (SR-NYSEArca-2012-66); First Trust Gold Trust, Exchange Act Release No. 70195 (Aug. 14, 2013), 78 FR 51239, 51240 (Aug. 20, 2013) (SR-NYSEArca-2013-61) (notice of proposed rule change included NYSE Arca's representation that FINRA, on behalf of the exchange, may obtain trading information regarding gold futures and options on gold futures from members of the Intermarket Surveillance Group, including COMEX, or from markets "with which [NYSE Arca] has in place a comprehensive surveillance sharing agreement," and that gold futures are traded on COMEX and the Tokyo Commodity Exchange, with a cross-reference to the proposed rule change to list and trade shares of the ETFS Gold Trust, in which NYSE Arca represented that COMEX is one of the "major world gold markets," Exchange Act Release No. 69847 (June 25, 2013), 78 FR 39399, 39400, 39405 (July 1, 2013)); Merk Gold Trust, Exchange Act Release No. 71378 (Jan. 23, 2014), 79 FR 4786, 4786–87 (Jan. 29, 2014) (SR-NYSEArca-2013-137) (notice of proposed rule change included NYSE Arca's representation that "COMEX is the largest gold futures and options exchange" and that NYSE Arca "may obtain trading information via the Intermarket Surveillance Group," including with respect to transactions occurring on COMEX pursuant to CME and NYMEX's membership, or from exchanges "with which [NYSE Arca] has in place a comprehensive surveillance sharing agreement," Exchange Act Release No. 71038 (Dec. 11, 2013), 78 FR 76367, 76369, 76374 (Dec. 17, 2013)); Long Dollar Gold Trust, Exchange Act Release No. 79518 (Dec. 9, 2016), 81 FR 90876, 90881, 90886, 90888 (Dec. 15, 2016) (SR-NYSEArca-2016-84).

Order “was based on an assumption that the currency market and the spot gold market were largely unregulated.”¹¹

As such, the regulated market of significant size test does not require that the spot bitcoin market be regulated in order for the Commission to approve this proposal, and precedent makes clear that an underlying market for a spot commodity or currency being a regulated market would actually be an exception to the norm. These largely unregulated currency and commodity markets do not provide the same protections as the markets that are subject to the Commission’s oversight, but the Commission has consistently looked to surveillance sharing agreements with the underlying futures market in order to determine whether such products were consistent with the Act. With this in mind, the CME Bitcoin Futures market is the proper market to consider in determining whether there is a related regulated market of significant size.

Further to this point, the Exchange notes that the Commission has approved proposals related to the listing and trading of funds that would primarily hold CME Bitcoin Futures that are registered under the Securities Act of 1933.¹² In the Teucrium Approval, the Commission found the CME Bitcoin Futures market to be a regulated market of significant size as it relates to CME Bitcoin Futures, an odd tautological truth that is also inconsistent with prior disapproval orders for ETPs that would hold actual bitcoin instead of derivatives contracts (“Spot Bitcoin ETPs”) that use the exact same pricing methodology as the CME Bitcoin Futures. As further discussed below, both the

¹¹ See Winklevoss Order at 37592.

¹² See Exchange Act Release No. 94620 (April 6, 2022), 87 FR 21676 (April 12, 2022) (the “Teucrium Approval”) and 94853 (May 5, 2022) (collectively, with the Teucrium Approval, the “Bitcoin Futures Approvals”).

Exchange and the Sponsor believe that this proposal and the included analysis are sufficient to establish that the CME Bitcoin Futures market represents a regulated market of significant size as it relates both to the CME Bitcoin Futures market and to the spot bitcoin market and that this proposal should be approved.

Finally, as discussed in greater detail below, by using professional custodians and other service providers, the Trust provides investors interested in exposure to bitcoin with important protections that are not always available to investors that invest directly in bitcoin, including protection against insolvency of non-qualified custodians, cyber-attacks, and other risks. If U.S. investors had access to vehicles such as the Trust for their bitcoin investments, instead of directing their bitcoin investments into loosely regulated offshore platforms (such as loosely regulated centralized exchanges that have since faced bankruptcy proceedings or other insolvencies), then countless investors could have protected their principal investments in bitcoin and thus benefited.

Background

Bitcoin is a digital asset based on the decentralized, open-source protocol of the peer-to-peer computer network launched in 2009 that governs the creation, movement, and ownership of bitcoin and hosts the public ledger, or “blockchain,” on which all bitcoin transactions are recorded (the “Bitcoin Network” or “Bitcoin”). The decentralized nature of the Bitcoin Network allows parties to transact directly with one another based on cryptographic proof instead of relying on a trusted third party. The protocol also lays out the rate of issuance of new bitcoin within the Bitcoin Network, a rate that is reduced by half approximately every four years with an eventual hard cap of 21 million. It’s generally understood that the combination of these two features – a systemic hard cap of

21 million bitcoin and the ability to transact trustlessly with anyone connected to the Bitcoin Network – gives bitcoin its value.

The first rule filing proposing to list an exchange-traded product to provide exposure to bitcoin in the U.S. was submitted by the Exchange on June 30, 2016.¹³ At that time, blockchain technology, and digital assets that utilized it, were relatively new to the broader public. The market cap of all bitcoin in existence at that time was approximately \$10 billion. No registered offering of digital asset securities or shares in an investment vehicle with exposure to bitcoin or any other cryptocurrency had yet been conducted, and the regulated infrastructure for conducting a digital asset securities offering had not begun to develop.¹⁴ Similarly, regulated U.S. bitcoin futures contracts did not exist. The CFTC had determined that bitcoin is a commodity,¹⁵ but had not engaged in significant enforcement actions in the space. The New York Department of Financial Services (“NYDFS”) adopted its final BitLicense regulatory framework in 2015, but had only approved four entities to engage in activities relating to virtual currencies (whether through granting a BitLicense or a limited-purpose trust charter) as

¹³ See Winklevoss Order.

¹⁴ Digital assets that are securities under U.S. law are referred to throughout this proposal as “digital asset securities.” All other digital assets, including bitcoin, are referred to interchangeably as “cryptocurrencies” or “virtual currencies.” The term “digital assets” refers to all digital assets, including both digital asset securities and cryptocurrencies, together.

¹⁵ See “In the Matter of Coinflip, Inc.” (“Coinflip”) (CFTC Docket 15-29 (September 17, 2015)) (order instituting proceedings pursuant to Sections 6(c) and 6(d) of the CEA, making findings and imposing remedial sanctions), in which the CFTC stated: “Section 1a(9) of the CEA defines ‘commodity’ to include, among other things, ‘all services, rights, and interests in which contracts for future delivery are presently or in the future dealt in.’ 7 U.S.C. § 1a(9). The definition of a ‘commodity’ is broad. See, e.g., Board of Trade of City of Chicago v. SEC, 677 F. 2d 1137, 1142 (7th Cir. 1982). Bitcoin and other virtual currencies are encompassed in the definition and properly defined as commodities.”

of June 30, 2016.¹⁶ While the first over-the-counter bitcoin fund launched in 2013, public trading was limited and the fund had only \$60 million in assets.¹⁷ There were very few, if any, traditional financial institutions engaged in the space, whether through investment or providing services to digital asset companies. In January 2018, the Staff of the Commission noted in a letter to the Investment Company Institute and SIFMA that it was not aware, at that time, of a single custodian providing fund custodial services for digital assets.¹⁸

Fast forward to today and the digital assets financial ecosystem, including bitcoin, has progressed significantly. The development of a regulated market for digital asset securities has significantly evolved, with market participants having conducted registered public offerings of both digital asset securities¹⁹ and shares in investment vehicles holding bitcoin futures, including Bitcoin Futures ETFs (as defined below). Additionally, licensed and regulated service providers have emerged to provide fund custodial services for digital assets, among other services. For example, in May 2021, the Staff of the Commission released a statement permitting open-end mutual funds to invest in cash-

¹⁶ A list of virtual currency businesses that are entities regulated by the NYDFS is available on the NYDFS website. See https://www.dfs.ny.gov/apps_and_licensing/virtual_currency_businesses/regulated_entities.

¹⁷ Data as of March 31, 2016 according to publicly available filings. See Bitcoin Investment Trust Form S-1, dated May 27, 2016, available: <https://www.sec.gov/Archives/edgar/data/1588489/000095012316017801/filename1.htm>.

¹⁸ See letter from Dalia Blass, Director, Division of Investment Management, U.S. Securities and Exchange Commission to Paul Schott Stevens, President & CEO, Investment Company Institute and Timothy W. Cameron, Asset Management Group – Head, Securities Industry and Financial Markets Association (January 18, 2018), available at <https://www.sec.gov/divisions/investment/noaction/2018/cryptocurrency-011818.htm>.

¹⁹ See Prospectus supplement filed pursuant to Rule 424(b)(1) for INX Tokens (Registration No. 333-233363), available at: https://www.sec.gov/Archives/edgar/data/1725882/000121390020023202/ea125858-424b1_inxlimited.htm.

settled bitcoin futures; in December 2020, the Commission adopted a conditional no-action position permitting certain special purpose broker-dealers to custody digital asset securities under Rule 15c3-3 under the Exchange Act (the “Custody Statement”);²⁰ in September 2020, the Staff of the Commission released a no-action letter permitting certain broker-dealers to operate a non-custodial Alternative Trading System (“ATS”) for digital asset securities, subject to specified conditions;²¹ in October 2019, the Staff of the Commission granted temporary relief from the clearing agency registration requirement to an entity seeking to establish a securities clearance and settlement system based on distributed ledger technology,²² and multiple transfer agents who provide services for digital asset securities registered with the Commission.²³

Outside the Commission's purview, the regulatory landscape has changed significantly since 2016, and cryptocurrency markets have grown and evolved as well. The market for bitcoin is approximately 100 times larger, having at one point reached a market cap of over \$1 trillion.²⁴ According to the CME Bitcoin Futures Report, from

²⁰ See Securities Exchange Act Release No. 90788, 86 FR 11627 (February 26, 2021) (File Number S7-25-20) (Custody of Digital Asset Securities by Special Purpose Broker-Dealers).

²¹ See letter from Elizabeth Baird, Deputy Director, Division of Trading and Markets, U.S. Securities and Exchange Commission to Kris Dailey, Vice President, Risk Oversight & Operational Regulation, Financial Industry Regulatory Authority (September 25, 2020), available at: <https://www.sec.gov/divisions/marketreg/mr-noaction/2020/finra-ats-role-in-settlement-of-digital-asset-security-trades-09252020.pdf>.

²² See letter from Jeffrey S. Mooney, Associate Director, Division of Trading and Markets, U.S. Securities and Exchange Commission to Charles G. Cascarilla & Daniel M. Burstein, Paxos Trust Company, LLC (October 28, 2019), available at: <https://www.sec.gov/divisions/marketreg/mr-noaction/2019/paxos-trust-company-102819-17a.pdf>.

²³ See, e.g., Form TA-1/A filed by Tokensoft Transfer Agent LLC (CIK: 0001794142) on January 8, 2021, available at: https://www.sec.gov/Archives/edgar/data/1794142/000179414219000001/xslFTA1X01/primary_doc.xml.

²⁴ As of December 1, 2021, the total market cap of all bitcoin in circulation was approximately \$1.08 trillion.

February 13, 2023 through March 27, 2023, CFTC regulated bitcoin futures represented between \$750 million and \$3.2 billion in notional trading volume on Chicago Mercantile Exchange (“CME”) (“Bitcoin Futures”) on a daily basis and notional volume was never below \$670 million.²⁵ Open interest was over \$1.4 billion for the entirety of the period and at one point was over \$2 billion. ETPs that primarily hold CME Bitcoin Futures have raised over \$1 billion dollars in assets. The CFTC has exercised its regulatory jurisdiction in bringing a number of enforcement actions related to bitcoin and against trading platforms that offer cryptocurrency trading.²⁶ As of February 14, 2023 the NYDFS has granted no fewer than thirty-four BitLicenses,²⁷ including to established public payment companies like PayPal Holdings, Inc. and Square, Inc., and limited purpose trust charters to entities providing cryptocurrency custody services. In addition, the Treasury's Office of Foreign Assets Control (“OFAC”) has brought enforcement actions over apparent violations of the sanctions laws in connection with the provision of wallet management services for digital assets.²⁸

²⁵ Data sourced from the CME Bitcoin Futures Report: 19 Nov 2021, available at: https://www.cmegroup.com/ftp/bitcoinfutures/Bitcoin_Futures_Liquidity_Report.pdf.

²⁶ The CFTC’s annual report for Fiscal Year 2020 (which ended on September 30, 2020) noted that the CFTC “continued to aggressively prosecute misconduct involving digital assets that fit within the CEA’s definition of commodity” and “brought a record setting seven cases involving digital assets.” See CFTC FY2020 Division of Enforcement Annual Report, available at: https://www.cftc.gov/media/5321/DOE_FY2020_AnnualReport_120120/download. Additionally, the CFTC filed on October 1, 2020, a civil enforcement action against the owner/operators of the BitMEX trading platform, which was one of the largest bitcoin derivative exchanges. See CFTC Release No. 8270-20 (October 1, 2020) available at: <https://www.cftc.gov/PressRoom/PressReleases/8270-20>.

²⁷ See https://www.dfs.ny.gov/virtual_currency_businesses.

²⁸ See U.S. Department of the Treasury Enforcement Release: “OFAC Enters Into \$98,830 Settlement with BitGo, Inc. for Apparent Violations of Multiple Sanctions Programs Related to Digital Currency Transactions” (December 30, 2020) available at: https://home.treasury.gov/system/files/126/20201230_bitgo.pdf. See also U.S. Department of the Treasury Enforcement Release: “Treasury Announces Two Enforcement Actions for over \$24M and \$29M Against Virtual Currency Exchange, Bittrex, Inc.” (October 11, 2022) available at: <https://home.treasury.gov/news/press-releases/jy1006>. See also U.S. Department of Treasury

In addition to the regulatory developments laid out above, more traditional financial market participants have become more active in cryptocurrency: large insurance companies, asset managers, university endowments, pension funds, and even historically bitcoin skeptical fund managers²⁹ have allocated to bitcoin. In June 2022, PwC estimated that the number of crypto-specialist hedge funds was more than 300 globally, with \$4.1 billion in assets under management. In addition, in a survey PwC found that 38 percent of surveyed traditional hedge funds were currently investing in ‘digital assets,’ compared to 21 percent the year prior.”³⁰ The largest over-the-counter bitcoin fund previously filed a Form 10 registration statement, which the Staff of the Commission reviewed and which took effect automatically, and is now a reporting company.³¹ Established companies like Tesla, Inc., MicroStrategy Incorporated, and Square, Inc., among others, have made substantial investments in bitcoin. The foregoing examples demonstrate that bitcoin has gained mainstream usage and recognition.

Despite these developments, access for U.S. retail investors to gain exposure to bitcoin via a transparent and U.S. regulated, U.S. exchange-traded vehicle remains limited. Instead current options include: (i) facing the counter-party risk, legal

Enforcement Release “OFAC Settles with Virtual Currency Exchange Kraken for \$362,158.70 Related to Apparent Violations of the Iranian Transactions and Sanctions Regulations” (November 28, 2022) available at: https://home.treasury.gov/system/files/126/20221128_kraken.pdf.

²⁹ See e.g., “Bridgewater: Our Thoughts on Bitcoin” (January 28, 2021) available at: <https://www.bridgewater.com/research-and-insights/our-thoughts-on-bitcoin> and “Paul Tudor Jones says he likes bitcoin even more now, rally still in the ‘first inning’” (October 22, 2020) available at: <https://www.cnbc.com/2020/10/22/-paul-tudor-jones-says-he-likes-bitcoin-even-more-now-rally-still-in-the-first-inning.html>.

³⁰ See the FSOC “Report on Digital Asset Financial Stability Risks and Regulation 2022” (October 3, 2022) (at footnote 26) at <https://home.treasury.gov/system/files/261/FSOC-Digital-Assets-Report-2022.pdf>.

³¹ See Letter from Division of Corporation Finance, Office of Real Estate & Construction to Barry E. Silbert, Chief Executive Officer, Grayscale Bitcoin Trust (January 31, 2020) <https://www.sec.gov/Archives/edgar/data/1588489/000000000020000953/filename1.pdf>.

uncertainty, technical risk, and complexity associated with accessing spot bitcoin; (ii) over-the-counter bitcoin funds (“OTC Bitcoin Funds”) with high management fees and potentially volatile premiums and discounts;³² (iii) purchasing shares of operating companies that they believe will provide proxy exposure to bitcoin with limited disclosure about the associated risks;³³ or (iv) purchasing Bitcoin Futures ETFs, as defined below, which represent a sub-optimal structure for long-term investors that will cost them significant amounts of money every year compared to Spot Bitcoin ETPs, as

³² The largest OTC Bitcoin Fund has an AUM of \$23 billion. The premium and discount for OTC Bitcoin Funds is known to move rapidly. For example, over the period of 12/21/20 to 1/21/20, the premium for the largest OTC Bitcoin Fund went from 40.18% to 2.79%. While the price of bitcoin appreciated significantly during this period and NAV per share increased by 41.25%, the price per share increased by only 3.58%. This means that investors are buying shares of a fund that experiences significant volatility in its premium and discount outside of the fluctuations in price of the underlying asset. Even operating within the normal premium and discount range, it’s possible for an investor to buy shares of an OTC Bitcoin Fund only to have those shares quickly lose 10% or more in dollar value excluding any movement of the price of bitcoin. That is to say – the price of bitcoin could have stayed exactly the same from market close on one day to market open the next, yet the value of the shares held by the investor decreased only because of the fluctuation of the premium. As more investment vehicles, including mutual funds and ETFs, seek to gain exposure to bitcoin, the easiest option for a buy and hold strategy for such vehicles is often an OTC Bitcoin Fund, meaning that even investors that do not directly buy OTC Bitcoin Funds can be disadvantaged by extreme premiums (or discounts) and premium volatility.

³³ A number of operating companies engaged in unrelated businesses – such as Tesla (a car manufacturer) and MicroStrategy (an enterprise software company) – have announced investments as large as \$5.3 billion in bitcoin. Without access to bitcoin exchange-traded products, retail investors seeking investment exposure to bitcoin may end up purchasing shares in these companies in order to gain the exposure to bitcoin that they seek. In fact, mainstream financial news networks have written a number of articles providing investors with guidance for obtaining bitcoin exposure through publicly traded companies (such as MicroStrategy, Tesla, and bitcoin mining companies, among others) instead of dealing with the complications associated with buying spot bitcoin in the absence of a bitcoin ETP. See e.g., “7 public companies with exposure to bitcoin” (February 8, 2021) available at: <https://finance.yahoo.com/news/7-public-companies-with-exposure-to-bitcoin-154201525.html>; and “Want to get in the crypto trade without holding bitcoin yourself? Here are some investing ideas” (February 19, 2021) available at: <https://www.cnbc.com/2021/02/19/ways-to-invest-in-bitcoin-without-holding-the-cryptocurrency-yourself-.html>. Such operating companies, however, are imperfect bitcoin proxies and provide investors with partial bitcoin exposure paired with a host of additional risks associated with whichever operating company they decide to purchase. Additionally, the disclosures provided by such operating companies with respect to risks relating to their bitcoin holdings are generally substantially smaller than the registration statement of a bitcoin ETP, including the Registration Statement, typically amounting to a few sentences of narrative description and a handful of risk factors. In other words, investors seeking bitcoin exposure through publicly traded companies are gaining only partial exposure to bitcoin and are not fully benefitting from the risk disclosures and associated investor protections that come from the securities registration process.

further discussed below. Meanwhile, investors in many other countries, including Canada and Brazil, are able to use more traditional exchange listed and traded products (including exchange-traded funds holding physical bitcoin) to gain exposure to bitcoin. Similarly, investors in Switzerland and across Europe have access to Exchange Traded Products which trade on regulated exchanges and provide exposure to a broad array of spot crypto assets. U.S. investors, by contrast, are left with fewer and more risky means of getting bitcoin exposure, as described above.³⁴

To this point, the lack of a Spot Bitcoin ETP exposes U.S. investor assets to significant risk because investors that would otherwise seek crypto asset exposure through a Spot Bitcoin ETP are forced to find alternative exposure through generally riskier means. For instance, many U.S. investors that held their digital assets in accounts at FTX³⁵, Celsius Network LLC,³⁶ BlockFi Inc.³⁷ and Voyager Digital Holdings, Inc.³⁸ have become unsecured creditors in the insolvencies of those entities. If a Spot Bitcoin ETP was available, it is likely that at least a portion of the billions of dollars tied up in those proceedings would still reside in the brokerage accounts of U.S. investors, having instead been invested in a transparent, regulated, and well-understood structure – a Spot Bitcoin ETP. To this point, approval of a Spot Bitcoin ETP would represent a major win for the protection of U.S. investors in the cryptoasset space. As further described below,

³⁴ The Exchange notes that the list of countries above is not exhaustive and that securities regulators in a number of additional countries have either approved or otherwise allowed the listing and trading of Spot Bitcoin ETPs.

³⁵ See FTX Trading Ltd., et al., Case No. 22-11068.

³⁶ See Celsius Network LLC, et al., Case No. 22-10964.

³⁷ See BlockFi Inc., Case No. 22-19361.

³⁸ See Voyager Digital Holdings, Inc., et al., Case No. 22-10943.

the Trust, like all other series of Commodity-Based Trust Shares, is designed to protect investors against the risk of losses through fraud and insolvency that arise by holding digital assets, including bitcoin, on centralized platforms.

Additionally, investors in other countries, specifically Canada, generally pay lower fees than U.S. retail investors that invest in OTC Bitcoin Funds due to the fee pressure that results from increased competition among available bitcoin investment options. Without an approved and regulated Spot Bitcoin ETP in the U.S. as a viable alternative, U.S. investors could seek to purchase shares of non-U.S. bitcoin vehicles in order to get access to bitcoin exposure. Given the separate regulatory regime and the potential difficulties associated with any international litigation, such an arrangement would create more risk exposure for U.S. investors than they would otherwise have with a U.S. exchange listed ETP. Further to this point, the lack of a U.S.-listed Spot Bitcoin ETP is not preventing U.S. funds from gaining exposure to bitcoin - several U.S. exchange-traded funds are using Canadian bitcoin ETPs to gain exposure to spot bitcoin. In addition to the benefits to U.S. investors articulated throughout this proposal, approving this proposal (and others like it) would provide U.S. exchange-traded funds and mutual funds with a U.S.-listed and regulated product to provide such access rather than relying on either flawed products or products listed and primarily regulated in other countries.

Bitcoin Futures ETFs

The Exchange and Sponsor applaud the Commission for allowing the launch of ETFs registered under the 1940 Act and the Bitcoin Futures Approvals that provide exposure to bitcoin primarily through CME Bitcoin Futures (“Bitcoin Futures ETFs”).

Allowing such products to list and trade is a productive first step in providing U.S. investors and traders with transparent, exchange-listed tools for expressing a view on bitcoin. The Bitcoin Futures Approvals, however, have created a logical inconsistency in the application of the standard the Commission applies when considering bitcoin ETP proposals.

As discussed further below, the standard applicable to bitcoin ETPs is whether the listing exchange has in place a comprehensive surveillance sharing agreement with a regulated market of significant size in the underlying asset. Previous disapproval orders have made clear that a market that constitutes a regulated market of significant size is generally a futures and/or options market based on the underlying reference asset rather than the spot commodity markets, which are often unregulated.³⁹ Leaving aside the analysis of that standard until later in this proposal,⁴⁰ the Exchange believes that the following rationale the Commission applied to a Bitcoin Futures ETF should result in the Commission approving this and other Spot Bitcoin ETP proposals:

The CME “comprehensively surveils futures market conditions and price movements on a real-time and ongoing basis in order to detect and prevent price distortions, including price distortions caused by manipulative efforts.” Thus, the CME’s surveillance can reasonably be relied upon to capture the effects on the

³⁹ See Winklevoss Order at 37593, specifically footnote 202, which includes the language from numerous approval orders for which the underlying futures markets formed the basis for approving series of ETPs that hold physical metals, including gold, silver, palladium, platinum, and precious metals more broadly; and 37600, specifically where the Commission provides that “when the spot market is unregulated – the requirement of preventing fraudulent and manipulative acts may possibly be satisfied by showing that the ETP listing market has entered into a surveillance-sharing agreement with a regulated market of significant size in derivatives related to the underlying asset.” As noted above, the Exchange believes that these citations are particularly helpful in making clear that the spot market for a spot commodity ETP need not be “regulated” in order for a spot commodity ETP to be approved by the Commission, and in fact that it’s been the common historical practice of the Commission to rely on such derivatives markets as the regulated market of significant size because such spot commodities markets are largely unregulated.

⁴⁰ As further outlined below, both the Exchange and the Sponsor believe that the Bitcoin Futures market represents a regulated market of significant size and that this proposal and others like it should be approved on this basis.

CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts, whether that attempt is made by directly trading on the CME bitcoin futures market or indirectly by trading outside of the CME bitcoin futures market. As such, when the CME shares its surveillance information with Arca, the information would assist in detecting and deterring fraudulent or manipulative misconduct related to the non-cash assets held by the proposed ETP.⁴¹

CME Bitcoin Futures pricing is based on pricing from spot bitcoin markets. The statement from the Teucrium Approval that “CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts...indirectly by trading outside of the CME bitcoin futures market,” makes clear that the Commission believes that CME’s surveillance can capture the effects of trading on the relevant spot markets on the pricing of Bitcoin Futures. If CME is able to detect such attempts at manipulation in the complex and interconnected spot bitcoin market, how would such an ability to detect attempted manipulation and the utility in sharing that information with the listing exchange apply only to Bitcoin Futures ETFs and not Spot Bitcoin ETPs? Stated a different way, given that there is significant trading volume on numerous bitcoin exchanges that are not part of the CME CF Bitcoin Reference Rate and that arbitrage opportunities across bitcoin exchanges means that such trading volume will influence spot bitcoin prices across the market and, despite this, the Commission still believes that CME can detect attempted manipulation of the Bitcoin Futures through “trading outside of the CME bitcoin futures market,” it is clear that such ability would apply equally to both Bitcoin Futures ETFs and Spot Bitcoin ETPs. To take it a step further, such an ability would also seem to be a strong indication that the CME

⁴¹ See Teucrium Approval at 21679.

Bitcoin Futures market represents a regulated market of significant size. The Exchange agrees with the Commission on this point and notes that the pricing mechanism applicable to the Shares is similar to that of the CME CF Bitcoin Futures.

Further to this point, a Bitcoin Futures ETF is potentially more susceptible to potential manipulation than a Spot Bitcoin ETP that offers only in-kind creation and redemption because settlement of CME Bitcoin Futures pricing (and thus the value of the underlying holdings of a Bitcoin Futures ETF) occurs at a single price derived from spot bitcoin pricing, while shares of a Spot Bitcoin ETP would represent interest in bitcoin directly and authorized participants for a Spot Bitcoin ETP (as proposed herein) would be able to source bitcoin from any exchange and create or redeem with the applicable trust regardless of the price of the underlying index. It is not logically possible to conclude that the CME Bitcoin Futures market represents a significant market for a futures-based product, but also conclude that the CMR Bitcoin Futures market does not represent a significant market for a spot-based product.

In addition to potentially being more susceptible to manipulation than a Spot Bitcoin ETP, the structure of Bitcoin Futures ETFs provides negative outcomes for buy and hold investors as compared to a Spot Bitcoin ETP.⁴² Specifically, the cost of rolling CME Bitcoin Futures contracts will cause the Bitcoin Futures ETFs to lag the performance of bitcoin itself and, at over a billion dollars in assets under management, would cost U.S. investors significant amounts of money on an annual basis compared to

⁴² See e.g., “Bitcoin ETF’s Success Could Come at Fundholders’ Expense,” Wall Street Journal (October 24, 2021), available at: <https://www.wsj.com/articles/bitcoin-etfs-success-could-come-at-fundholders-expense-11635080580>; “Physical Bitcoin ETF Prospects Accelerate,” ETF.com (October 25, 2021), available at: https://www.etf.com/sections/blog/physical-bitcoin-etf-prospects-shine?nopaging=1&__cf_chl_jschl_tk__=pmd_JsK.fjXz9eAQW9zol0qpzhXDrrlpIVdoCloLXbLjl44-1635476946-0-gqNtZGzNAPCjcnBszQql.

Spot Bitcoin ETPs. Such rolling costs would not be required for Spot Bitcoin ETPs that hold bitcoin. Further, Bitcoin Futures ETFs could potentially hit CME position limits, which would force a Bitcoin Futures ETF to invest in non-futures assets for bitcoin exposure and cause potential investor confusion and lack of certainty about what such Bitcoin Futures ETFs are actually holding to try to get exposure to bitcoin, not to mention completely changing the risk profile associated with such an ETF. While Bitcoin Futures ETFs represent a useful trading tool, they are clearly a sub-optimal structure for U.S. investors that are looking for long-term exposure to bitcoin that will, based on the calculations above, unnecessarily cost U.S. investors significant amounts of money every year compared to Spot Bitcoin ETPs and the Exchange believes that any proposal to list and trade a Spot Bitcoin ETP should be reviewed by the Commission with this important investor protection context in mind.

Based on the foregoing, the Exchange and Sponsor believe that any objective review of the proposals to list Spot Bitcoin ETPs compared to the Bitcoin Futures ETFs and the Bitcoin Futures Approvals would lead to the conclusion that Spot Bitcoin ETPs should be available to U.S. investors and, as such, this proposal and other comparable proposals to list and trade Spot Bitcoin ETPs should be approved by the Commission. Stated simply, U.S. investors will continue to lose significant amounts of money from holding Bitcoin Futures ETFs as compared to Spot Bitcoin ETPs, losses which could be prevented by the Commission approving Spot Bitcoin ETPs. Additionally, any concerns related to preventing fraudulent and manipulative acts and practices related to Spot Bitcoin ETPs would apply equally to the spot markets underlying the futures contracts held by a Bitcoin Futures ETF. While the 1940 Act does offer certain investor

protections, those protections do not relate to mitigating potential manipulation of the holdings of an ETF in a way that warrants distinction between Bitcoin Futures ETFs and Spot Bitcoin ETPs. To be clear, both the Exchange and Sponsor believe that the Bitcoin Futures market is a regulated market of significant size and that such manipulation concerns are mitigated as described throughout this proposal. After issuing the Bitcoin Futures Approvals which conclude the CME Bitcoin Futures market is a regulated market of significant size as it relates to Bitcoin Futures, the only consistent outcome would be approving Spot Bitcoin ETPs on the basis that the CME Bitcoin Futures market is also a regulated market of significant size as it relates to the bitcoin spot market. Given the current landscape, approving this proposal (and others like it) and allowing Spot Bitcoin ETPs to be listed and traded alongside Bitcoin Futures ETFs would establish a consistent regulatory approach, provide U.S. investors with choice in product structures for bitcoin exposure, and offer flexibility in the means of gaining exposure to bitcoin through transparent, regulated, U.S. exchange-listed vehicles.

Spot and Proxy Exposure to Bitcoin

Exposure to bitcoin through an ETP also presents certain advantages for retail investors compared to buying spot bitcoin directly. The most notable advantage from the Sponsor's perspective is the elimination of the need for an individual retail investor to either manage their own private keys or to hold bitcoin through a cryptocurrency exchange that lacks sufficient protections. Typically, retail exchanges hold most, if not all, retail investors' bitcoin in "hot" (Internet-connected) storage and do not make any commitments to indemnify retail investors or to observe any particular cybersecurity standard. Meanwhile, a retail investor holding spot bitcoin directly in a self-hosted wallet

may suffer from inexperience in private key management (*e.g.*, insufficient password protection, lost key, etc.), which could cause them to lose some or all of their bitcoin holdings. Thus, with respect to custody of the Trust's bitcoin assets, the Trust presents advantages from an investment protection standpoint for retail investors compared to owning spot bitcoin directly.

Finally, as described in the Background section above, a number of operating companies largely engaged in unrelated businesses – such as Tesla (a car manufacturer) and MicroStrategy (an enterprise software company) – have announced significant investments in bitcoin. Without access to bitcoin exchange-traded products, retail investors seeking investment exposure to bitcoin may end up purchasing shares in these companies in order to gain the exposure to bitcoin that they seek.⁴³ In fact, mainstream financial news networks have written a number of articles providing investors with guidance for obtaining bitcoin exposure through publicly traded companies (such as MicroStrategy, Tesla, and bitcoin mining companies, among others) instead of dealing with the complications associated with buying spot bitcoin in the absence of a bitcoin ETP.⁴⁴ Such operating companies, however, are imperfect bitcoin proxies and provide investors with partial bitcoin exposure paired with a host of additional risks associated with whichever operating company they decide to purchase. Additionally, the disclosures

⁴³ In August 2017, the Commission's Office of Investor Education and Advocacy warned investors about situations where companies were publicly announcing events relating to digital coins or tokens in an effort to affect the price of the company's publicly traded common stock. See https://www.sec.gov/oiea/investor-alerts-and-bulletins/ia_icorelatedclaims.

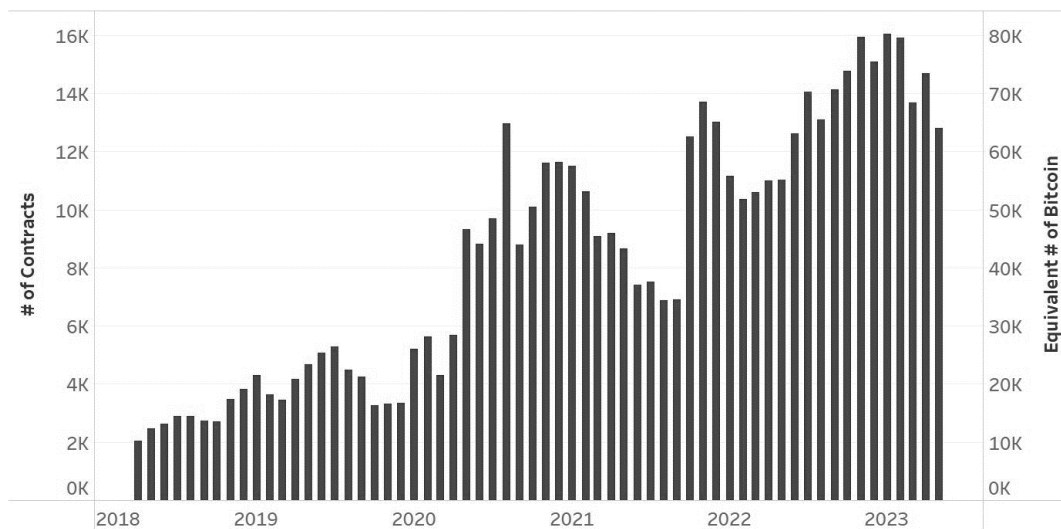
⁴⁴ See e.g., “7 public companies with exposure to bitcoin” (February 8, 2021) available at: <https://finance.yahoo.com/news/7-public-companies-with-exposure-to-bitcoin-154201525.html>; and “Want to get in the crypto trade without holding bitcoin yourself? Here are some investing ideas” (February 19, 2021) available at: <https://www.cnbc.com/2021/02/19/ways-to-invest-in-bitcoin-without-holding-the-cryptocurrency-yourself-.html>.

provided by the aforementioned operating companies with respect to risks relating to their bitcoin holdings are generally substantially smaller than the registration statement of a bitcoin ETP, including the Registration Statement, typically amounting to a few sentences of narrative description and a handful of risk factors.⁴⁵ In other words, investors seeking bitcoin exposure through publicly traded companies are gaining only partial exposure to bitcoin and are not fully benefitting from the risk disclosures and associated investor protections that come from the securities registration process.

Bitcoin Futures

CME began offering trading in Bitcoin Futures in 2017. Each contract represents five bitcoin and is based on the CME CF Bitcoin Reference Rate.⁴⁶ The contracts trade and settle like other cash-settled commodity futures contracts. Nearly every measurable metric related to Bitcoin Futures has generally trended up since launch, although certain

CME Bitcoin Futures Open Interest (OI)



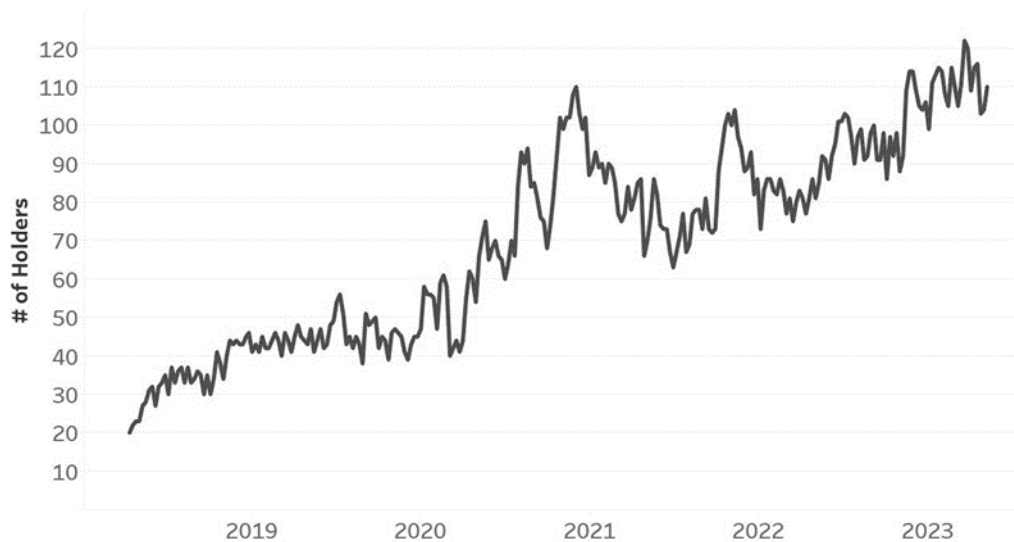
⁴⁵ See, e.g., Tesla 10-K for the year ended December 31, 2020, which mentions bitcoin just nine times: https://www.sec.gov/ix?doc=/Archives/edgar/data/1318605/000156459021004599/tsla-10k_20201231.htm.

⁴⁶ The CME CF Bitcoin Reference Rate is based on a publicly available calculation methodology based on pricing sourced from several crypto exchanges and trading platforms, including Bitstamp, Coinbase, Gemini, itBit, Kraken, and LMAX Digital.

notional volume calculations have decreased roughly in line with the decrease in the price of bitcoin. For example, there were 143,215 Bitcoin Futures contracts traded in April 2023 (approximately \$20.07 billion) compared to 193,182 (\$5 billion), 104,713 (\$3.9 billion) 118,714 (\$42.7b billion), and 111,964 (\$23.2b billion) contracts traded in April 2019, April 2020, and April 2021, and April 2022, respectively.⁴⁷

The number of large open interest holders⁴⁸ and unique accounts trading Bitcoin Futures have both increased, even in the face of heightened Bitcoin price volatility.

CME Bitcoin Futures Large Open Interest Holders (LOIH)

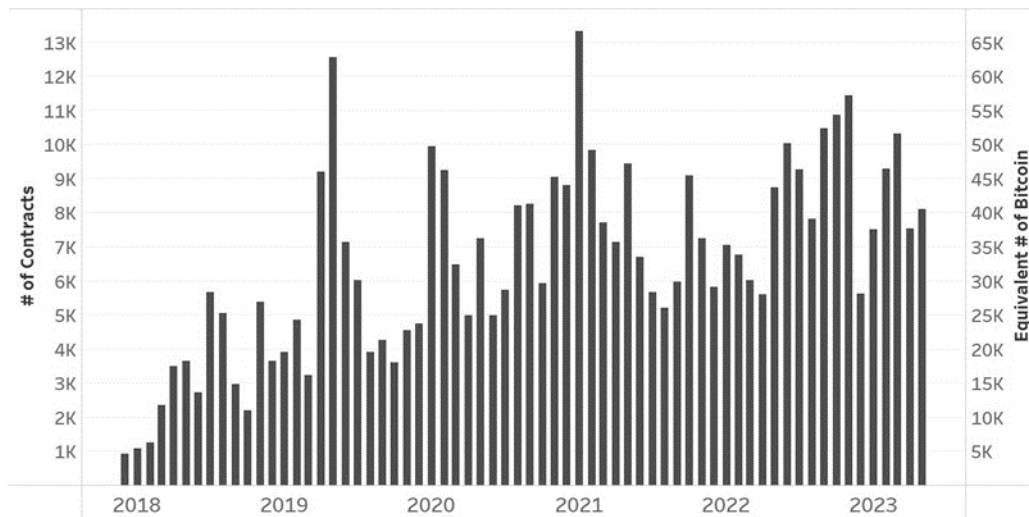


⁴⁷ Source: CME, Yahoo Finance 4/30/23.

⁴⁸ A large open interest holder in Bitcoin Futures is an entity that holds at least 25 contracts, which is the equivalent of 125 bitcoin. At a price of approximately \$29,268.81 per bitcoin on 4/30/2023, more than 100 firms had outstanding positions of greater than \$3.65 million in Bitcoin Futures.

The Sponsor further believes that publicly available research, including research done as part of rule filings proposing to list and trade shares of Spot Bitcoin ETPs, corroborates the overall trend outlined above and supports the thesis that the Bitcoin Futures pricing leads the spot market and, thus, a person attempting to manipulate the Shares would also have to trade on that market to manipulate the ETP. Specifically, the Sponsor believes that such research indicates that bitcoin futures lead the bitcoin spot market in price formation.⁴⁹

CME Bitcoin Futures Average Daily Volume (ADV)



⁴⁹

See Exchange Act Releases No. 94080 (January 27, 2022), 87 FR 5527 (April 12, 2022) (specifically “Amendment No. 1 to the Proposed Rule Change To List and Trade Shares of the Wise Origin Bitcoin Trust Under BZX Rule 14.11(3)(4), Commodity-Based Trust Shares”); 94982 (May 25, 2022), 87 FR 33250 (June 1, 2022); 94844 (May 4, 2022), 87 FR 28043 (May 10, 2022); and 93445 (October 28, 2021), 86 FR 60695 (November 3, 2021). See also Hu, Y., Hou, Y. and Oxley, L. (2019). “What role do futures markets play in Bitcoin pricing? Causality, cointegration and price discovery from a time-varying perspective” (available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7481826/>). This academic research paper concludes that “There exist no episodes where the Bitcoin spot markets dominates the price discovery processes with regard to Bitcoin futures. This points to a conclusion that the price formation originates solely in the Bitcoin futures market. We can, therefore, conclude that the Bitcoin futures markets dominate the dynamic price discovery process based upon time-varying information share measures. Overall, price discovery seems to occur in the Bitcoin futures markets rather than the underlying spot market based upon a time-varying perspective.”

Section 6(b)(5) and the Applicable Standards

The Commission has approved numerous series of Trust Issued Receipts,⁵⁰ including Commodity-Based Trust Shares,⁵¹ to be listed on U.S. national securities exchanges. In order for any proposed rule change from an exchange to be approved, the Commission must determine that, among other things, the proposal is consistent with the requirements of Section 6(b)(5) of the Act, specifically including: (i) the requirement that a national securities exchange's rules are designed to prevent fraudulent and manipulative acts and practices;⁵² and (ii) the requirement that an exchange proposal be designed, in general, to protect investors and the public interest. The Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the Act and that this filing sufficiently demonstrates that the CME Bitcoin Futures market represents a regulated market of significant size and that, on the whole, the manipulation concerns previously articulated by the Commission are sufficiently mitigated to the point that they

⁵⁰ See Exchange Rule 14.11(f).

⁵¹ Commodity-Based Trust Shares, as described in Exchange Rule 14.11(e)(4), are a type of Trust Issued Receipt.

⁵² As the Exchange has stated in a number of other public documents, it continues to believe that bitcoin is resistant to price manipulation and that “other means to prevent fraudulent and manipulative acts and practices” exist to justify dispensing with the requisite surveillance sharing agreement. The geographically diverse and continuous nature of bitcoin trading render it difficult and prohibitively costly to manipulate the price of bitcoin. The fragmentation across bitcoin platforms, the relatively slow speed of transactions, and the capital necessary to maintain a significant presence on each trading platform make manipulation of bitcoin prices through continuous trading activity challenging. To the extent that there are bitcoin exchanges engaged in or allowing wash trading or other activity intended to manipulate the price of bitcoin on other markets, such pricing does not normally impact prices on other exchange because participants will generally ignore markets with quotes that they deem non-executable. Moreover, the linkage between the bitcoin markets and the presence of arbitrageurs in those markets means that the manipulation of the price of bitcoin price on any single venue would require manipulation of the global bitcoin price in order to be effective. Arbitrageurs must have funds distributed across multiple trading platforms in order to take advantage of temporary price dislocations, thereby making it unlikely that there will be strong concentration of funds on any particular bitcoin exchange or OTC platform. As a result, the potential for manipulation on a trading platform would require overcoming the liquidity supply of such arbitrageurs who are effectively eliminating any cross-market pricing differences.

are outweighed by quantifiable investor protection issues that would be resolved by approving this proposal.

(i) Designed to Prevent Fraudulent and Manipulative Acts and Practices

In order to meet this standard in a proposal to list and trade a series of Commodity-Based Trust Shares, the Commission requires that an exchange demonstrate that there is a comprehensive surveillance-sharing agreement in place⁵³ with a regulated market of significant size. Specifically, the Commission has previously stated that:

...when the spot market is unregulated – the requirement of preventing fraudulent and manipulative acts may possibly be satisfied by showing that the ETP listing market has entered into a surveillance-sharing agreement with a regulated market of significant size in derivatives related to the underlying asset. That is because, where a market of significant size exists with respect to derivatives on the asset underlying the commodity-trust ETP, the Commission believes that there is a reasonable likelihood that a person attempting to manipulate the ETP by manipulating the underlying spot market would also have to trade in the derivatives market in order to succeed, since arbitrage between the derivative and spot markets would tend to counter an attempt to manipulate the spot market alone.⁵⁴

⁵³ As previously articulated by the Commission, “The standard requires such surveillance-sharing agreements since “they provide a necessary deterrent to manipulation because they facilitate the availability of information needed to fully investigate a manipulation if it were to occur.” The Commission has emphasized that it is essential for an exchange listing a derivative securities product to enter into a surveillance-sharing agreement with markets trading underlying securities for the listing exchange to have the ability to obtain information necessary to detect, investigate, and deter fraud and market manipulation, as well as violations of exchange rules and applicable federal securities laws and rules. The hallmarks of a surveillance-sharing agreement are that the agreement provides for the sharing of information about market trading activity, clearing activity, and customer identity; that the parties to the agreement have reasonable ability to obtain access to and produce requested information; and that no existing rules, laws, or practices would impede one party to the agreement from obtaining this information from, or producing it to, the other party.” The Commission has historically held that joint membership in the Intermarket Surveillance Group (“ISG”) constitutes such a surveillance sharing agreement. See Securities Exchange Act Release No. 88284 (February 26, 2020), 85 FR 12595 (March 3, 2020) (SR-NYSEArca-2019-39) (the “Wilshire Phoenix Disapproval”).

⁵⁴ Self-Regulatory Organizations; Bats BZX Exchange, Inc.; Order Setting Aside Action by Delegated Authority and Disapproving a Proposed Rule Change, as Modified by Amendments No. 1 and 2, To List and Trade Shares of the Winklevoss Bitcoin trust, 83 Fed. Reg. 37579, 37600 (Aug 1, 2018).

The Commission has provided illustrative guidance in interpreting the terms “significant market” and “market of significant size” to include “a market (or group of markets) as to which (a) there is a reasonable likelihood that a person attempting to manipulate the ETP would also have to trade on that market to successfully manipulate the ETP, so a surveillance-sharing agreement would assist the ETP listing market in detecting and deterring misconduct, and (b) it is unlikely that trading in the ETP would be the predominant influence on prices in that market.”⁵⁵

The Commission has stated in a prior disapproval order that “the lead-lag relationship between the bitcoin futures market and the spot market...is central to understanding whether it is reasonably likely that a would-be manipulator of the ETP would need to trade on the bitcoin futures market to successfully manipulate prices on those spot platforms that feed into the proposed ETP’s pricing mechanism.”⁵⁶ The Commission further noted that “in particular, if the spot market leads the futures market, this would indicate that it would not be necessary to trade on the futures market to manipulate the proposed ETP, even if arbitrage worked efficiently, because the futures price would move to meet the spot price.”⁵⁷

The Commission has also recognized that the “regulated market of significant size” standard is not the only means for satisfying Section 6(b)(5) of the act, specifically providing that a listing exchange could demonstrate that “other means to prevent

⁵⁵ Id.

⁵⁶ Self-Regulatory Organizations; NYSE Arca, Inc.; Order Disapproving a Proposed Rule Change, as Modified by Amendment No. 1, Relating to the Listing and Trading of Shares of the Bitwise Bitcoin ETF Trust Under NYSE Arca Rule 8.201-E, 84 Fed. Reg. 55382, 55411 (Oct 16, 2019).

⁵⁷ Id.

fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement.⁵⁸

The Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the Act and that the Sponsor’s analysis demonstrates that the Exchange can meet such requirements in that the CME Bitcoin Futures Market (i) is a regulated market; (ii) has a comprehensive surveillance-sharing agreement with the Exchange; and (iii) satisfies the Commission’s “significant market” definition.”

1. The CME Bitcoin Futures Market is a Regulated Market and ISG Member

The CME is regulated by the CFTC and is a member of the Intermarket Surveillance Group (“ISG”), which was established to provide a framework for sharing information and coordinating regulatory efforts among exchanges trading securities and related products and to address potential intermarket manipulations and trading abuses. The Commission has previously stated that membership by a regulated futures exchange in ISG is sufficient to meet the surveillance-sharing requirement.⁵⁹ Both the Exchange and CME are members of the Intermarket Surveillance Group (the “ISG”).⁶⁰

2. The CME Bitcoin Futures Market is a Market of Significant Size

Based on the Commission’s prior guidance, Sponsor conducted a detailed price discovery study through its lead-lag analysis of bitcoin spot and futures trading across markets located globally. As discussed below, Sponsor’s analysis concludes that the

⁵⁸ See Winklevoss Order at 37580. The Commission has also specifically noted that it “is not applying a ‘cannot be manipulated’ standard; instead, the Commission is examining whether the proposal meets the requirements of the Exchange Act and, pursuant to its Rules of Practice, places the burden on the listing exchange to demonstrate the validity of its contentions and to establish that the requirements of the Exchange Act have been met.” *Id.* at 37582.

⁵⁹ See Winklevoss Order at 37594.

⁶⁰ For a list of the current members and affiliate members of ISG, see www.isgportal.com.

CME Bitcoin Futures market is consistently the leading market for price discovery across USD bitcoin markets located globally, including bitcoin spot markets and offshore, unregulated bitcoin futures markets. Thus, Sponsor's analysis supports the conclusion that there is a reasonable likelihood that a person attempting to manipulate the Shares would also have to trade on the CME Bitcoin Futures market to manipulate the Trust. Sponsor also conducted an additional lead-lag analysis including data from a recently launched bitcoin futures-based ETF to evaluate the likelihood of whether trading in the Trust could become the predominant influence on prices in the CME Bitcoin Futures market and concluded that it is unlikely that trading in the Trust would be the predominant influence on prices in the CME Bitcoin Futures market.

Sponsor's analysis on price discovery in the Bitcoin spot and futures markets is described below.

Data Description and Sources

Sponsor obtained tick level trade data for Bitcoin spot prices and futures prices used in its analysis from Coin Metrics for the period spanning from January 1, 2019, to March 31, 2021. Table 1 summarizes the dataset by exchange, market type, and quote currency.

Sponsor aggregated the tick level trades to the one second floor level using a volume weighted average price (VWAP) approach. Compared to the daily/minute level granularity of timestamps, Sponsor believes the second level can capture more intra-day price dynamics and is more useful here to investigate price discovery, as both arbitrage and manipulative activities can occur within a matter of seconds. To preprocess the tick level trade data to second level granularity, two typical methods are often used. One is to

use the last observed trade price within a second, and the other is to use VWAP within a second. Since multiple trades can occur with simultaneous timestamps but with different transaction prices, a VWAP can represent the price information from each trade instead of randomly selecting the last price. It is worth mentioning that although the price time series' have second level resolution (timestamped to seconds), this does not mean that the price time series' values are evenly spaced at each second since a market may not have trades within every second. Given this non-synchronous nature of trading and the potential model issues arising from utilizing data with numerous imputed values, Sponsor's analysis leverages a method that eliminates the need for imputation for the timestamps without trades. This approach allows the model inputs of price time series from different markets to stay non-synchronous without further data processing.

In order to exclude any impacts caused by exchange rate movements, Sponsor limited the dataset to BTC-USD and BTC-USDT trades. Markets with an average correlation lower than 0.1 to other bitcoin markets, in any given quarter, were removed from the analysis. For futures markets, Sponsor included both ordinary futures and perpetuals. Contract frequencies were validated and recorded via respective exchange websites, and, for CME data, the sponsor compared data from the exchange directly with data provided by Coin Metrics to verify accuracy.

Within the ordinary futures market, one exchange, quote and contract lifespan combination can often have same-day trading on contracts with different expiration dates. To remove price gaps in this market, Sponsor constructed a continuous time-series of prices by choosing the contract with the highest volume per day within an exchange, quote, and contract lifespan combination. For each combination, successive contracts are

backwards adjusted using the price difference between the two contracts at the time of rollover.

Table 1 Summary of Instruments

Exchange	Spot		Ordinary Futures*		Perpetual Futures	
	USD	USDT	USD	USDT	USD	USDT
Binance		✓	✓	✓	✓	✓
Binance.US	✓					
Bitfinex	✓	✓				✓
bitFlyer	✓					
BitMEX			✓		✓	
Bitstamp	✓					
Bittrex	✓					
Bybit					✓	✓
CEX.IO	✓					
CME			✓			
Coinbase	✓					
Deribit			✓		✓	
FTX	✓		✓		✓	
Gemini	✓					
HitBTC		✓				
Huobi		✓	✓		✓	✓
itBit	✓					
Kraken	✓	✓	✓		✓	
LBank		✓				
Liquid	✓					
OKEx		✓	✓	✓	✓	✓
ZB.COM		✓				
* One exchange with the same market type and quote currency can have multiple ordinary futures contracts with different expiration cycles/lifespans.						

Legend:

CME Bitcoin
FuturesUSD
SpotUSDT
SpotFutures
(Excluding
CME)USDT
FuturesUSD
Perpetual
FuturesUSDT
Perpetual
Futures

Research Design

Price discovery between spot and futures markets plays an important role in financial research due to its association with market maturity. In theory, the futures market is expected to lead price discovery in established asset classes due to its inherent features, such as lower transaction fees, built-in leverage, unconstrained short-selling, and greater transparency. Since bitcoin futures contracts began trading on regulated exchanges in December 2017, several academic and market research papers have studied spot-futures price discovery in bitcoin markets. Sponsor started its research by reviewing the existing literature. Table 2 summarizes the metrics, data ranges, frequency levels, and conclusions for thirteen papers.

Table 2: Previous bitcoin spot/futures price discovery research

Author	Article Name (Year)	Journal	Metrics	Data Range	Frequency Level	Conclusion
Corbet, et al.	Bitcoin Futures - What use are they? (2018)	Economics Letters	Information Share, Component Share, Information Leadership Share (Yan) Information Leadership Share (Putnins)	09/26/2017 - 02/22/2018	Minute	finding that the bitcoin spot market leads price discovery
Kapur and Olaya	An analysis of price discovery between Bitcoin futures and spot markets (2018)	Economics Letters	Information Share, Component Share	12/12/2017 - 05/16/2018	Daily	finding that the bitcoin futures market leads price discovery
Baur and Dimpfl	Price Discovery in Bitcoin Spot or Futures? (2019)	Journal of Futures Markets	Information Share, Component Share	12/10/2017 - 10/18/2018	15-Minute	finding that the bitcoin spot market leads price discovery
Hu, et al.	What role do futures markets play in Bitcoin pricing? Causality, cointegration and price discovery from a time-varying perspective (2019)	International Review of Financial Analysis	Time-varying version of Information Share and Generalized information Share	12/18/2017 - 06/16/2019	Daily	finding that the bitcoin futures market leads price discovery
Alexander and Heck	Price discovery, high-frequency trading and jumps in bitcoin markets (2019)	Available at SSRN: https://ssrn.com/abstract=3383147	Generalized Information Share, Component Share	12/18/2017 - 06/30/2019	30-Minute	finding that the bitcoin futures market leads price discovery
Fassler, et al.	Price Discovery in Bitcoin Futures (2020)	Research in International Business and Finance	Common Factor Weight, Information Share, Component Share, Information Leadership Share (Putnins)	01/01/2018 - 12/31/2018	Hourly	finding that bitcoin futures play a more important role in price discovery
Entrop, et al.	The determinants of price discovery on bitcoin markets (2020)	Journal of Futures Markets	Information Share, Component Share	12/17/2017 - 03/31/2019	Minute	finding that price discovery measures vary significantly over time without one market being clearly dominant over the other
Abueldia, et al.	The development of Bitcoin futures: Exploring the interactions between	Finance Research Letters	Information Share, Component Share, Information Leadership Share (Yan)	12/18/2017 - 02/26/2018	Minute	finding that futures dominate price discovery relative to spot market, and CBOE futures are found to be the

	cryptocurrency derivatives (2020)		Information Leadership Share (Putros)			lead source compared to CME
Alexander, et al.	Price Discovery in Bitcoin: The Impact of Unregulated Markets (2020)	Journal of Financial Stability	Generalized Information Share	04/01/2019 - 01/30/2020	Minute	finding that, in a multi-dimensional setting, including the main price leaders within futures, perpetuals, and spot markets, CME bitcoin futures have a very minor effect on price discovery and that faster speed of adjustment and information absorption occurs on the unregulated spot and derivatives platforms than on CME bitcoin futures
Aleji and Mirzash	Bitcoin spot and futures market microstructure (2020)	Journal of Futures Markets	Information Share, Component Share	01/02/2019 - 02/28/2019	5-Minute	finding that relatively more price discovery occurs on CME as compared to four spot exchanges
Chang, et al.	Efficient price discovery in the bitcoin markets (2020)	Available at SSRN: https://ssrn.com/abstract=3733924	Component Share	07/01/2019 - 12/31/2019	Minute	finding that CME bitcoin futures dominate price discovery
Hung, et al.	Trading activity and price discovery in Bitcoin futures markets (2021)	Journal of Empirical Finance	Modified Information Share	12/26/2017 - 04/30/2019	15-Minute	finding that the bitcoin spot market dominates price discovery
Wu, et al.	Fractional cointegration in bitcoin spot and futures markets (2021)	Journal of Futures Markets	Fractional Version of Component Share	12/18/2017 - 7/31/2020	Minute	finding that CME bitcoin futures dominate price discovery

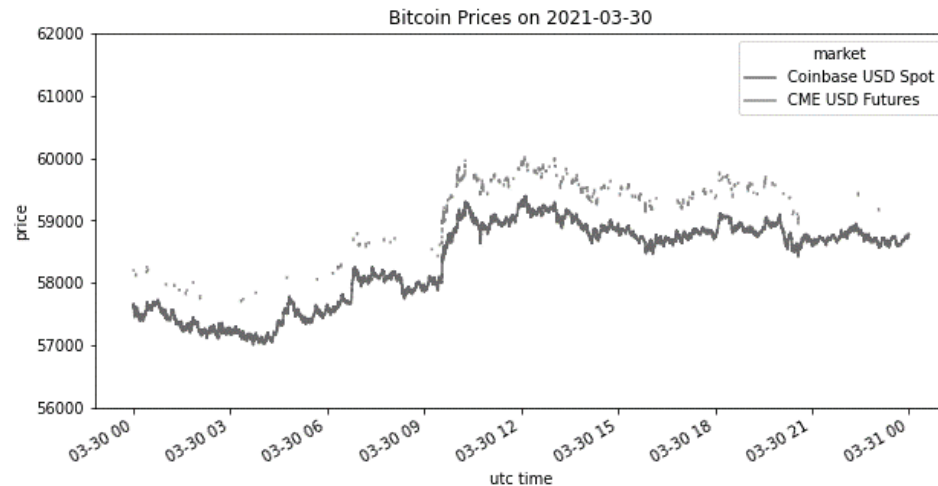
Sponsor noted that each of the studies reviewed used metrics derived from the Vector Error Correction Model (VECM) or an extension of VECM to examine price discovery. Within the column of metrics, Information Share (IS) proposed by Hasbrouk (1995) and Component Share (CS) pioneered by Gonzalo and Granger (1995) are mostly used. Hasbrouk transforms the VECM into a vector moving average with a common factor component and transitory component and defines the metric IS to measure the proportion of the variance of the permanent component of prices coming from each market with Cholesky factorization. The IS is not unique if switching the order of input price data of the underlying two markets. To overcome it, Lien and Shrestha (2009) use

eigenvalue decomposition instead of Cholesky factorization - this metric is called Modified Information Share. Both Information Share and Modified Information Share are used for pair-wise analysis. The extension of Modified Information Share to more than two markets is called Generalized Information Share (Lien and Shrestha, 2014). Component Share is calculated from the normalized orthogonal coefficients to the vector of the lagged error correlation term in the VECM. Fractional Component Share is derived similarly to CS but from a version of VECM that uses a fractional difference operator instead of the first order difference operator. Information Leadership Share (Yan and Zivot, 2010) and Information Leadership Share (Putniņš, 2013) combine Information Share and Component Share non-linearly.

Although the metrics used in reviewed studies are similar, the conclusions from these papers are mixed as to which markets lead or lag in price discovery. Buccheri (2021)⁶¹ discussed the limitations for VECM derived metrics and noted that when price observations are sparse (See CME price observations in Figure 1 as an example), a lot of zero returns are produced through imputation; therefore, the time series of prices strongly deviate from the standard semi-martingale assumption and sample covariances can be downward biased. The authors in Buccheri (2021) conclude that when the prices have a high level of sparsity, the VECM is clearly mis-specified and the estimates are potentially biased.

Figure 1: Bitcoin Price Observations

⁶¹ Buccheri, Giuseppe, Giacomo Bormetti, Fulvio Corsi, and Fabrizio Lillo. "Comment on: Price discovery in high resolution." *Journal of Financial Econometrics* 19, no. 3 (2021): 439-451. <https://doi.org/10.1093/jfinec/nbz008>. The authors comment on the limitations of using information share within markets with trades on high resolution frequencies. The paper illustrates why the application of a VECM methodology like information share would be mis-specified and the OLS estimates could be biased because of high sparsity in the data.



This conclusion in Bucchini (2021) provides theoretical support on why VECM derived metrics are not suitable to use when the underlying data has high level of sparsity but does not quantify the actual impact in practice. In “Suitable Price Discovery Measurement of Bitcoin Spot and Futures Markets”⁶² (Robertson and Zhang, 2022), the authors demonstrate that the conclusions of Bucchini (2019) are of high importance by quantifying the impact of sparsity within bitcoin markets.

The authors show IS and CS are sensitive to input data’s level of sparsity with numerical experiments. When the sparsity level is about 10% for a designed-to-lead market, IS and CS show the known-leading market clearly contributes a majority to price discovery. However, as the sparsity is increased, the known-leading market begins to contribute less to price discovery and, when the level of sparsity is higher than 30%, using IS and CS produces mixed results or the opposite conclusion of what is true.

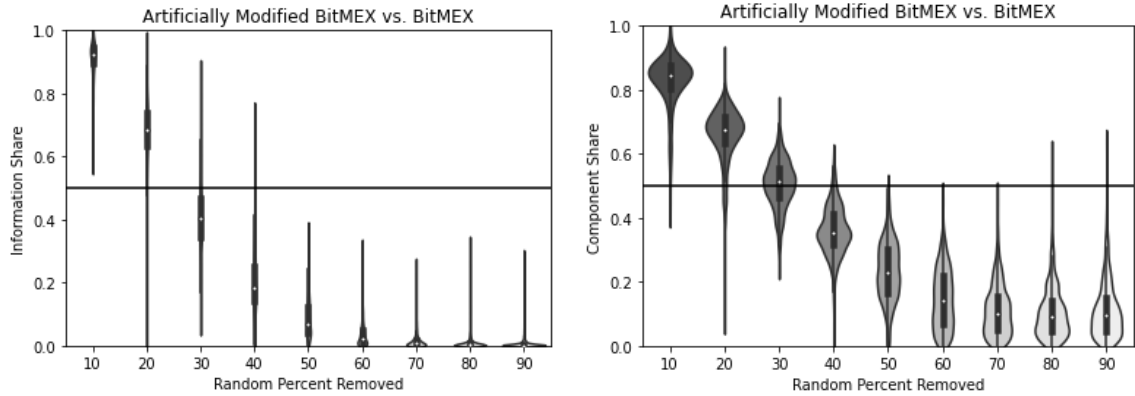
Bucchini explains the effect of using VECM based metrics with violation of model assumptions from theoretical perspective, and Robertson and Zhang show the effect

⁶² Robertson, Kevin, and Jiani Zhang. (2022) "Suitable Price Discovery Measurement of Bitcoin Spot and Futures Markets." Available at SSRN: <https://ssrn.com/abstract=4012165> or <http://dx.doi.org/10.2139/ssrn.4012165>.

with numerical experiments and provide empirical evidence about to what extent using VECM can give unreliable results. Both emphasize that sparsity level is important regarding price discovery measurement using VECM based metrics.

Although Robertson and Zhang state that the choice of market to create the experiment data does not change the conclusion, Sponsor replicated their experiment using a different market to provide additional evidence on the impact of sparsity on VECM based metrics. Sponsor calculates the IS and CS every day from Q1 2019 through Q1 2021 (821 days) between the artificially leading (by 3 seconds) version of the BitMEX USD perpetual futures market at 9 different levels of sparsity (measured by the percent of random data removed, 10% increments starting at 10% and ending at 90%) and the original BitMEX USD perpetual futures market. To satisfy the VECM assumption that prices/returns are synchronous, Sponsor used the typical and commonly used form of forward filling using previous second values. Figure 2 shows the distributions of daily IS and CS values for the designed-to-lead market. The x axis is the sparsity level, and the y axis is IS/CS. The plotted results show that, as the level of sparsity is increased, the known leading market begins to contribute less to price discovery causing mixed results (both IS and CS dropped from above 0.8 to less than 0.2) and the opposite conclusion of what is true. The market is considered leading when IS/CS is above 0.5.

Figure 2: Effect of Sparsity on Information Share and Component Share



The observations from Sponsor's experiment confirm the conclusions of Buccheri (2019) and Robertson and Zhang (2022) that VECM derived metrics are sensitive to the level of sparsity within market data.

Robertson and Zhang (2022) show that only about half of the markets included in the quarter of 2021 have trades for every second increment. Taking the CME USD futures market, Coinbase USD spot market, and BitMEX USD perpetual futures markets as representatives of bitcoin futures market, spot market, and perpetual market, Table 3 shows their comparison in average time in seconds between trades in each quarter. In the first quarter of 2019, on average, CME records a trade every 111 seconds (~2 minutes) while Coinbase records a trade every 3 seconds. In more recent time periods, the sparsity level decreases for CME, but is still 25 times higher than the Coinbase USD spot market and BitMEX USD perpetual futures market in the first quarter of 2021.

Table 3: Average Time Between Trades

Exchange	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1
CME	111	36	57	68	34	53	43	37	25
Coinbase	3	2	2	2	2	2	2	1	1
BitMEX	2	1	1	1	1	1	2	2	1

Due to the high sparsity of CME Bitcoin futures data, the Sponsor attributes the “mixed results” in previous academic studies that have failed to demonstrate that the CME bitcoin futures market constitutes a market of significant size to the problems associated with using econometric models without considering the suitability. When analyzing information flow with daily data that has low sparsity level, the analysis using metrics derived from VECM (e.g., Hu, et al., 2019) is convincing. However, for analyzing intraday information flow and accounting for the varying levels of sparsity among the bitcoin market, the sponsor believes the framework of correlation-based lead-lag analysis using the Hayashi-Yoshida (HY) estimator⁶³ to compute correlation and its extension by other academic researchers, including Hoffman (2013)⁶⁴ and Huth (2011),⁶⁵ to obtain the lead-lag seconds and lead-lag ratio is more suitable.

Lead-lag seconds and lead-lag ratio are the typical output metrics in correlation-based lead-lag analysis. The former measures the relative time in lead or lag between two markets and the latter measures the relative strength of the lead-lag relationship between

⁶³ Hayashi, Takaki, and Nakahiro Yoshida. "On covariance estimation of non-synchronously observed diffusion processes." *Bernoulli* 11, no. 2 (2005): 359-379. <http://www.jstor.org/stable/3318933>. The authors proposed a novel method (HY estimator) of estimating the covariance of two diffusion processes when they are observed only at discrete times in a non-synchronous manner. This methodology addresses the issue that the traditional realized covariance estimator encounters, which is that the choice of regular interval size and data interpolation scheme can lead to unreliable estimation. The new method Hayashi and Yoshida introduced in this paper is free from any interpolation and therefore avoids the bias and other problems caused by it.

⁶⁴ Hoffmann, Marc, Mathieu Rosenbaum, and Nakahiro Yoshida. "Estimation of the lead-lag parameter from non-synchronous data." *Bernoulli* 19, no. 2 (2013): 426-461. <http://www.jstor.org/stable/23525731>. The authors propose a methodology for modeling the lead-lag effect between two financial assets with non-synchronous data based on Hayashi and Yoshida's work (2015). It has been applied in various price discovery research publications. The Sponsor's analysis utilized this methodology to obtain pairwise lead-lag seconds between two markets.

⁶⁵ Huth, Nicolas, and Frédéric Abergel. "High frequency lead/lag relationships—empirical facts." *Journal of Empirical Finance* 26 (2014): 41-58. <https://doi.org/10.1016/j.jempfin.2014.01.003>.

two markets. They are both free from any imputation or sampling within non-synchronous and/or infrequent data and have proven to be useful in price discovery research in other markets. Dao (2018)⁶⁶ applied the Hayashi-Yoshida estimator in a lead-lag framework with these two metrics on price discovery research of the S&P 500 index and the two most liquid ETFs that track it. This academic study is the first to analyze the effect of information arrival on the lead-lag relationship among related spot instruments and concludes that sophisticated investors have a more significant effect on the lead-lag relationship. The analysis from this study confirms that using the Hayashi-Yoshida estimator in a lead-lag framework is suitable for analyzing high frequency, tick level, non-synchronous data even timestamped to milliseconds. Sponsor notes that there is academic research studying high-frequency lead-lag relationships between multiple bitcoin spot markets using the Hayashi-Yoshida estimator with lead-lag seconds and lead-lag ratio from Schei (2019)⁶⁷. The suitability test performed by Robertson and Zhang (2022) shows that these two metrics are not sensitive to the level of sparsity within markets. Their experiment shows that the accuracy of lead-lag seconds is consistent across the varying levels of sparsity and the lead-lag ratio moves closer to 1 (i.e., provides less certainty about the result) when the level of sparsity increases. Lead-lag ratio quantifies how strong the relationship is, and the strength can be considered as the confidence level associated with the conclusion that one market leads or lags another.

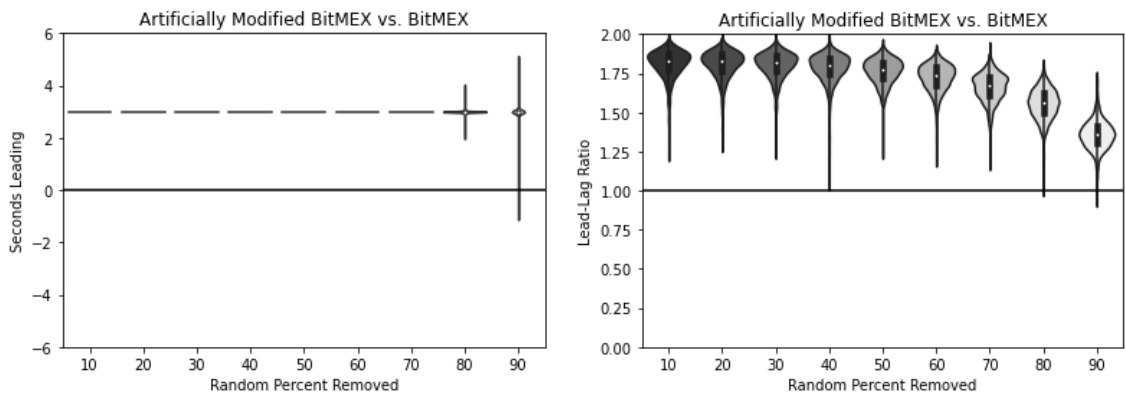
⁶⁶ Dao, Thong Minh, Frank McGroarty, and Andrew Urquhart. "Ultra-high-frequency lead-lag relationship and information arrival." *Quantitative Finance* 18, no. 5 (2018): 725-735. <https://doi.org/10.1080/14697688.2017.1414484>.

⁶⁷ Schei, Norheim Schei. "High Frequency Lead-Lag Relationships in the Bitcoin Market." (unpublished master's thesis, 2019). Copenhagen Business School, Copenhagen, Denmark.

The closer the lead-lag ratio is to 1, the less certain one can conclude the relationship is of one market's lead/lag over the other market.

Again, Sponsor replicated the suitability test using the HY estimator in a lead-lag framework performed by Robertson and Zhang (2022) but on the BitMEX USD perpetual futures market. As mentioned by the authors, no interpolation is needed in this version of the experiment because the HY estimator computes directly from non-synchronous data. Figure 3 shows the distribution of daily lead-lag seconds and daily lead-lag ratios between the artificially leading and sparse versions of the BitMEX USD perpetual futures market and the original BitMEX USD perpetual futures market.

Figure 3: Effect of Sparsity on Lead-Lag Seconds and Lead-Lag Ratio



The observations from Sponsor's experiment match those of Robertson and Zhang (2022) that the HY estimator used in a lead-lag framework is not sensitive to the level of sparsity within market data. The distribution of lead-lag seconds shows that the time shift parameter that maximizes the HY estimator is consistently +3 seconds – which is the amount of time the artificial market was advanced by. The distribution of the lead-lag ratios are consistently above 1, showing that the leading relationship of the artificial market over the original is strong. As Robertson and Zhang also noted, the lead-lag ratios decay towards the level of 1 with increasing levels of sparsity, which matches the

expectation that the lead-lag relationship becomes weak when one of the markets rarely has data.

Sponsor's analysis expands the research of *Schei* by using the Hayashi-Yoshida estimator with a lead-lag framework and the same metrics but on both bitcoin spot and futures markets. It is worth mentioning, the lead-lag framework is different than a VECM based approach. A VECM based approach, for example IS, measures the proportion of the variance of the permanent component of prices coming from each market and the total variance and the variance proportion change when the number of markets included changes. Therefore, "omitting substantial information flows from other markets [by using a two-dimensional methodology] can produce misleading results", which Alexander and Heck (2020)⁶⁸ state in their study as the motivation to use Generalized Information Share instead of the original Information Share metric. This is a limitation for two-dimensional VECM based metrics and does not apply to Sponsor's correlation-based lead-lag analysis. This is because VECM based metrics measure the proportion of price discovery among markets while a lead-lag framework measures how much time one market leads/lags another without the need to compute the total variance of the permanent component of prices.

Lead-Lag Analysis

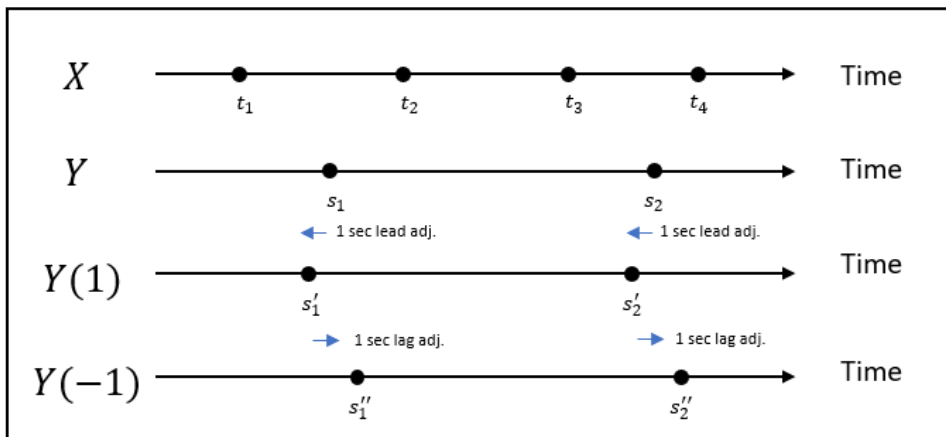
In the lead-lag analysis, Sponsor examined the pairwise lead-lag relationship within the spot market and futures market, as well as across them. For each pair, Sponsor computed the correlation coefficients using the HY estimator between one market price

⁶⁸ C. Alexander & D. Heck "Price discovery in Bitcoin: The impact of unregulated markets", 50 J. Financial Stability 100776 (2020).

time series and a second market price time series as well as timestamp-adjusted (leading/lagging) versions of the second market to find the time delta that maximizes their correlation. The range of time deltas is from $-N$ seconds to N seconds in one second increments. In the Sponsor's analysis, the parameter N is set as 15. For illustration below, Sponsor uses the pair of CME USD Futures (denoted as price time series X) and Coinbase USD Spot (denoted as price time series Y) as an example to describe the process.

Step 1: Fix the timestamp of CME and adjust the timestamps of Coinbase from N seconds lagging to N seconds leading. Figure 4 shows this process with time deltas equal to 1 and -1 for illustration purpose.

Figure 4: Adjustment of Timestamps



Notes: Each dot is a price observation; t_i and s_j are the observation timestamps of X and Y ; $Y(1)$ and $Y(-1)$ are timestamp adjusted price time series with 1 second backward shift and 1 second forward shift respectively.

Step 2: Compute the correlation coefficients between CME price time series and each of timestamp-adjusted time series of Coinbase with l seconds ($l \in [-N, N]$) lead/lag using HY estimator. The correlation coefficient is defined as (Hayashi & Yoshida 2005):

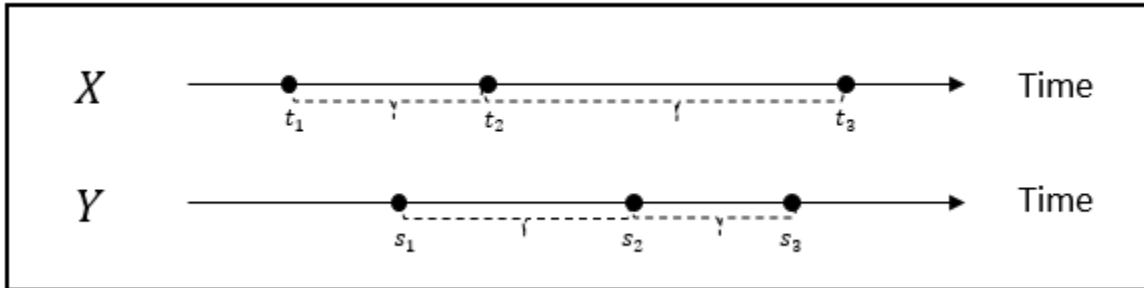
$$\hat{\rho} = \frac{\sum_{i,j} r_X^i r_Y^j \mathbb{I}_{\{O_{ij} \neq \emptyset\}}}{\sqrt{\sum_i (r_X^i)^2 \sum_j (r_Y^j)^2}},$$

where

- X and Y are trade prices on two different markets
- $r_X^i = X_{t_i} - X_{t_{i-1}}$ and t_i is the i_{th} observed time of X
- $r_Y^j = Y_{s_j} - Y_{s_{j-1}}$ and s_j is the j_{th} observed time of Y
- The observed times, t_i and s_j for X and Y are independent
- O_{ij} is the overlapping time between interval (t_{i-1}, t_i) and interval (s_{i-1}, s_i)
- \mathbb{I} is defined as an indicator function, $\mathbb{I} = \begin{cases} 1, & O_{ij} \neq \emptyset \\ 0, & O_{ij} = \emptyset \end{cases}$

The numerator of $\hat{\rho}$ is the covariance between CME and Coinbase, which equates to the sum of every product of price changes that share a time overlap. Figure 5 shows this process with a simple example.

Figure 5: Data Points Used in HY Estimator



Notes: The interval (t_1, t_2) is overlapped with the interval (s_1, s_2) , and the interval (t_2, t_3) is overlapped with both the interval (s_1, s_2) and the interval (s_2, s_3) . Therefore, the covariance is calculated by summing the products of the following pairs of price changes: $(X_{t_2} - X_{t_1}, Y_{s_2} - Y_{s_1})$, $(X_{t_3} - X_{t_2}, Y_{s_2} - Y_{s_1})$, and $(X_{t_3} - X_{t_2}, Y_{s_3} - Y_{s_2})$.

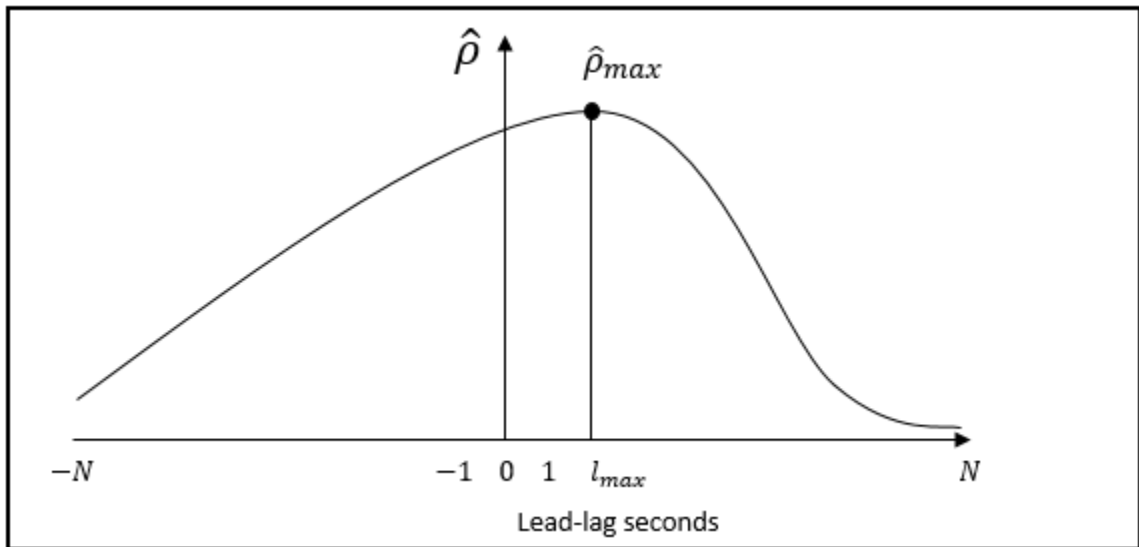
Step 3: Collect the correlation coefficients with different lead-lag seconds as a correlation curve and search for the value l_{max} from $-N$ to N that maximizes their correlation.

Meanwhile, compute the lead-lag ratio between CME and Coinbase, llr , to measure the strength of the lead-lag relationship (Huth & Abergel 2012). It is defined as

$$llr = \frac{\sum_{l=1}^N \hat{\rho}^2(l_i)}{\sum_{l=1}^N \hat{\rho}^2(-l_i)}.$$

The further the llr is from 1, the stronger the relationship is of one market's lead/lag over the other market. The llr is used in conjunction with the HY correlation coefficient and the lead-lag seconds to provide a more comprehensive analysis. If $llr \in [0.95, 1.05]$ or l_{max} is zero, we conclude neither market leads. If llr is not in the range $[0.95, 1.05]$ and l_{max} is positive, CME leads Coinbase by l_{max} seconds and vice versa. Figure 6 shows an example of the correlation curve.

Figure 6: Example of the Correlation Curve



Notes: The l_{max} is the lead-lag seconds, and $\hat{\rho}_{max}$ is the corresponding maximum HY correlation.

These three steps provide the pairwise lead-lag seconds between two markets. To measure a market's overall price discovery leadership, the results are aggregated by taking the average lead-lag seconds it has with all other markets included in a quarter.

Conclusion of Reasonable Likelihood – Lead Lag Analysis

Sponsor's results suggest that, out of the 20 spot markets and 26 futures markets analyzed, the CME bitcoin futures market plays the most important role in price discovery during each quarter spanning from the first quarter of 2019 to the first quarter

of 2021. Figure 7 shows the average pairwise lead-lag seconds between CME bitcoin futures and other bitcoin markets with 95% confidence intervals using the calculations introduced in previous session. The blue dots represent the CME's average leading time in seconds and the black line represents the confidence interval. All the blue dots are above 0 and only 6 markets have lower confidence bounds slightly below 0; therefore, Sponsor concludes the CME bitcoin futures market leads all other markets included in the analysis.

Figure 7: Pairwise Lead-Lag Seconds of CME Bitcoin Futures Market

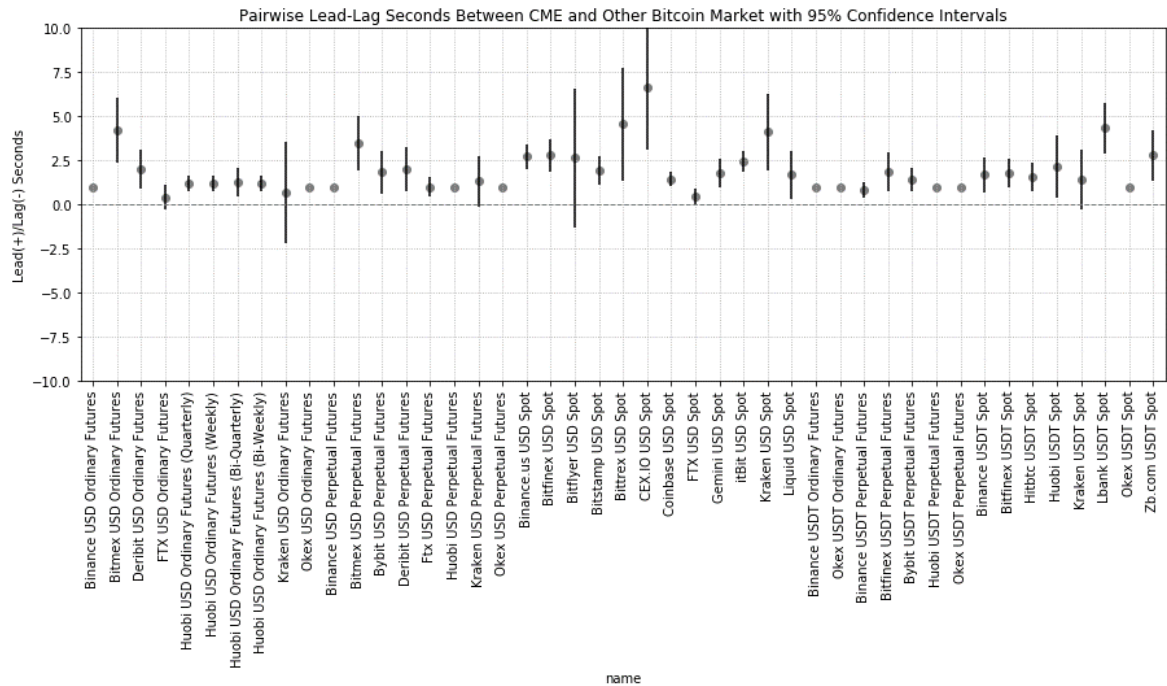


Table 4 lists the detailed results for every pair of CME against other markets with lead-lag seconds used to create Figure 7 along with lead-lag ratios.

Table 4: Pairwise Lead-Lag Leadership (Lead-Lag Seconds | Lead-Lag Ratio) of CME Bitcoin Futures Market

Category	Exchange	Lead-Lag Seconds Lead-Lag Ratio								
		2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1
USD Ordinary Futures	Binance						1 1.48	1 1.44	1 1.15	1 1.20
USD Ordinary Futures	BitMEX	9 1.34	6 1.35	5 1.50	5 1.38	3 1.39	4 1.44	3 1.72	2 1.18	1 1.21
USD Ordinary Futures	Deribit	5 1.27	3 1.27	3 1.31	2 1.26	1 1.25	1 1.31	1 1.32	1 1.10	1 1.12
USD Ordinary Futures	FTX					0 0.96	0 0.99	1 1.08	0 1.04	1 1.10
USD Ordinary Futures	Huobi (Bi-Quarterly)				2 1.25	1 1.26	1 1.32	1 1.52	1 1.16	1 1.20
USD Ordinary Futures	Huobi (Weekly)				2 1.25	1 1.27	1 1.27	1 1.43	1 1.12	1 1.15
USD Ordinary Futures	Huobi (Quarterly)						2 1.49	1 1.40	1 1.12	1 1.16
USD Ordinary Futures	Huobi (Bi-Weekly)				2 1.20	1 1.22	1 1.23	1 1.35	1 1.09	1 1.13
USD Ordinary Futures	Kraken							2 1.11	0 1.01	0 1.02
USD Ordinary Futures	Okex						1 1.28	1 1.47	1 1.14	1 1.19
USD Perpetual Futures	Binance							1 1.54	1 1.17	1 1.23
USD Perpetual Futures	BitMEX	8 1.36	4 1.31	4 1.45	4 1.40	2 1.39	3 1.47	3 1.92	2 1.24	1 1.38
USD Perpetual Futures	Bybit				4 1.42	2 1.39	2 1.44	1 1.86	1 1.26	1 1.41
USD Perpetual Futures	Deribit	6 1.37	3 1.28	2 1.38	2 1.33	1 1.31	1 1.37	1 1.61	1 1.16	1 1.22
USD Perpetual Futures	FTX	0 0.99	0 1.02	2 1.07	2 1.15	1 1.11	1 1.24	1 1.55	1 1.16	1 1.21
USD Perpetual Futures	Huobi							1 1.84	1 1.23	1 1.33
USD Perpetual Futures	Kraken							2 1.87	1 1.13	1 1.12
USD Perpetual Futures	Okex							1 1.54	1 1.14	1 1.20
USD Spot	Binance.us			4 1.16	3 1.19	3 1.17	2 1.26	3 1.45	2 1.20	2 1.28
USD Spot	Bitfinex	5 1.33	4 1.29	3 1.44	3 1.34	2 1.35	3 1.41	2 1.68	2 1.22	1 1.32
USD Spot	Bitfyer		13 1.06	0 1.03	2 1.05	6 1.07	0 1.02	0 1.02	0 1.04	0 1.00
USD Spot	Bitstamp	3 1.19	3 1.24	3 1.31	3 1.24	1 1.21	1 1.19	1 1.26	1 1.13	1 1.19
USD Spot	Bittrex	15 1.22	6 1.25	5 1.35	4 1.18	2 1.25	2 1.25	2 1.38	3 1.19	2 1.29
USD Spot	CEX.IO	13 1.23	11 1.17	14 1.24	4 1.12	6 1.18	3 1.15	3 1.22	3 1.12	3 1.22
USD Spot	Coinbase	2 1.46	2 1.30	2 1.40	2 1.34	1 1.32	1 1.35	1 1.62	1 1.20	1 1.28
USD Spot	FTX			0 1.05	0 1.05	0 0.99	0 1.02	1 1.26	1 1.16	1 1.23
USD Spot	Gemini	4 1.19	3 1.21	2 1.25	2 1.21	1 1.22	1 1.22	1 1.37	1 1.15	1 1.20
USD Spot	uBit	4 1.28	3 1.20	3 1.24	2 1.23	2 1.08	2 1.18	2 1.27	2 1.22	2 1.34
USD Spot	Kraken	9 1.37	8 1.31	6 1.47	3 1.30	2 1.35	2 1.33	3 1.66	2 1.25	2 1.41
USD Spot	Liquid	5 1.13	4 1.12	2 1.09	2 1.07	1 1.06	0 1.05	1 1.05	0 1.03	0 1.05
USDT Ordinary Futures	Binance									1 1.08
USDT Ordinary Futures	Okex						1 1.29	1 1.39	1 1.14	1 1.19
USDT Perpetual Futures	Binance				1 1.23	1 1.22	1 1.27	1 1.43	1 1.13	0 1.17
USDT Perpetual Futures	Bitfinex			0 1.01	1 1.05	4 1.15	2 1.10	2 1.23	2 1.15	2 1.16
USDT Perpetual Futures	Bybit					2 1.08	2 1.36	1 1.71	1 1.23	1 1.35
USDT Perpetual Futures	Huobi								1 1.16	1 1.27
USDT Perpetual Futures	Okex							1 1.52	1 1.15	1 1.20

USDT Spot	Binance	5 1.29	2 1.23	2 1.31	1 1.27	1 1.25	1 1.28	1 1.47	1 1.15	1 1.20
USDT Spot	Bitfinex	0 1.00	3 1.05	3 1.10	3 1.13	2 1.14	2 1.20	1 1.19	1 1.12	1 1.21
USDT Spot	Hitbtc	4 1.27	2 1.25	2 1.35	1 1.24	1 1.22	1 1.22	1 1.36	1 1.12	1 1.22
USDT Spot	Huobi	7 1.24	3 1.27	2 1.33		1 1.27	1 1.29	1 1.50	1 1.15	1 1.20
USDT Spot	Kraken					0 1.01	0 1.04	3 1.08	2 1.08	2 1.14
USDT Spot	LBank			5 1.55	4 1.37		4 1.40			
USDT Spot	Okex					1 1.13	1 1.28	1 1.52	1 1.16	1 1.20
USDT Spot	Zb.com	6 1.20	5 1.26	3 1.37	4 1.35	2 1.40	2 1.37	1 1.64	1 1.18	1 1.23

Additionally, Sponsor compared the CME bitcoin futures market's leadership with other markets by aggregating each market's lead-lag by taking the average of each markets lead-lag seconds over all other markets in a quarter.

Figure 8 shows that, while other category leaders can change rank each quarter, they consistently rank below CME futures in average seconds leading. This consistency, along with the Sponsor's inclusion standards of strict overall average market correlations and demonstrative lead-lag ratios, speaks to the strength of CME futures' leadership across spot and futures markets globally.⁶⁹

⁶⁹ For more information, see Memorandum from the Division of Trading and Markets regarding a September 8, 2021 meeting with representatives from Fidelity Digital Assets, et al. (Sept. 8, 2021) available at <https://www.sec.gov/comments/sr-cboebzx-2021-039/srcboebzx2021039-250110.pdf>.

Figure 8: Leading Market Category – Based on the Leading Market within each Category

Leading Category	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures	CME Bitcoin Futures
1 st Lagging Category	USD Spot	USD Spot	USD Perpetual Futures	USD Spot	USD Futures	USD Futures	USD Spot	USD Futures	USD Futures
2 nd Lagging Category	USDT Spot	USD Perpetual Futures	USD Spot	USDT Spot	USD Spot	USD Spot	USD Futures	USD Spot	USDT Futures
3 rd Lagging Category	USD Perpetual Futures	USDT Spot	USDT Spot	USD Futures	USD Perpetual Futures	USDT Perpetual Futures	USDT Perpetual Futures	USD Perpetual Futures	USD Perpetual Futures
4 th Lagging Category	USD Futures	USD Futures	USD Futures	USD Perpetual Futures	USDT Spot	USDT Spot	USDT Spot	USDT Perpetual Futures	USDT Perpetual Futures
5 th Lagging Category	N/A	N/A	N/A	USDT Perpetual Futures	USDT Perpetual Futures	USD Perpetual Futures	USDT Futures	USDT Spot	USDT Spot
6 th Lagging Category	N/A	N/A	N/A	N/A	N/A	USDT Futures	USD Perpetual Futures	USDT Futures	USD Spot
	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021

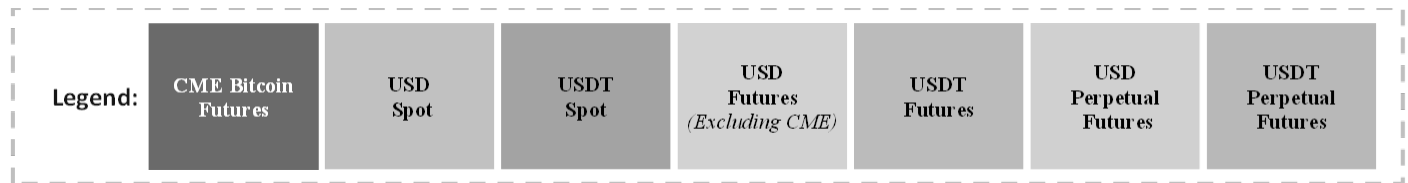
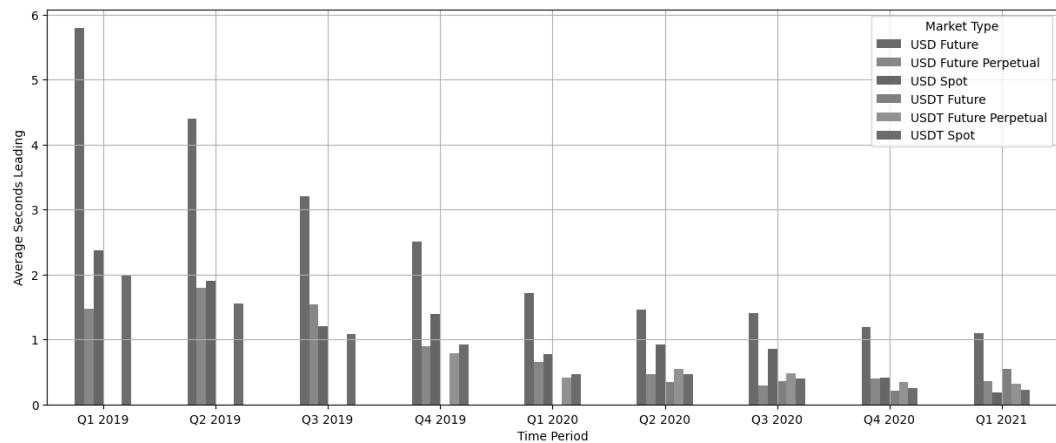


Figure 9 shows the average lead over all other markets for each market category leader by quarter. For example, the market leader within the USD Futures category (which is consistently CME) leads all other markets by an average of ~5.8 seconds in Q1 2019.

Figure 9: Category Leaders' Average Lead Among All Markets

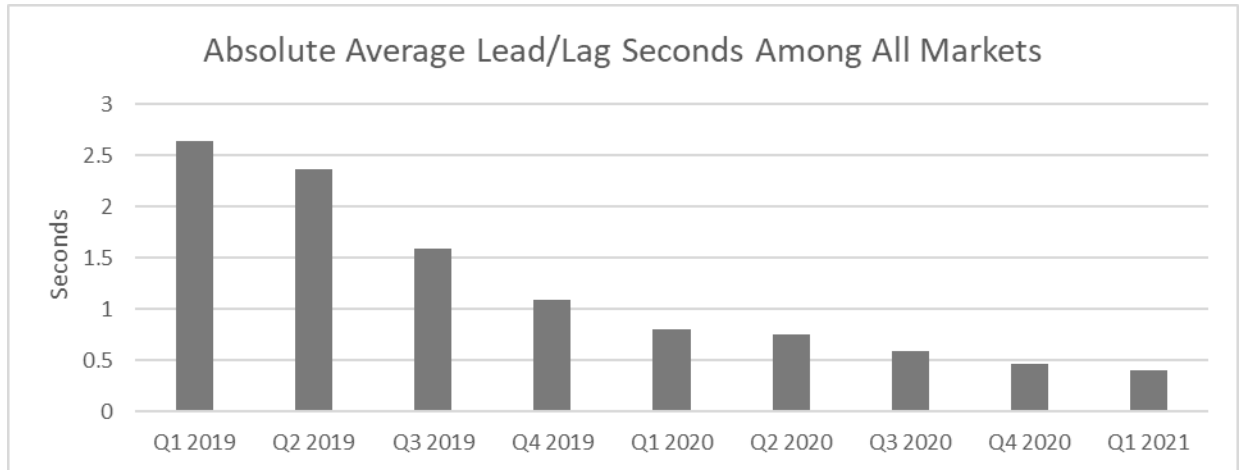


Another observation from Figure 9 is that there is a clear decline in seconds-leading through time for these market category leaders. As discussed further below (Figure 10 & 11), this declining lead-lag time does not mean that a particular market category leader's strength in leadership is deteriorating, as it is not only evident for market category leaders, but all markets, and suggests efficiency within the bitcoin markets has continued to improve.

The lead-lag relationships between and among bitcoin futures and spot markets provide insights into the directional influences of markets on price discovery, with the CME Bitcoin futures market playing the most important role in price discovery during each quarter spanning from the first quarter of 2019 to the first quarter of 2021, as noted above. Arbitrage between the CME Bitcoin futures market and spot markets would tend to counter an attempt to manipulate the spot market alone. Thus, the Sponsor's analysis supports the conclusion that there is a reasonable likelihood that a person attempting to manipulate the Shares would also have to trade on the CME Bitcoin futures market to manipulate the ETP.

Figure 10 shows that the absolute average of every market's overall lead-lag seconds (average lead-lag seconds over all other markets) has steadily decreased from the first quarter of 2019 to the first quarter of 2021. This suggests that the efficiency within bitcoin markets has continued to improve, and the window of arbitrage opportunity has closed with increasing speed.

Figure 10: Absolute Average Lead/Lag Seconds Among All Markets



While average lead/lag among markets has decreased over time, this does not mean that relative leadership among markets has decreased over time. To understand relative leadership among markets during different time periods, Sponsor standardizes each market's average lead/lag with other markets by dividing the market's average lead with other markets by the average of every market's absolute average lead with other markets. This relative leadership score (RLS) of market x is defined as:

$$rls_x = \frac{\mu_x}{\sum_n^i |\mu_i| / n}$$

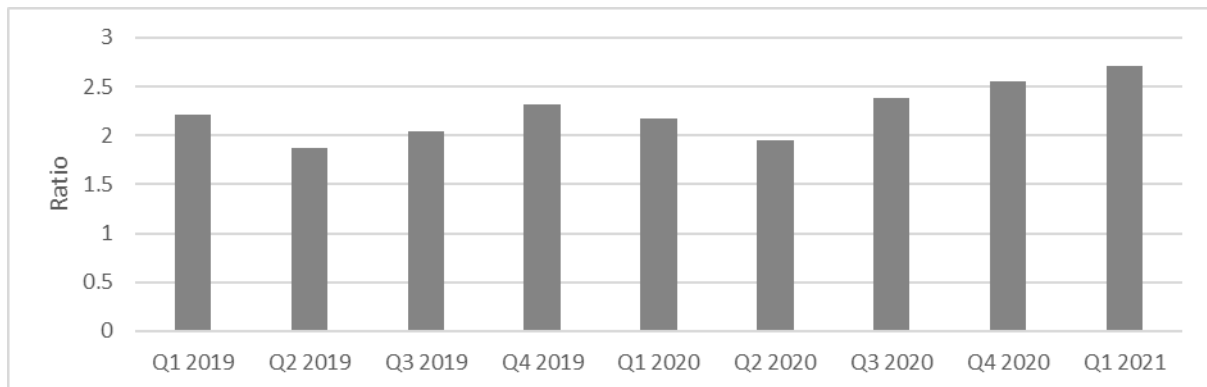
where

- x is a market
- μ_x is the average lead of market x over all other markets
- $\sum_i^n |\mu_i|$ is the sum of each market's absolute lead over all other markets
- n is the number of markets included in the time period

The RLS of the CME bitcoin futures market indicates that the strength of CME leadership has not deteriorated, shown in Figure 11. The RLS for the CME USD futures market is relatively stable – indicating that there is no deterioration in the strength of this

market and even a slight increase in strength during the last three quarters observed – even the average lead/lag (the denominator of RLS plotted in Figure 10) among markets has decreased over time.

Figure 11: CME Bitcoin Futures Market Relative Leadership Score



To summarize, the top rank in average leading seconds and the pairwise leading results with confidence intervals for the CME bitcoin futures market, support the conclusion that there is a reasonable likelihood that a person attempting to manipulate the Shares would also have to trade on the CME bitcoin futures market to manipulate the ETP. The RLS of the CME bitcoin futures market provides evidence that that likelihood has stayed consistent while the efficiency within the bitcoin markets has continued to improve.

3. Trading in the Shares Unlikely to be Predominant Influence on Prices in CME Bitcoin Futures Market

As described above, the Commission requires the Exchange to conclude that it is unlikely that trading in the Shares would become the predominant influence on prices in the CME Bitcoin Futures market. In a recent approval order⁷⁰ of a bitcoin-futures ETP,

⁷⁰ See Exchange Act Release No. 94620 (April 6, 2022), 87 FR 21676 (April 12, 2022) (the “Teucrium Approval”) and 94853 (May 5, 2022) (collectively, with the Teucrium Approval, the

the Commission concluded that it is unlikely that trading in the proposed bitcoin-futures ETP would be the predominant influence on prices in the CME bitcoin futures market.

The Commission specifies as reasons for its conclusion “the maturation of the CME bitcoin futures market since its inception in 2017-including, but not limited to, the overall size, volume, liquidity, and number of years of trading in the CME bitcoin futures market and evidence from the 1940 Act-registered Bitcoin Futures ETFs”. Sponsor agrees with the Commission’s remarks on the maturation of the CME bitcoin futures market and would also add “price discovery leadership”, as discussed above, to the list of maturation evidence. As evidence from the 1940 Act-registered Bitcoin Futures ETFs, the Commission states it “has neither observed any disruption to the CME bitcoin futures market, nor any evidence that the Bitcoin Futures ETFs have exerted dominant influence on CME bitcoin futures prices.” Through its own analysis, Sponsor again agrees with the Commission’s remarks and, as discussed below, also found that the level of price discovery leadership associated with the CME bitcoin futures market remained unchanged since the launch of Bitcoin Futures ETFs.

In considering the question of whether the proposed bitcoin-spot ETP would be the predominant influence on prices in the CME bitcoin futures market, Sponsor conducted a numerical experiment to best estimate the effect since it is not feasible to directly evaluate the effect for the proposed ETP before its existence. The experiment is designed to observe whether the price discovery leadership of the CME bitcoin futures market can be changed by a new market (specifically an ETP) entering with high trade activity. If it is, it is reasonable to assume that the proposed bitcoin-spot ETP could be the

“Bitcoin Futures Approvals”).

predominant influence on prices in the CME bitcoin futures market if it has high trade activity. However, if it is not, it is also reasonable to assume that the proposed bitcoin-spot ETP would not be the predominant influence. From the numerical experiment, Sponsor aims to demonstrate that high trade activity or volume is not the key factor in price discovery.

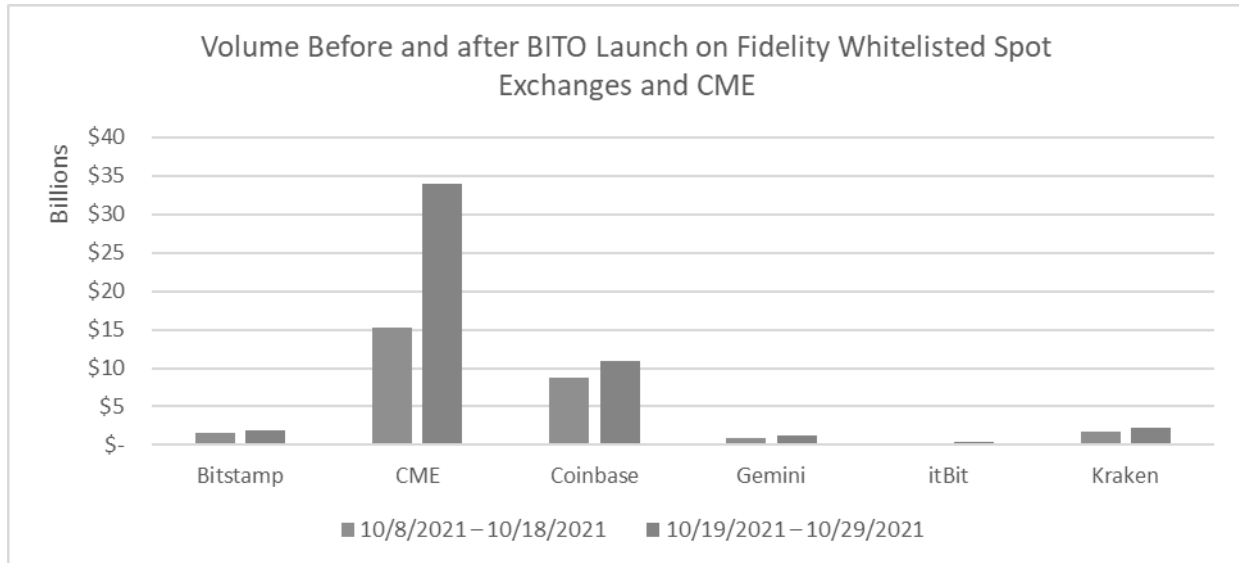
Sponsor used trade data from a recently launched bitcoin futures-based ETF, ProShares Bitcoin Strategy ETF (“BITO”), which caused high trading activity after its launch, as the model in its experiment. BITO is a Commission-registered ETF that is listed and traded on a US regulated national securities exchange and was launched on October 18, 2021. As described in its prospectus, BITO seeks to invest primarily in CME Bitcoin futures contracts.

Sponsor selected two periods, representing a regular period with normal trading activity and a period with new information and heightened trading activity (from approximately \$15 billion to \$34 billion) in the CME Bitcoin futures market as seen from Figure 12. The experiment is to compare whether the leadership of CME increased during the second period. If not, it is reasonable to conclude the heightened trading activity in the futures market did not increase the leadership of the futures market. With that same logic, the potential heightened trading activity in the spot market would not increase the leadership of the spot market.

Sponsor obtained tick level data from Coin Metrics for all markets included in the lead-lag analysis described above spanning two specific periods: 11 days before the launch of BITO (10/8/2021 – 10/18/2021) and 11 days after the launch (10/19/2021 – 10/29/2021). For the 11 days after the launch of BITO, Sponsor obtained tick-level trade

data on BITO via Bloomberg and aggregated to the one second floor level using the same method described above.

Figure 12: Volume Comparison Before and After BITO Launch on Fidelity Whitelisted Spot Exchanges and CME

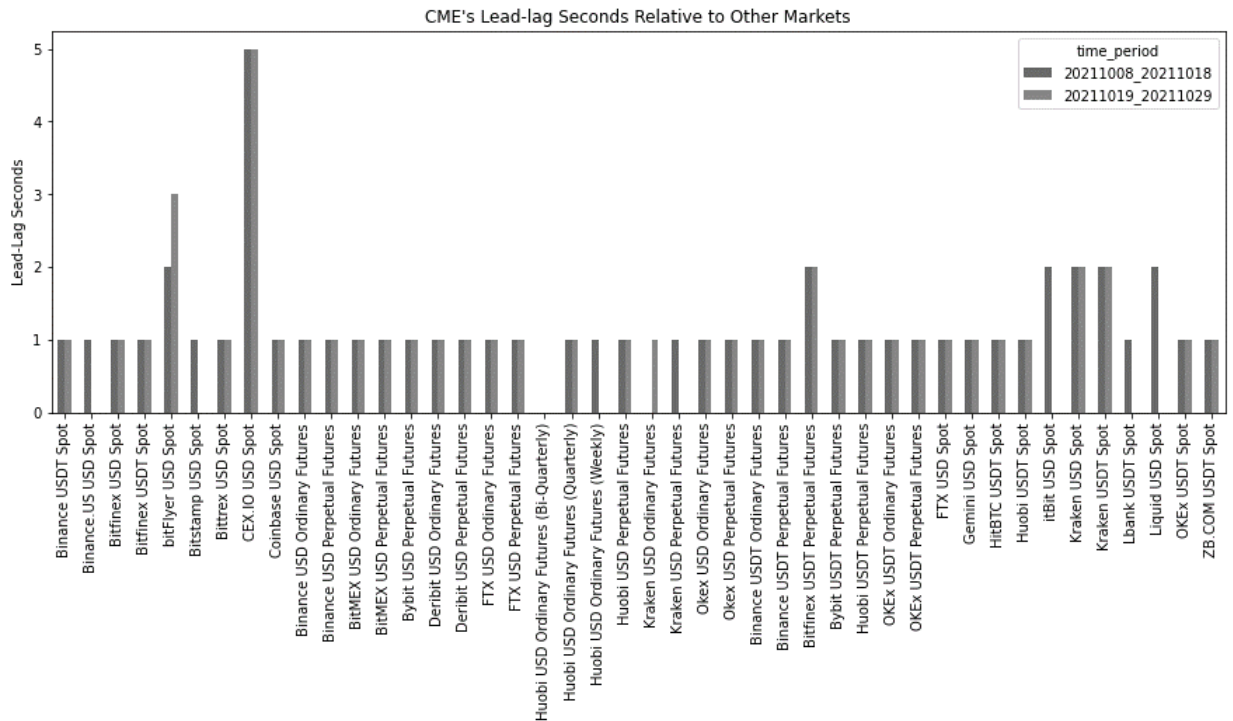


Sponsor examined the pairwise lead-lag relationship between CME bitcoin futures and all other markets included. For each pair, Sponsor computed the correlation coefficients using the same lead-lag framework and HY estimator between CME bitcoin futures and the second market price timeseries as well as timestamp-adjusted (leading/lagging) versions of the second market to find the time delta that maximized their correlation. The only differences between Sponsor's BITO analysis and the quarterly analysis spanning Q1 2019 through Q1 2021 discussed above are the timeframes and a stricter average correlation threshold (.2 instead of .1) in the BITO analysis given the shorter timeframe.

The results of this experiment in Figure 13 show the CME bitcoin futures market leading all markets for the period of 11 days prior to the launch of BITO. The price

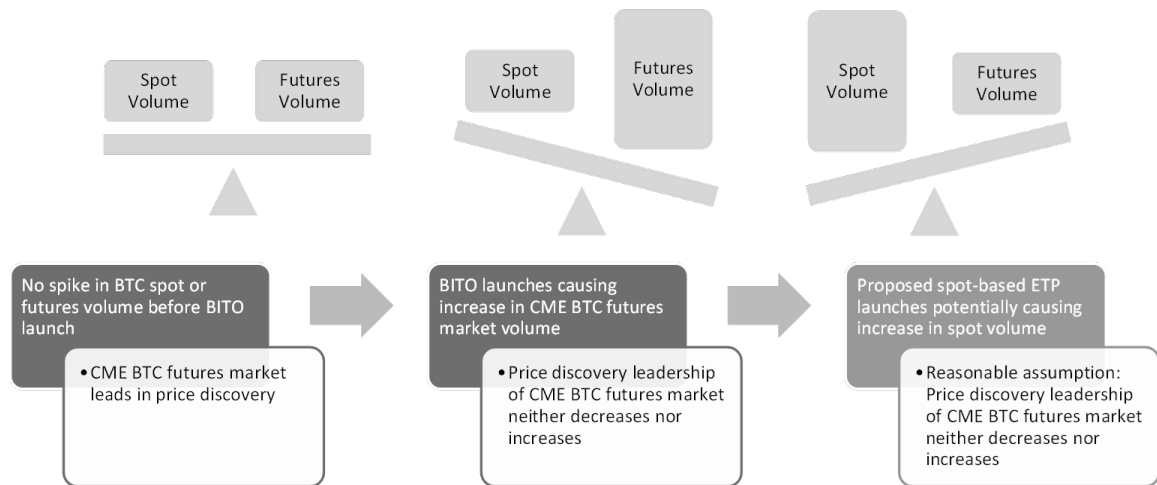
discovery leadership of the CME bitcoin futures market still leads after BITO's launch in the period of 10/19/2021 to 10/29/2020, but CME's leadership does not become stronger even though the trading volume increased significantly.

Figure 13: CME's Lead-lag Seconds Relative to Other Market Before and After BITO's Launch



Given that the CME bitcoin futures market did not see an increase in price discovery leadership even during a period of heightened activity (trading volume increased from 15 billion to 34 billion) on that market after BITO's launch, Sponsor believes it would be unreasonable to assume that the level of the spot markets' leadership would increase (CME bitcoin futures market price leadership would deteriorate) due to the potential heightened trade activity in the spot markets after the proposed spot-based ETP launch. This dynamic is illustrated in Figure 14.

Figure 14: Impact of heightened market activity on CME BTC futures market price discovery leadership



Based on the experiment, Sponsor concludes the inherent features of futures are more important factors in price discovery and allow this market to dominate even with lower or changing levels of volume. This conclusion is also supported in academic research⁷¹ studying similar patterns in other asset classes. It is worth mentioning that it is not feasible to directly evaluate the effect for the proposed ETP before its existence. The numerical experiment above is to best estimate the effect and eliminate the concern on the potential high trade activity in spot markets caused by the proposed ETP.

Moreover, Sponsor believes that there will be no material effect of the Shares' trade prices on CME bitcoin futures prices from secondary market trading activities. To estimate this effect, Sponsor uses BITO in its analysis as the first ETP launched in US and a reasonable example of a general ETP. Sponsor examined the pairwise lead-lag relationship between BITO and all other markets included in previous analysis. As seen

⁷¹ Futures with much smaller trading volumes compared to the underlying spot market can still dominate price discovery. See Hauptfleisch, Martin, Tālis J. Putniņš, and Brian Lucey. "Who sets the price of gold? London or New York." *Journal of Futures Markets* 36, no. 6 (2016): 564-586. <https://doi.org/10.1002/fut.21775> for more information.

in Table 5, only four markets have a lead-lag ratio (the strength measurement of the lead-lag relationship) outside the range of [0.95, 1.05] and non-zero lead-lag seconds to conclude they are leading or lagging. Sponsor interprets this result as BITO's lead-lag relationship with other bitcoin markets is not significant.

Table 5: Markets with significant lead/lag relationships to BITO

	BITO Leadership (Lead-lag Seconds)	Lead-Lag Ratio
CME USD Ordinary Futures	-1	0.909
Kraken USD Ordinary Futures	-1	0.926
Huobi USD Ordinary Futures (Bi-Quarterly)	-1	0.933
CEX.IO USD Spot	12	1.067

Regarding BITO's price discovery contribution measured by lead-lag seconds, it does not lead any bitcoin markets except CEX.IO USD spot market, which not only lags BITO but also lags all other bitcoin markets. More importantly, the CME bitcoin futures market leads BITO with the highest level of certainty as seen from the lead-lag ratio. As such, Sponsor concludes that the proposed ETP would have no material impact on CME bitcoin futures prices.

The gold market shares certain characteristics with the bitcoin market – both gold and bitcoin have a finite supply, are traded globally in various market venues against various currency pairs and have a robust futures market. In addition, many investors view bitcoin as a form of digital gold and in looking to determine the potential impact of price discovery in trading in the ETP shares on the secondary market, the Sponsor looks to the gold market as an analogous market to bitcoin when looking to determine the impact of

price discovery. According to a previous study⁷² the Sponsor reviewed, the authors analyzed intraday data on gold prices from 1997-2014 and concluded that futures markets tend to lead price discovery in the gold market despite the spot market having ten times more volume than the US futures market. A second study⁷³ that the sponsor analyzed, came to the same conclusion that futures are the global leader in price discovery for gold, with a growing influence of ETPs.

Further, Sponsor believes that Shares of the Trust trading on the secondary market could have a positive impact on the CME Bitcoin Futures market leading position. Sponsor believes this due to the use of CME Bitcoin Futures in hedging activities by market participants. One such example, is when Authorized Participants transact on both the secondary and primary markets. In order to arbitrage or fulfill large basket trades on behalf of clients, Authorized Participants may transact in the primary market with the ETP by creating and/or redeeming and then immediately offsetting that transaction in the secondary market. Because the primary market is settled in-kind (meaning the exchange of shares and bitcoin) and the secondary market is settled in cash (meaning the exchange of shares and fiat currency), the Authorized Participant needs to transact in the bitcoin spot market. Given there is a lag between the secondary market transaction, the striking of the NAV per Share in the primary market and the settlement of the primary market transaction, the Authorized Participants will look to hedge their exposure to the bitcoin market using bitcoin futures. For the reasons discussed throughout this document such as

⁷² See Hauptfleisch, et. al.

⁷³ Sehgal, Sanjay, Neharika Sobti, and Florent Diesting. "Who leads in intraday gold price discovery and volatility connectedness: Spot, futures, or exchange-traded fund?" *Journal of Futures Markets* 41, no. 7 (2021): 1092-1123. <https://doi.org/10.1002/fut.22208>.

the transparency, low fees, and leverage capabilities, many market participants look to hedge themselves using futures and Sponsor believes that will be the case with Authorized Participant transactions in respect of the Trust as well.

The Exchange also believes that trading in the Shares would not be the predominant force on prices in the Bitcoin Futures market (or spot market) for several additional reasons, including the significant volume in the Bitcoin Futures market, the size of bitcoin's market cap (approximately \$1 trillion), and the significant liquidity available in the spot market. According to the Sponsor's analysis, in the second quarter of 2021, bitcoin futures volume greatly exceeded volumes in the spot markets. The volume of the bitcoin futures market was approximately \$7.1 trillion where the volume of the bitcoin spot markets was approximately \$1.4 trillion.⁷⁴ In addition to the Bitcoin Futures market data points cited above, the spot market for bitcoin is also very liquid. According to data from CoinRoutes from February 2021, the cost to buy or sell \$5 million worth of bitcoin averages roughly 10 basis points with a market impact of 30 basis points.⁷⁵ For a \$10 million market order, the cost to buy or sell is roughly 20 basis points with a market impact of 50 basis points. Stated another way, a market participant could enter a market buy or sell order for \$10 million of bitcoin and only move the market 0.5%. More strategic purchases or sales (such as using limit orders and executing through OTC bitcoin trade desks) would likely have less obvious impact on the market—which is consistent with MicroStrategy, Tesla, and Square being able to collectively

⁷⁴ For more information, see Memorandum from the Division of Trading and Markets regarding a September 8, 2021 meeting with representatives from Fidelity Digital Assets, et al. (Sept. 8, 2021) *available at* <https://www.sec.gov/comments/sr-cboebzx-2021-039/srcboebzx2021039-250110.pdf>.

⁷⁵ These statistics are based on samples of bitcoin liquidity in USD (excluding stablecoins or Euro liquidity) based on executable quotes on Coinbase Pro, Gemini, Bitstamp, Kraken, LMAX Exchange, BinanceUS, and OKCoin during February 2021.

purchase billions of dollars in bitcoin. As such, the combination of Bitcoin Futures leading price discovery, the overall size of the bitcoin market, and the ability for market participants, including authorized participants creating and redeeming with the Trust, to buy or sell large amounts of bitcoin without significant market impact will help prevent the Shares from becoming the predominant force on pricing in either the bitcoin spot or Bitcoin Futures markets, satisfying part (b) of the test outlined above.

(b) SEC Approval of Bitcoin Futures ETFs and CME Surveillance

Bitcoin Futures represent a growing influence on pricing in the spot bitcoin market as has been laid out above and in other proposals to list and trade Spot Bitcoin ETPs. Pricing in Bitcoin Futures is based on pricing from spot bitcoin markets. As noted above, the statement from the Teucrium Approval that “CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts...indirectly by trading outside of the CME bitcoin futures market,” makes clear that the Commission believes that CME’s surveillance can capture the effects of trading on the relevant spot markets on the pricing of Bitcoin Futures. While the Commission makes clear in the Teucrium Approval that the analysis only applies to the Bitcoin Futures market as it relates to an ETP that invests in Bitcoin Futures as its only non-cash or cash equivalent holding, if CME’s surveillance is sufficient to mitigate concerns related to trading in Bitcoin Futures for which the pricing is based directly on pricing from spot bitcoin markets, it’s not clear how such a conclusion could apply only to ETPs based on Bitcoin Futures and not extend to Spot Bitcoin ETPs.

Additionally, a Bitcoin Futures ETF is actually potentially more susceptible to manipulation than a Spot Bitcoin ETP where the underlying trust offers only in-kind creation and redemption. Specifically, the pricing of Bitcoin Futures is based on prices from spot bitcoin markets, while shares of a Spot Bitcoin ETP would represent an interest in bitcoin directly and authorized participants for a Spot Bitcoin ETP would be able to source bitcoin from any exchange and create or redeem with the applicable trust regardless of the price of the underlying index. Potential manipulation of a Bitcoin Futures ETF would require manipulation on the spot markets on which the pricing for Bitcoin Futures are based while the in-kind creation and redemption process and fungibility of bitcoin means that a would be manipulator of a Spot Bitcoin ETP would need to manipulate the price across all bitcoin markets or risk simply providing arbitrage opportunities for authorized participants. Further to this point, this arbitrage opportunity also acts to reduce any incentives to manipulate the price of a Spot Bitcoin ETP because the underlying trust will create and redeem shares at set rates of bitcoin per share without regard to the price that the ETP is trading at in the secondary market or the price of the underlying index. As such, the Exchange believes that part (a) of the significant market test outlined above is satisfied and that common membership in ISG between the Exchange and CME would assist the listing exchange in detecting and deterring misconduct in the Shares.

Recently, the Commission allowed three ETFs primarily invested in CME Bitcoin futures to register and list on a national securities exchange (“Bitcoin Futures ETFs”).⁷⁶

⁷⁶ ProShares Bitcoin Strategy ETF (BITO); VanEck Bitcoin Strategy ETF (XBTF); Valkyrie Bitcoin Strategy ETF (BTF).

As described in its prospectus, BITO does not invest directly in bitcoin but rather seeks to provide capital appreciation primarily through managed exposure to cash-settled bitcoin futures contracts traded on commodity exchanges registered with the Commodity Futures Trading Commission (“CFTC”). Currently, the only such contracts that are traded on, or subject to the rules of, the CME. CME Bitcoin futures are cash-settled in US dollars based on the CME DF Bitcoin Reference Rate (“BRR”), which is a volume-weighted composite of U.S. dollar-bitcoin trading activity on certain constituent exchanges including Bitstamp, Coinbase, Gemini, itBit, Kraken, and LMAX Digital.⁷⁷

The CME reference rate is based on substantially the same pricing data from digital asset trading platforms as the Index used by the Trust. The Index is designed to reflect the performance of bitcoin in U.S. dollars and the current constituent exchange composition of the Index is Bitstamp, Coinbase, Gemini, itBit, Kraken, and LMAX Digital. As noted recently by a commenter on another Rule 19b-4 application for a bitcoin spot ETP, Bitcoin Futures ETFs and the Trust are exposed to the same underlying pricing data and the same risks of manipulation.⁷⁸

There is no basis, in law or in fact, for determining that the Bitcoin Futures ETFs satisfy the standards of Section 6(b)(5) of the Exchange Act while the Trust does not. Bitcoin pricing, whether in the spot market or the futures market, is determined in the digital asset trading platforms where supply and demand interact; and there is almost complete overlap in the underlying digital asset trading platforms that supply pricing

⁷⁷ See CME CF Bitcoin Reference Rate Index data at <https://www.cmegroup.com/trading/cryptocurrency-indices/cf-bitcoin-reference-rate.html>.

⁷⁸ See Letter from Joseph A. Hall et al. to Vanessa Countryman on SR-NYSEArca-2021-90 (Nov. 29, 2021).

information for the reference indices used by both the CME Bitcoin futures market and the Trust.

Just three weeks after the Bitcoin Futures ETFs began trading, the Commission again rejected a 19b-4 application filed by a spot bitcoin ETP on the grounds that the listing exchange had failed to demonstrate satisfaction of the Section 6(b)(5) standard.⁷⁹ The Commission specifically disagreed with the exchange's premises that (i) it is inconsistent with the Section 6(b)(5) standard for the Commission to permit a Bitcoin Futures ETF registered under the 1940 Act to launch but to disapprove the approval of a bitcoin spot ETP; (ii) it is inconsistent for the Commission to approve a Bitcoin Futures ETF that trades exclusively in CME Bitcoin Futures contracts and conclude that the CME Bitcoin Futures market is not a "market of significant size" under the Section 6(b)(5) standard; and (iii) there is no basis of fact or law that the 1940 Act is designed to prevent market manipulation in the markets in which the Bitcoin Futures ETF trades. Instead, the Commission stated that it considers each proposed rule change on its own merits and noted that the proposed rule did not relate to a product regulated under the 1940 Act and did not relate to the same underlying holdings as the Bitcoin Futures ETFs. In practice, however, the Commission did not address why a bitcoin spot ETP fails to satisfy the Section 6(b)(5) standard when it is exposed to the same underlying risks of manipulation as the CME Bitcoin Futures contracts primarily held by Bitcoin Futures ETFs, which have been allowed to register and list.

⁷⁹ Order Disapproving a Proposed Rule Change to List and Trade Shares of the VanEck Bitcoin Trust under BZX Rule 14.11(e)(4), Commodity-Based Trust Shares, Securities Exchange Act Release No. 93559 (Nov. 12, 2021), 86 Fed. Reg. 64,539 (Nov. 18, 2021) (SR-CboeBZX-2021-019) ("VanEck Order").

As recently as 2020, the Commission approved new exchange listing rules permitting ETFs registered under the 1940 Act, including Bitcoin Futures ETFs, to list under an exchange's generic listing standards without having to submit separate rule filing pursuant to Section 19(b).⁸⁰ In determining that the rule change was reasonably designed to help prevent fraudulent and manipulative acts and practice, the SEC stated that ETFs would be required to disclose its portfolio holdings under the 1940 Act and that the exchange rule included requirements relating to fire walls and procedures to prevent the use and dissemination of material, non-public information regarding the applicable ETF index and portfolio.⁸¹ Importantly, with regard to surveillance, the Commission stated only that the rule change required the exchange to implement and maintain written surveillance procedures for ETF shares and noted that the exchange would use its existing surveillance procedures applicable to derivative products to monitor trading in ETF shares. In approving the generic listing standards, the SEC did not require in-depth analyses into any particular markets or index components.⁸² While noting the ability of an exchange to rely on FINRA for information related to certain securities held by ETPs, the Commission focused its determination on the exchange's surveillance of the market for ETF shares. As a result, Bitcoin Futures ETFs are permitted to list and trade under generic listing standards based solely on the oversight of the underlying futures by the CFTC and futures exchanges with no acknowledgement or assessment by the

⁸⁰ Self-Regulatory Organizations; NYSE Arca, Inc.; Notice of Filing of Amendment No. 2 and Order Granting Accelerated Approval of a Proposed Rule Change, as Modified by Amendment No. 2, to Adopt NYSE Arca Rule 5.2-E(j)(8) Governing the Listing and Trading of Exchange-Traded Fund Shares (Apr. 13, 2020) (SR-NYSEArca-2019-81).

⁸¹ Id.

⁸² Id.

Commission of the actual risk of fraud or manipulation related to underlying bitcoin spot markets referenced by such bitcoin futures – even when such bitcoin markets mirror those proposed as reference markets in the Index used by the Trust and other spot bitcoin ETP listing proposals.

Because (i) the risks of manipulation in the bitcoin markets impacting the Trust are thus indistinguishable from those same risks impacting Bitcoin Futures ETFs; (ii) the Trust will have the same pricing sources, and (iii) the Trust will be subject to the same risks of manipulation as shares of Bitcoin Futures ETFs; the Exchange believes that the proposed rule change is sufficiently designed to prevent fraudulent and manipulative acts and practice. Approving this change is consistent with the treatment of substantially similar products, and the Exchange believes that any finding to the contrary would result in arbitrarily disparate treatment to the Trust.

(c) Other Means to Prevent Fraudulent and Manipulative Acts and Practices

The Commission has also recognized that the “regulated market of significant size” standard is not the only means for satisfying Section 6(b)(5) of the act, specifically providing that a listing exchange could demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement.⁸³

The Exchange believes that such conditions are present. Specifically, the significant liquidity in the spot market and the impact of market orders on the overall

⁸³ See Winklevoss Order at 37580. The Commission has also specifically noted that it “is not applying a “cannot be manipulated” standard; instead, the Commission is examining whether the proposal meets the requirements of the Exchange Act and, pursuant to its Rules of Practice, places the burden on the listing exchange to demonstrate the validity of its contentions and to establish that the requirements of the Exchange Act have been met. *Id.* at 37582.

price of bitcoin mean that attempting to move the price of bitcoin is costly and has grown more expensive over the past year. In January 2020, for example, the cost to buy or sell \$5 million worth of bitcoin averaged roughly 30 basis points (compared to 10 basis points in 2/2021) with a market impact of 50 basis points (compared to 30 basis points in 2/2021).⁸⁴ For a \$10 million market order, the cost to buy or sell was roughly 50 basis points (compared to 20 basis points in 2/2021) with a market impact of 80 basis points (compared to 50 basis points in 2/2021). As the liquidity in the bitcoin spot market increases, it follows that the impact of \$5 million and \$10 million orders will continue to decrease the overall impact in spot price.

As noted above, the Commission also permits a listing exchange to demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement. The Exchange and Sponsor believe that such conditions are present.

Surveillance Sharing Agreement

The Commission also permits a listing exchange to demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement. The Exchange and Sponsor believe that such conditions are present. The Exchange is proposing to take additional steps to those described above to supplement its ability to obtain information that would be helpful in detecting, investigating, and deterring fraud and market manipulation in the Commodity-Based Trust Shares. On June 21, 2023, the Exchange reached an agreement

⁸⁴ These statistics are based on samples of bitcoin liquidity in USD (excluding stablecoins or Euro liquidity) based on executable quotes on Coinbase Pro, Gemini, Bitstamp, Kraken, LMAX Exchange, BinanceUS, and OKCoin during February 2021.

on terms with Coinbase, Inc. (“Coinbase”), an operator of a United States-based spot trading platform for Bitcoin that represents a substantial portion of US-based and USD denominated Bitcoin trading,⁸⁵ to enter into a surveillance-sharing agreement (“Spot BTC SSA”) and executed an associated term sheet. Based on this agreement on terms, the Exchange and Coinbase will finalize and execute a definitive agreement that the parties expect to be executed prior to allowing trading of the Commodity-Based Trust Shares.

The Spot BTC SSA is expected to be a bilateral surveillance-sharing agreement between the Exchange and Coinbase that is intended to supplement the Exchange’s market surveillance program. The Spot BTC SSA is expected to have the hallmarks of a surveillance-sharing agreement between two members of the ISG, which would give the Exchange supplemental access to data regarding spot Bitcoin trades on Coinbase where the Exchange determines it is necessary as part of its surveillance program for the Commodity-Based Trust Shares.⁸⁶ This means that the Exchange expects to receive market data for orders and trades from Coinbase, which it will utilize in surveillance of the trading of Commodity-Based Trust Shares. In addition, the Exchange can request further information from Coinbase related to spot bitcoin trading activity on the Coinbase exchange platform, if the Exchange determines that such information would be necessary to detect and investigate potential manipulation in the trading of the Commodity-Based Trust Shares.⁸⁷

⁸⁵ According to a Kaiko Research report dated June 26, 2023, Coinbase represented roughly 50% of exchange trading volume in USD-BTC trading on a daily basis during May 2023.

⁸⁶ For additional information regarding ISG and the hallmarks of surveillance-sharing between ISG members, see <https://isgportal.org/overview>.

⁸⁷ The Exchange also notes that it already has in place ISG-like surveillance sharing agreement with Cboe Digital Exchange, LLC and Cboe Clear Digital, LLC.

In-Kind Creation and Redemption

Further, and consistent with prior points above, offering only in-kind creation and redemption will provide unique protections against potential attempts to manipulate the Shares. While the Sponsor believes that the Benchmark which it uses to value the Trust's bitcoin is itself resistant to manipulation based on the methodology further described below, the fact that creations and redemptions are only available in-kind makes the manipulability of the Benchmark significantly less important. Specifically, because the Trust will not accept cash to buy bitcoin in order to create new shares or, barring a forced redemption of the Trust or under other extraordinary circumstances, be forced to sell bitcoin to pay cash for redeemed shares, the price that the Sponsor uses to value the Trust's bitcoin is not particularly important.⁸⁸ When authorized participants are creating with the Trust, they need to deliver a certain number of bitcoin per share (regardless of the valuation used) and when they're redeeming, they can similarly expect to receive a certain number of bitcoin per share. As such, even if the price used to value the Trust's bitcoin is manipulated (which the Sponsor believes that its methodology is resistant to), the ratio of bitcoin per Share does not change and the Trust will either accept (for creations) or distribute (for redemptions) the same number of bitcoin regardless of the value. This not only mitigates the risk associated with potential manipulation, but also discourages and disincentivizes manipulation of the Benchmark because there is little financial incentive to do so.

Wise Origin Bitcoin Trust

⁸⁸ While the Benchmark will not be particularly important for the creation and redemption process, it will be used for calculating fees.

The Registration Statement includes the following description of the Trust and its operations. The Trust will issue Shares that represent fractional undivided beneficial interests in and ownership of the Trust. The Trust is a Delaware statutory trust that operates pursuant to the Declaration of Trust and Trust Agreement (the “Trust Agreement”), between Sponsor and Delaware Trust Company, the Delaware trustee of the Trust (the “Trustee”). Sponsor manages the Trust and is responsible for the ongoing registration of the Shares. The Trust will engage Fidelity Service Company, Inc. (“FSC”), a Sponsor affiliate, to be the administrator (“Administrator”). A third-party transfer agent (the “Transfer Agent”) will facilitate the issuance and redemption of Shares of the Trust and respond to correspondence by Trust Shareholders and others relating to its duties, maintain Shareholder accounts, and make periodic reports to the Trust.⁸⁹ Another affiliate of Sponsor, Fidelity Distributors Corporation, will be the marketing agent (“Marketing Agent”) in connection with the creation and redemption of “Baskets” of Shares. The Sponsor will provide assistance in the marketing of the Shares. FDAS, another Sponsor affiliate, will serve as the Custodian.

According to the Registration Statement, the Trust is neither an investment company registered under the Investment Company Act of 1940, as amended (the “1940 Act”),⁹⁰ nor a commodity pool for purposes of the Commodity Exchange Act (“CEA”), and neither the Trust nor the Sponsor is subject to regulation as a commodity pool operator or a commodity trading adviser in connection with the Shares.

⁸⁹ The Exchange notes that the Sponsor is finalizing negotiations with several service providers, and it will submit an amendment to this proposal upon finalization of those arrangements.

⁹⁰ 15 U.S.C. 80a-1.

The Trust's investment objective is to seek to track the performance of bitcoin, as measured by the performance of the Fidelity Bitcoin Index PR (the "Index"), less the Trust's expenses and other liabilities. In seeking to achieve its investment objective, the Trust will hold bitcoin and will value its Shares daily as of 4:00 p.m. Eastern time using the same methodology used to calculate the Index and process all creations and redemptions in transactions with authorized participants. The Trust is not actively managed.

The Bitcoin Custodian

The Sponsor has selected FDAS to be the Trust's Custodian. FDAS is a New York state limited liability trust⁹¹ that serves as bitcoin custodian to institutional and individual investors. The Custodian maintains a substantial portion of the private keys associated with the Trust's bitcoin in "cold storage" or similarly secure technology. Cold storage is a safeguarding method with multiple layers of protections and protocols, by which the private key(s) corresponding to the Trust's bitcoin is (are) generated and stored in an offline manner. Private keys are generated in offline computers that are not connected to the internet so that they are resistant to being hacked. Cold storage of private keys may involve keeping such keys on a non-networked computer or electronic device or storing the public key and private keys on a storage device (for example, a USB thumb drive) or printed medium and deleting the keys from all computers.

⁹¹ New York state trust companies are subject to rigorous oversight similar to other types of entities, such as nationally chartered banking entities, that hold customer assets. Like national banks, they must obtain specific approval of their primary regulator for the exercise of their fiduciary powers. Moreover, limited purpose trust companies engaged in the custody of digital assets are subject to even more stringent requirements than national banks which, following initial approval of trust powers, generally can exercise those powers broadly without further approval of the OCC. In contrast, NYDFS requires in their approval orders that limited purpose trust companies obtain separate approval for all material changes in business.

The Custodian may receive deposits of bitcoin but may not send bitcoin without use of the corresponding private keys. In order to send bitcoin when the private keys are kept in cold storage, either the private keys must be retrieved from cold storage and entered into a software program to sign the transaction, or the unsigned transaction must be sent to the “cold” server in which the private keys are held for signature by the private keys. At that point, the Custodian can transfer the bitcoin. The Trust’s Transfer Agent will facilitate the settlement of Shares in response to the placement of creation orders and redemption orders from Authorized Participants. The Trust generally does not intend to hold cash or cash equivalents. However, there may be situations where the Trust will hold cash on a temporary basis. The Trust will enter into a cash custody agreement with an unaffiliated regulated bank as custodian of the Trust’s cash and cash equivalents.

The Index

The Index is designed to reflect the performance of bitcoin in U.S. dollars. The current exchange composition of the Index is Bitstamp, Coinbase, Gemini, itBit, Kraken, and LMAX Digital. The Index methodology was developed by Fidelity Product Services, LLC (the “Index Provider”) and is administered by the Fidelity Index Committee. Coin Metrics, Inc. is the third-party calculation agent for the Index.⁹²

The Index is constructed using bitcoin price feeds from eligible bitcoin spot markets and a volume-weighted median price (“VWMP”) methodology, calculated every 15 seconds based on VWMP spot market data over rolling 5-minute increments to develop a bitcoin price composite. The Index market value is the volume-weighted median price of bitcoin in U.S. dollars over the previous five minutes, which is calculated

⁹² The Sponsor’s affiliates have an ownership interest in Coin Metrics, Inc.

by (1) ordering all individual transactions on eligible spot markets over the previous five minutes by price, and then (2) selecting the price associated with the 50th percentile of total volume. Using rolling five-minute segments means malicious actors would need to sustain efforts to manipulate the market over an extended period of time, or such malicious actors would need to replicate efforts multiple times across eligible bitcoin spot markets, potentially triggering review. This extended period also supports authorized participant activity by capturing volume over a longer time period, rather than forcing authorized participants to mark an individual close or auction. The use of a median price reduces the ability of outlier prices to impact the NAV, as it systematically excludes those prices from the NAV calculation. The use of a volume-weighted median (as opposed to a traditional median) serves as an additional protection against attempts to manipulate the NAV by executing a large number of low-dollar trades, because any manipulation attempt would have to involve a majority of global spot bitcoin volume in a three-minute window to have any influence on the NAV. Further, removing the highest and lowest prices further protects against attempts to manipulate the NAV, requiring bad actors to act on multiple eligible bitcoin spot markets at once to have any ability to influence the price.

Availability of Information

In addition to the price transparency of the Index, the Trust will provide information regarding the Trust's bitcoin holdings as well as additional data regarding the Trust. The Trust will provide an Intraday Indicative Value ("IIV") per Share updated every 15 seconds, as calculated by the Exchange or a third-party financial data provider during the Exchange's Regular Trading Hours (9:30 a.m. to 4:00 p.m. Eastern time). The

IIV will be calculated by using the prior day's closing NAV per Share as a base and updating that value during Regular Trading Hours to reflect changes in the value of the Trust's bitcoin holdings during the trading day.

The IIV disseminated during Regular Trading Hours should not be viewed as an actual real-time update of the NAV, which will be calculated only once at the end of each trading day. The IIV will be widely disseminated on a per Share basis every 15 seconds during the Exchange's Regular Trading Hours by one or more major market data vendors. In addition, the IIV will be available through on-line information services.

The website for the Trust, which will be publicly accessible at no charge, will contain the following information: (a) the current NAV per Share daily and the prior business day's NAV and the reported closing price; (b) the BZX Official Closing Price⁹³ in relation to the NAV as of the time the NAV is calculated and a calculation of the premium or discount of such price against such NAV; (c) data in chart form displaying the frequency distribution of discounts and premiums of the Official Closing Price against the NAV, within appropriate ranges for each of the four previous calendar quarters (or for the life of the Trust, if shorter); (d) the prospectus; and other applicable quantitative information. The Trust will also disseminate the Trust's holdings on a daily basis on the Trust's website. The value of the Index will be made available by one or more major market data vendors, updated at least every 15 seconds during Regular Trading Hours.

⁹³ As defined in Rule 11.23(a)(3), the term "BZX Official Closing Price" shall mean the price disseminated to the consolidated tape as the market center closing trade.

The NAV for the Trust will be calculated by the Administrator once a day and will be disseminated daily to all market participants at the same time. Quotation and last-sale information regarding the Shares will be disseminated through the facilities of the Consolidated Tape Association (“CTA”).

Quotation and last sale information for bitcoin is widely disseminated through a variety of major market data vendors, including Bloomberg and Reuters, as well as the Index.

Information relating to trading, including price and volume information, in bitcoin is available from major market data vendors and from the exchanges on which bitcoin are traded. Depth of book information is also available from bitcoin exchanges. The normal trading hours for bitcoin exchanges are 24 hours per day, 365 days per year.

Net Asset Value

As described in the Registration Statement, for purposes of calculating the Trust’s NAV per Share, the Trust’s holdings of bitcoin will be valued using the same methodology as used to calculate the Index. NAV means the total assets of the Trust including, but not limited to, all bitcoin and cash, if any, less total liabilities of the Trust, each determined on the basis of generally accepted accounting principles. The NAV of the Trust is calculated by taking the fair market value of its total assets based on the volume-weighted median price of bitcoin used for the calculation of the Index, subtracting any liabilities (which include accrued expenses), and dividing that total by the total number of outstanding Shares. The Administrator calculates the NAV of the Trust once each Exchange trading day. The NAV for a normal trading day will be released after 4:00 p.m. Eastern time. Trading during the core trading session on the Exchange

typically closes at 4:00 p.m. Eastern time. However, NAVs are not officially struck until later in the day (often by 5:30 p.m. Eastern time and almost always by 8:00 p.m. Eastern time). The pause between 4:00 p.m. Eastern time and 5:30 p.m. Eastern time (or later) provides an opportunity to algorithmically detect, flag, investigate, and correct unusual pricing should it occur.

Creation and Redemption of Shares

When the Trust sells or redeems its Shares, it will do so in “in-kind” transactions in blocks of Shares (a “Creation Basket”) at the Trust’s NAV. Authorized participants will deliver, or facilitate the delivery of, bitcoin to the Trust’s account with the Custodian in exchange for Shares when they purchase Shares, and the Trust, through the Custodian, will deliver bitcoin to such authorized participants when they redeem Shares with the Trust. Authorized participants may then offer Shares to the public at prices that depend on various factors, including the supply and demand for Shares, the value of the Trust’s assets, and market conditions at the time of a transaction. Shareholders who buy or sell Shares during the day from their broker may do so at a premium or discount relative to the NAV of the Shares of the Trust.

According to the Registration Statement, on any business day, an authorized participant may place an order to create one or more baskets. Purchase orders must be placed by the time noted in the Authorized Participant Agreement or as provided separately to all Authorized Participants. The day on which an order is received is considered the purchase order date. The total deposit of bitcoin required is an amount of bitcoin that is in the same proportion to the total assets of the Trust, net of accrued expenses and other liabilities, on the date the order to purchase is properly received, as

the number of Shares to be created under the purchase order is in proportion to the total number of Shares outstanding on the date the order is received. Each night, the Sponsor will publish the amount of bitcoin that will be required in exchange for each creation order. The Administrator determines the required deposit for a given day by dividing the number of bitcoin held by the Trust as of the opening of business on that business day, adjusted for the amount of bitcoin constituting estimated accrued but unpaid fees and expenses of the Trust as of the opening of business on that business day, by the quotient of the number of Shares outstanding at the opening of business divided by the aggregation of Shares associated with a Creation Basket. The procedures by which an authorized participant can redeem one or more Creation Baskets mirror the procedures for the creation of Creation Baskets.

Rule 14.11(e)(4) – Commodity-Based Trust Shares

The Shares will be subject to BZX Rule 14.11(e)(4), which sets forth the initial and continued listing criteria applicable to Commodity-Based Trust Shares. The Exchange will obtain a representation that the Trust's NAV will be calculated daily and that these values and information about the assets of the Trust will be made available to all market participants at the same time. The Exchange notes that, as defined in Rule 14.11(e)(4)(C)(i), the Shares will be: (a) issued by a trust that holds a specified commodity⁹⁴ deposited with the trust; (b) issued by such trust in a specified aggregate minimum number in return for a deposit of a quantity of the underlying commodity; and (c) when aggregated in the same specified minimum number, may be redeemed at a

⁹⁴ For purposes of Rule 14.11(e)(4), the term commodity takes on the definition of the term as provided in the Commodity Exchange Act. As noted above, the CFTC has opined that Bitcoin is a commodity as defined in Section 1a(9) of the Commodity Exchange Act. See Coinflip.

holder's request by such trust which will deliver to the redeeming holder the quantity of the underlying commodity.

Upon termination of the Trust, the Shares will be removed from listing. The Trustee, Delaware Trust Company, is a trust company having substantial capital and surplus and the experience and facilities for handling corporate trust business, as required under Rule 14.11(e)(4)(E)(iv)(a) and that no change will be made to the trustee without prior notice to and approval of the Exchange. The Exchange also notes that, pursuant to Rule 14.11(e)(4)(F), neither the Exchange nor any agent of the Exchange shall have any liability for damages, claims, losses or expenses caused by any errors, omissions or delays in calculating or disseminating any underlying commodity value, the current value of the underlying commodity required to be deposited to the Trust in connection with issuance of Commodity-Based Trust Shares; resulting from any negligent act or omission by the Exchange, or any agent of the Exchange, or any act, condition or cause beyond the reasonable control of the Exchange, its agent, including, but not limited to, an act of God; fire; flood; extraordinary weather conditions; war; insurrection; riot; strike; accident; action of government; communications or power failure; equipment or software malfunction; or any error, omission or delay in the reports of transactions in an underlying commodity. Finally, as required in Rule 14.11(e)(4)(G), the Exchange notes that any registered market maker ("Market Maker") in the Shares must file with the Exchange in a manner prescribed by the Exchange and keep current a list identifying all accounts for trading in an underlying commodity, related commodity futures or options on commodity futures, or any other related commodity derivatives, which the registered Market Maker may have or over which it may exercise investment discretion. No

registered Market Maker shall trade in an underlying commodity, related commodity futures or options on commodity futures, or any other related commodity derivatives, in an account in which a registered Market Maker, directly or indirectly, controls trading activities, or has a direct interest in the profits or losses thereof, which has not been reported to the Exchange as required by this Rule. In addition to the existing obligations under Exchange rules regarding the production of books and records (see, e.g., Rule 4.2), the registered Market Maker in Commodity-Based Trust Shares shall make available to the Exchange such books, records or other information pertaining to transactions by such entity or registered or non-registered employee affiliated with such entity for its or their own accounts for trading the underlying physical commodity, related commodity futures or options on commodity futures, or any other related commodity derivatives, as may be requested by the Exchange.

Trading Halts

With respect to trading halts, the Exchange may consider all relevant factors in exercising its discretion to halt or suspend trading in the Shares. The Exchange will halt trading in the Shares under the conditions specified in BZX Rule 11.18. Trading may be halted because of market conditions or for reasons that, in the view of the Exchange, make trading in the Shares inadvisable. These may include: (1) the extent to which trading is not occurring in the bitcoin underlying the Shares; or (2) whether other unusual conditions or circumstances detrimental to the maintenance of a fair and orderly market are present. Trading in the Shares also will be subject to Rule 14.11(e)(4)(E)(ii), which sets forth circumstances under which trading in the Shares may be halted.

Trading Rules

The Exchange deems the Shares to be equity securities, thus rendering trading in the Shares subject to the Exchange's existing rules governing the trading of equity securities. BZX will allow trading in the Shares during all trading sessions on the Exchange. The Exchange has appropriate rules to facilitate transactions in the Shares during all trading sessions. As provided in BZX Rule 11.11(a) the minimum price variation for quoting and entry of orders in securities traded on the Exchange is \$0.01 where the price is greater than \$1.00 per share or \$0.0001 where the price is less than \$1.00 per share.

Surveillance

The Exchange believes that its surveillance procedures are adequate to properly monitor the trading of the Shares on the Exchange during all trading sessions and to deter and detect violations of Exchange rules and the applicable federal securities laws. Trading of the Shares through the Exchange will be subject to the Exchange's surveillance procedures for derivative products, including Commodity-Based Trust Shares. The issuer has represented to the Exchange that it will advise the Exchange of any failure by the Trust or the Shares to comply with the continued listing requirements, and, pursuant to its obligations under Section 19(g)(1) of the Exchange Act, the Exchange will surveil for compliance with the continued listing requirements. If the Trust or the Shares are not in compliance with the applicable listing requirements, the Exchange will commence delisting procedures under Exchange Rule 14.12. The Exchange may obtain information regarding trading in the Shares and Bitcoin Futures via

ISG, from other exchanges who are members or affiliates of the ISG, or with which the Exchange has entered into a comprehensive surveillance sharing agreement.⁹⁵

Information Circular

Prior to the commencement of trading, the Exchange will inform its members in an Information Circular of the special characteristics and risks associated with trading the Shares. Specifically, the Information Circular will discuss the following: (i) the procedures for the creation and redemption of Baskets (and that the Shares are not individually redeemable); (ii) BZX Rule 3.7, which imposes suitability obligations on Exchange members with respect to recommending transactions in the Shares to customers; (iii) how information regarding the IIV and the Trust's NAV are disseminated; (iv) the risks involved in trading the Shares outside of Regular Trading Hours⁹⁶ when an updated IIV will not be calculated or publicly disseminated; (v) the requirement that members deliver a prospectus to investors purchasing newly issued Shares prior to or concurrently with the confirmation of a transaction; and (vi) trading information.

In addition, the Information Circular will advise members, prior to the commencement of trading, of the prospectus delivery requirements applicable to the Shares. Members purchasing the Shares for resale to investors will deliver a prospectus to such investors. The Information Circular will also discuss any exemptive, no-action and interpretive relief granted by the Commission from any rules under the Act.

⁹⁵ For a list of the current members and affiliate members of ISG, see www.isgportal.com.

⁹⁶ Regular Trading Hours is the time between 9:30 a.m. and 4:00 p.m. Eastern Time.

2. Statutory Basis

The Exchange believes that the proposal is consistent with Section 6(b) of the Act⁹⁷ in general and Section 6(b)(5) of the Act⁹⁸ in particular in that it is designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, to foster cooperation and coordination with persons engaged in facilitating transactions in securities, 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.

The Commission has approved numerous series of Trust Issued Receipts,⁹⁹ including Commodity-Based Trust Shares,¹⁰⁰ to be listed on U.S. national securities exchanges. In order for any proposed rule change from an exchange to be approved, the Commission must determine that, among other things, the proposal is consistent with the requirements of Section 6(b)(5) of the Act, specifically including: (i) the requirement that a national securities exchange's rules are designed to prevent fraudulent and manipulative acts and practices;¹⁰¹ and (ii) the requirement that an exchange proposal be designed, in

⁹⁷ 15 U.S.C. 78f.

⁹⁸ 15 U.S.C. 78f(b)(5).

⁹⁹ See Exchange Rule 14.11(f).

¹⁰⁰ Commodity-Based Trust Shares, as described in Exchange Rule 14.11(e)(4), are a type of Trust Issued Receipt.

¹⁰¹ As the Exchange has stated in a number of other public documents, it continues to believe that bitcoin is resistant to price manipulation and that "other means to prevent fraudulent and manipulative acts and practices" exist to justify dispensing with the requisite surveillance sharing agreement. The geographically diverse and continuous nature of bitcoin trading render it difficult and prohibitively costly to manipulate the price of bitcoin. The fragmentation across bitcoin platforms, the relatively slow speed of transactions, and the capital necessary to maintain a significant presence on each trading platform make manipulation of bitcoin prices through continuous trading activity challenging. To the extent that there are bitcoin exchanges engaged in or allowing wash trading or other activity intended to manipulate the price of bitcoin on other markets, such pricing does not normally impact prices on other exchange because participants will generally ignore markets with quotes that they deem non-executable. Moreover, the linkage between the bitcoin markets and the presence of arbitrageurs in those markets means that the

general, to protect investors and the public interest. The Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the and, as described and discussed above, the Sponsor's analysis demonstrates that the Exchange has satisfied the requirements under the Act that the CME Bitcoin Futures Market (i) is a regulated market, (ii) has a comprehensive surveillance-sharing agreement with the Exchange; and (iii) satisfies the Commission's "significant market" definition." In addition, the Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the Act because this filing sufficiently demonstrates that the standard that has previously been articulated by the Commission applicable to Commodity-Based Trust Shares has been met as outlined below.

Designed to Prevent Fraudulent and Manipulative Acts and Practices

In order for a proposal to list and trade a series of Commodity-Based Trust Shares to be deemed consistent with the Act, the Commission requires that an exchange demonstrate that there is a comprehensive surveillance-sharing agreement in place¹⁰²

manipulation of the price of bitcoin price on any single venue would require manipulation of the global bitcoin price in order to be effective. Arbitrageurs must have funds distributed across multiple trading platforms in order to take advantage of temporary price dislocations, thereby making it unlikely that there will be strong concentration of funds on any particular bitcoin exchange or OTC platform. As a result, the potential for manipulation on a trading platform would require overcoming the liquidity supply of such arbitrageurs who are effectively eliminating any cross-market pricing differences.

¹⁰² As previously articulated by the Commission, "The standard requires such surveillance-sharing agreements since "they provide a necessary deterrent to manipulation because they facilitate the availability of information needed to fully investigate a manipulation if it were to occur." The Commission has emphasized that it is essential for an exchange listing a derivative securities product to enter into a surveillance- sharing agreement with markets trading underlying securities for the listing exchange to have the ability to obtain information necessary to detect, investigate, and deter fraud and market manipulation, as well as violations of exchange rules and applicable federal securities laws and rules. The hallmarks of a surveillance-sharing agreement are that the agreement provides for the sharing of information about market trading activity, clearing activity, and customer identity; that the parties to the agreement have reasonable ability to obtain access to and produce requested information; and that no existing rules, laws, or practices would impede one party to the agreement from obtaining this information from, or producing it to, the other party." The Commission has historically held that joint membership in ISG constitutes such a

with a regulated market of significant size. Both the Exchange and CME are members of ISG.¹⁰³ As such, the only remaining issue to be addressed is whether the Bitcoin Futures market constitutes a market of significant size, which the Exchange believes that it does. The terms “significant market” and “market of significant size” include a market (or group of markets) as to which: (a) there is a reasonable likelihood that a person attempting to manipulate the ETP would also have to trade on that market to manipulate the ETP, so that a surveillance-sharing agreement would assist the listing exchange in detecting and deterring misconduct; and (b) it is unlikely that trading in the ETP would be the predominant influence on prices in that market.¹⁰⁴

The Commission has also recognized that the “regulated market of significant size” standard is not the only means for satisfying Section 6(b)(5) of the act, specifically providing that a listing exchange could demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement.¹⁰⁵

(a) Reasonable likelihood that a person attempting to manipulate the ETP would also have to trade on that market to manipulate the ETP

Bitcoin Futures represent a growing influence on pricing in the spot bitcoin market as has been laid out above and in other proposals to list and trade Spot Bitcoin ETPs. Pricing in Bitcoin Futures is based on pricing from spot bitcoin markets. As noted

surveillance sharing agreement. See Wilshire Phoenix Disapproval.

¹⁰³ For a list of the current members and affiliate members of ISG, see www.isgportal.com.

¹⁰⁴ See Wilshire Phoenix Disapproval.

¹⁰⁵ See Winklevoss Order at 37580. The Commission has also specifically noted that it “is not applying a “cannot be manipulated” standard; instead, the Commission is examining whether the proposal meets the requirements of the Exchange Act and, pursuant to its Rules of Practice, places the burden on the listing exchange to demonstrate the validity of its contentions and to establish that the requirements of the Exchange Act have been met. Id. at 37582.

above, the statement from the Teucrium Approval that “CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts...indirectly by trading outside of the CME bitcoin futures market,” makes clear that the Commission believes that CME’s surveillance can capture the effects of trading on the relevant spot markets on the pricing of Bitcoin Futures. While the Commission makes clear in the Teucrium Approval that the analysis only applies to the Bitcoin Futures market as it relates to an ETP that invests in Bitcoin Futures as its only non-cash or cash equivalent holding, if CME’s surveillance is sufficient to mitigate concerns related to trading in Bitcoin Futures for which the pricing is based directly on pricing from spot bitcoin markets, it’s not clear how such a conclusion could apply only to ETPs based on Bitcoin Futures and not extend to Spot Bitcoin ETPs.

Additionally, a Bitcoin Futures ETF is actually potentially more susceptible to manipulation than a Spot Bitcoin ETP where the underlying trust offers only in-kind creation and redemption. Specifically, the pricing of Bitcoin Futures is based on prices from spot bitcoin markets, while shares of a Spot Bitcoin ETP would represent an interest in bitcoin directly and authorized participants for a Spot Bitcoin ETP would be able to source bitcoin from any exchange and create or redeem with the applicable trust regardless of the price of the underlying index. Potential manipulation of a Bitcoin Futures ETF would require manipulation on the spot markets on which the pricing for Bitcoin Futures are based while the in-kind creation and redemption process and fungibility of bitcoin means that a would be manipulator of a Spot Bitcoin ETP would

need to manipulate the price across all bitcoin markets or risk simply providing arbitrage opportunities for authorized participants. Further to this point, this arbitrage opportunity also acts to reduce any incentives to manipulate the price of a Spot Bitcoin ETP because the underlying trust will create and redeem shares at set rates of bitcoin per share without regard to the price that the ETP is trading at in the secondary market or the price of the underlying index. As such, the Exchange believes that part (a) of the significant market test outlined above is satisfied and that common membership in ISG between the Exchange and CME would assist the listing exchange in detecting and deterring misconduct in the Shares.

(b) Predominant Influence on Prices in Spot and Bitcoin Futures

The Exchange and Sponsor also believe that trading in the Shares would not be the predominant force on prices in the Bitcoin Futures market or spot market for a number of reasons, including the in-kind creation and redemption process, the spot market arbitrage opportunities that such in-kind creation and redemption process creates, the significant volume in the Bitcoin Futures market, the size of bitcoin's market cap, and the significant liquidity available in the spot market. In addition to the Bitcoin Futures market data points cited above, the spot market for bitcoin is also very liquid. According to data from Skew, the cost to buy or sell \$5 million worth of bitcoin averages roughly 48 basis points with a market impact of \$139.08.¹⁰⁶ Stated another way, a market participant could enter a market buy or sell order for \$5 million of bitcoin and only move the market 0.48%. More strategic purchases or sales (such as using limit orders and executing

¹⁰⁶ These statistics are based on samples of bitcoin liquidity in USD (excluding stablecoins or Euro liquidity) based on executable quotes on Coinbase, FTX and Kraken during the one-year period ending May 2022.

through OTC bitcoin trade desks) would likely have less obvious impact on the market – which is consistent with MicroStrategy, Tesla, and Square being able to collectively purchase billions of dollars in bitcoin.

As such, the combination of the in-kind creation and redemption process, the Bitcoin Futures leading price discovery, the overall size of the bitcoin market, and the ability for market participants, including authorized participants creating and redeeming in-kind with the Trust, to buy or sell large amounts of bitcoin without significant market impact will help prevent the Shares from becoming the predominant force on pricing in either the bitcoin spot or Bitcoin Futures markets, satisfying part (b) of the test outlined above.

(c) Other Means to Prevent Fraudulent and Manipulative Acts and Practices

As noted above, the Commission also permits a listing exchange to demonstrate that “other means to prevent fraudulent and manipulative acts and practices” are sufficient to justify dispensing with the requisite surveillance-sharing agreement. The Exchange and Sponsor believe that such conditions are present.

The Exchange also believes that reviewing this proposal through the lens of the Bitcoin Futures Approvals would also lead the Commission to approving this proposal. Previous disapproval orders have made clear that a market that constitutes a regulated market of significant size is generally a futures and/or options market based on the underlying reference asset rather than the spot commodity markets, which are often unregulated.¹⁰⁷ The Exchange believes that the following excerpt from the Teucrium Approval is particular informative:

¹⁰⁷ See Winklevoss Order at 37593, specifically footnote 202, which includes the language from numerous approval orders for which the underlying futures markets formed the basis for

The CME “comprehensively surveils futures market conditions and price movements on a real-time and ongoing basis in order to detect and prevent price distortions, including price distortions caused by manipulative efforts.” Thus the CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts, whether that attempt is made by directly trading on the CME bitcoin futures market or indirectly by trading outside of the CME bitcoin futures market. As such, when the CME shares its surveillance information with Arca, the information would assist in detecting and deterring fraudulent or manipulative misconduct related to the non-cash assets held by the proposed ETP.¹⁰⁸

Bitcoin Futures pricing is based on pricing from spot bitcoin markets. The statement from the Teucrium Approval that “CME’s surveillance can reasonably be relied upon to capture the effects on the CME bitcoin futures market caused by a person attempting to manipulate the proposed futures ETP by manipulating the price of CME bitcoin futures contracts...indirectly by trading outside of the CME bitcoin futures market,” makes clear that the Commission believes that CME’s surveillance can capture the effects of trading on the relevant spot markets on the pricing of Bitcoin Futures. If CME is able to detect such attempts at manipulation in the complex and interconnected spot bitcoin market, how would such an ability to detect attempted manipulation and the utility in sharing that information with the listing exchange apply only to Bitcoin Futures ETFs and not Spot Bitcoin ETPs? Stated a different way, given that there is significant trading volume on

approving series of ETPs that hold physical metals, including gold, silver, palladium, platinum, and precious metals more broadly; and 37600, specifically where the Commission provides that “when the spot market is unregulated – the requirement of preventing fraudulent and manipulative acts may possibly be satisfied by showing that the ETP listing market has entered into a surveillance-sharing agreement with a regulated market of significant size in derivatives related to the underlying asset.” As noted above, the Exchange believes that these citations are particularly helpful in making clear that the spot market for a spot commodity ETP need not be “regulated” in order for a spot commodity ETP to be approved by the Commission, and in fact that it’s been the common historical practice of the Commission to rely on such derivatives markets as the regulated market of significant size because such spot commodities markets are largely unregulated.

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See Teucrium Approval at 21679.

numerous bitcoin exchanges that are not part of the CME CF Bitcoin Reference Rate and that arbitrage opportunities across bitcoin exchanges means that such trading volume will influence spot bitcoin prices across the market and, despite this, the Commission still believes that CME can detect attempted manipulation of the Bitcoin Futures through “trading outside of the CME bitcoin futures market,” it is clear that such ability would apply equally to both Bitcoin Futures ETFs and Spot Bitcoin ETPs. To take it a step further, such an ability would also seem to be a strong indication that the CME Bitcoin Futures market represents a regulated market of significant size. To be clear, the Exchange agrees with the Commission on this point (and the implications of their conclusions) and further notes that the pricing mechanism applicable to the Shares is similar to the CME CF Bitcoin Reference Rate.

Surveillance Sharing Agreement

The Exchange is proposing to take additional steps to those described above to supplement its ability to obtain information that would be helpful in detecting, investigating, and deterring fraud and market manipulation in the Commodity-Based Trust Shares. On June 21, 2023, the Exchange reached an agreement on terms with Coinbase, Inc. (“Coinbase”), an operator of a United States-based spot trading platform for Bitcoin that represents a substantial portion of US-based and USD denominated Bitcoin trading,¹⁰⁹ to enter into a surveillance-sharing agreement (“Spot BTC SSA”) and executed an associated term sheet. Based on this agreement on terms, the Exchange and

¹⁰⁹ According to a Kaiko Research report dated June 26, 2023, Coinbase represented roughly 50% of exchange trading volume in USD-BTC trading on a daily basis during May 2023.

Coinbase will finalize and execute a definitive agreement that the parties expect to be executed prior to allowing trading of the Commodity-Based Trust Shares.

The Spot BTC SSA is expected to be a bilateral surveillance-sharing agreement between the Exchange and Coinbase that is intended to supplement the Exchange's market surveillance program. The Spot BTC SSA is expected to have the hallmarks of a surveillance-sharing agreement between two members of the ISG, which would give the Exchange supplemental access to data regarding spot Bitcoin trades on Coinbase where the Exchange determines it is necessary as part of its surveillance program for the Commodity-Based Trust Shares.¹¹⁰ This means that the Exchange expects to receive market data for orders and trades from Coinbase, which it will utilize in surveillance of the trading of Commodity-Based Trust Shares. In addition, the Exchange can request further information from Coinbase related to spot bitcoin trading activity on the Coinbase exchange platform, if the Exchange determines that such information would be necessary to detect and investigate potential manipulation in the trading of the Commodity-Based Trust Shares.¹¹¹

In Kind Creation and Redemption

Further, and consistent with prior points above, offering only in-kind creation and redemption will also provide unique protections against potential attempts to manipulate the price of the Shares. While the Sponsor believes that the Benchmark which it uses to value the Trust's bitcoin is itself resistant to manipulation based on the methodology

¹¹⁰ For additional information regarding ISG and the hallmarks of surveillance-sharing between ISG members, see <https://isgportal.org/overview>.

¹¹¹ The Exchange also notes that it already has in place ISG-like surveillance sharing agreement with Cboe Digital Exchange, LLC and Cboe Clear Digital, LLC.

further described below, the fact that creations and redemptions are only available in-kind makes the manipulability of the Benchmark significantly less important. Specifically, because the Trust will not accept cash to buy bitcoin in order to create new Shares or, barring a forced redemption of the Trust or under other extraordinary circumstances, be forced to sell bitcoin to pay cash for redeemed Shares, the price that the Sponsor uses to value the Trust's bitcoin is not particularly important.¹¹² When authorized participants are creating Shares with the Trust, they need to deliver a certain number of bitcoin per Share (regardless of the valuation used) and when they're redeeming, they can similarly expect to receive a certain number of bitcoin per Share. As such, even if the price used to value the Trust's bitcoin is manipulated (which the Sponsor believes that its methodology is resistant to), the ratio of bitcoin per Share does not change and the Trust will either accept (for creations) or distribute (for redemptions) the same number of bitcoin regardless of the value. This not only mitigates the risk associated with potential manipulation, but also discourages and disincentivizes manipulation of the Benchmark because there is little financial incentive to do so.

(d) Designed to Protect Investors and the Public Interest

The Exchange believes that the proposal is designed to protect investors and the public interest. Over the past several years, U.S. investor exposure to bitcoin through OTC Bitcoin Funds has grown into the tens of billions of dollars, including through Bitcoin Futures ETFs. With that growth, so too has grown the quantifiable investor protection issues to U.S. investors through roll costs for Bitcoin Futures ETFs and

¹¹² While the Benchmark will not be particularly important for the creation and redemption process, it will be used for calculating fees.

premium/discount volatility and management fees for OTC Bitcoin Funds. The Exchange believes that the concerns related to the prevention of fraudulent and manipulative acts and practices have been sufficiently addressed to be consistent with the Act and, to the extent that the Commission disagrees with that assertion, such concerns are now outweighed by investor protection concerns. As such, the Exchange believes that approving this proposal (and comparable proposals) provides the Commission with the opportunity to allow U.S. investors with access to bitcoin in a regulated and transparent exchange-traded vehicle that would act to limit risk to U.S. investors by: (i) reducing premium and discount volatility; (ii) reducing management fees through meaningful competition; (iii) reducing risks and costs associated with investing in Bitcoin Futures ETFs and operating companies that are imperfect proxies for bitcoin exposure; and (iv) providing an alternative to custodial spot bitcoin.

Commodity-Based Trust Shares

The Exchange believes that the proposed rule change is designed to prevent fraudulent and manipulative acts and practices in that the Shares will be listed on the Exchange pursuant to the initial and continued listing criteria in Exchange Rule 14.11(e)(4). The Exchange believes that its surveillance procedures are adequate to properly monitor the trading of the Shares on the Exchange during all trading sessions and to deter and detect violations of Exchange rules and the applicable federal securities laws. Trading of the Shares through the Exchange will be subject to the Exchange's surveillance procedures for derivative products, including Commodity-Based Trust Shares. The issuer has represented to the Exchange that it will advise the Exchange of any failure by the Trust or the Shares to comply with the continued listing requirements,

and, pursuant to its obligations under Section 19(g)(1) of the Exchange Act, the Exchange will surveil for compliance with the continued listing requirements. If the Trust or the Shares are not in compliance with the applicable listing requirements, the Exchange will commence delisting procedures under Exchange Rule 14.12. The Exchange may obtain information regarding trading in the Shares and listed bitcoin derivatives via the ISG, from other exchanges who are members or affiliates of the ISG, or with which the Exchange has entered into a comprehensive surveillance sharing agreement.

Availability of Information

The Exchange also believes that the proposal promotes market transparency in that a large amount of information is currently available about bitcoin and will be available regarding the Trust and the Shares. In addition to the price transparency of the Benchmark, the Trust will provide information regarding the Trust's bitcoin holdings as well as additional data regarding the Trust. The Trust will provide an IIV per Share updated every 15 seconds, as calculated by the Exchange or a third-party financial data provider during the Exchange's Regular Trading Hours (9:30 a.m. to 4:00 p.m. E.T.). The IIV will be calculated by using the prior day's closing NAV per Share as a base and updating that value during Regular Trading Hours to reflect changes in the value of the Trust's bitcoin holdings during the trading day.

The IIV disseminated during Regular Trading Hours should not be viewed as an actual real-time update of the NAV, which will be calculated only once at the end of each trading day. The IIV will be widely disseminated on a per Share basis every 15 seconds

during the Exchange's Regular Trading Hours by one or more major market data vendors. In addition, the IIV will be available through on-line information services.

The website for the Trust, which will be publicly accessible at no charge, will contain the following information: (a) the current NAV per Share daily and the prior business day's NAV and the reported closing price; (b) the BZX Official Closing Price in relation to the NAV as of the time the NAV is calculated and a calculation of the premium or discount of such price against such NAV; (c) data in chart form displaying the frequency distribution of discounts and premiums of the Official Closing Price against the NAV, within appropriate ranges for each of the four previous calendar quarters (or for the life of the Trust, if shorter); (d) the prospectus; and (e) other applicable quantitative information. The Trust will also disseminate the Trust's holdings on a daily basis on the Trust's website. The price of bitcoin will be made available by one or more major market data vendors, updated at least every 15 seconds during Regular Trading Hours. Information about the Benchmark, including key elements of how the Benchmark is calculated, will be publicly available at www.mvis-indices.com/.

The NAV for the Trust will be calculated by the Administrator once a day and will be disseminated daily to all market participants at the same time. Quotation and last-sale information regarding the Shares will be disseminated through the facilities of the CTA.

Quotation and last sale information for bitcoin is widely disseminated through a variety of major market data vendors, including Bloomberg and Reuters, as well as the Benchmark. Information relating to trading, including price and volume information, in bitcoin is available from major market data vendors and from the exchanges on which

bitcoin are traded. Depth of book information is also available from bitcoin exchanges.

The normal trading hours for bitcoin exchanges are 24 hours per day, 365 days per year.

In sum, the Exchange believes that this proposal is consistent with the requirements of Section 6(b)(5) of the Act, that this filing sufficiently demonstrates that the CME Bitcoin Futures market represents a regulated market of significant size, and that on the whole the manipulation concerns previously articulated by the Commission are sufficiently mitigated to the point that they are outweighed by investor protection issues that would be resolved by approving this proposal.

The Exchange believes that the proposal is, in particular, designed to protect investors and the public interest. Premium and discount volatility, high fees, rolling costs, insufficient disclosures, and technical hurdles are putting U.S. investor money at risk on a daily basis that could potentially be eliminated through access to a Spot Bitcoin ETP. As such, the Exchange believes that this proposal acts to limit the risk to U.S. investors that are increasingly seeking exposure to bitcoin by providing direct, 1-for-1 exposure to bitcoin in a regulated, transparent, exchange-traded vehicle, specifically by: (i) reducing premium volatility; (ii) reducing management fees through meaningful competition; (iii) providing an alternative to Bitcoin Futures ETFs which will eliminate roll cost; (iv) reducing risks associated with investing in operating companies that are imperfect proxies for bitcoin exposure; and (v) providing an alternative to custodial spot bitcoin. Finally, the Exchange notes that in addition to all of the arguments herein which it believes sufficiently establishes the CME Bitcoin Futures market as a regulated market of significant size, it is logically inconsistent to find that the CME Bitcoin Futures market is

a significant market as it relates to the CME Bitcoin Futures market, but not a significant market as it relates to the bitcoin spot market for the numerous reasons laid out above.

For the above reasons, the Exchange believes that the proposed rule change is consistent with the requirements of Section 6(b)(5) of the Act.

B. Self-Regulatory Organization's Statement on Burden on Competition

The Exchange does not believe that the proposed rule change will impose any burden on competition that is not necessary or appropriate in furtherance of the purpose of the Act. The Exchange notes that the proposed rule change, rather will facilitate the listing and trading of an additional exchange-traded product that will enhance competition among both market participants and listing venues, to the benefit of investors and the marketplace.

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

The Exchange neither solicited nor received comments on the proposed rule change.

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

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

- A. by order approve or disapprove such proposed rule change, or
- B. institute proceedings to determine whether the proposed rule change should be disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments:

- Use the Commission's internet comment form (<https://www.sec.gov/rules/sro.shtml>); or
- Send an email to rule-comments@sec.gov. Please include file number SR-CboeBZX-2023-044 on the subject line.

Paper Comments:

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549-1090.

All submissions should refer to file number SR-CboeBZX-2023-044. This file number should be included on the subject line if email is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's internet website (<https://www.sec.gov/rules/sro.shtml>). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street NE, Washington, DC 20549, on official business days between the hours of 10 a.m. and 3

p.m. Copies of the filing also will be available for inspection and copying at the principal office of the Exchange. Do not include personal identifiable information in submissions; you should submit only information that you wish to make available publicly. We may redact in part or withhold entirely from publication submitted material that is obscene or subject to copyright protection. All submissions should refer to file number SR-CboeBZX-2023-044 and should be submitted on or before [INSERT DATE 21 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.¹¹³

Sherry R. Haywood,

Assistant Secretary.

¹¹³ 17 CFR 200.30-3(a)(12).