

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

SECURITIES AND EXCHANGE
COMMISSION,

Plaintiff,

-v-

TERRAFORM LABS PTE. LTD. and
DO HYEONG KWON,

Defendants.

23-cv-1346 (JSR)

OPINION AND ORDER

JED S. RAKOFF, U.S.D.J.:

In this case, the Securities and Exchange Commission ("SEC") alleges that the defendants -- Terraform Labs Pte. Ltd., a "crypto-assets" company, and its founder, Do Hyeong Kwon -- orchestrated a multi-billion-dollar fraud involving the development, marketing, and sale of various cryptocurrencies. The SEC's claims, all brought under the federal securities laws, include a claim that defendants offered and sold unregistered securities, claims that defendants offered and effected transactions in unregistered security-based swaps, and claims that defendants engaged in fraudulent schemes to lead investors astray. One of the alleged fraudulent schemes is that defendants misrepresented that one of Terraform's crypto asset securities, UST, was permanently pegged to a \$1.00 price through an automatic self-stabilizing algorithm, rather than through the intervention of a third-party trading firm with whom defendants struck a secret deal. Another of the alleged fraudulent

schemes is that defendants falsely stated that a Korean mobile payment application, Chai, used the Terraform blockchain to process and settle transactions in cryptocurrencies, a lie that defendants concealed by replicating purported Chai transactions on a Terraform server.

In support of its fraud claims, the SEC offers two expert witnesses: Dr. Bruce Mizrach and Dr. Matthew Edman. In response, defendants offer three expert witnesses of their own: Dr. Terrence Hendershott (as rebuttal to Dr. Mizrach), Mr. Raj Unny (as rebuttal to Dr. Edman), and Dr. Christine Parlour. Each side moved under Federal Rule of Evidence 702 to exclude the other side's experts, and the Court, after receiving full briefing, held a "Daubert" hearing on those motions on November 17, 2023, at which it questioned all five putative experts. On November 20, 2023, the Court issued a "bottom-line" order denying defendants' motions to exclude the testimony of Dr. Mizrach and Dr. Edman, denying the SEC's motion to exclude the testimony of Dr. Hendershott, and granting the SEC's motions to exclude the testimony of Mr. Unny and Dr. Parlour. Below, the Court explains the reasons for those rulings.

In addition, this Opinion and Order disposes of the parties' cross-motions for summary judgment, on which the Court received full briefing and held oral argument on November 30, 2023. As the Court explains below, the Court grants summary judgment for the

SEC on the claim that defendants offered and sold unregistered securities. The Court grants summary judgment for defendants on the claims involving offering and effecting transactions in security-based swaps. Finally, the Court denies' both sides' cross-motions for summary judgment on the fraud claims.

I. Factual and Procedural Background

Defendant Do Hyeong Kwon, along with an individual named Daniel Shin, founded Terraform Labs Pte. Ltd. ("Terraform") in April 2018. ECF No. 124 ("Defs.' Response to SEC 56.1"), at ¶¶ 1-2.¹ In April 2019, Terraform and Kwon launched and promoted the Terraform blockchain, which would record and display transactions of cryptocurrency tokens, or crypto assets, across computers in a linked network. Id. ¶ 25; ECF No. 126 ("SEC Resp. to Defs.' 56.1"), at ¶¶ 10-13.

A. LUNA and wLUNA

Terraform coded into the blockchain at launch one billion tokens of a particular crypto asset, LUNA, that it created.² Defs.' Response to SEC 56.1 ¶ 25. Beginning even before the blockchain

¹ Citations to a particular paragraph in either side's response to the other side's Local Rule 56.1 statement of facts include the content of both the initial Local Rule 56.1 statement and the response.

² In December 2020, Terraform launched a platform allowing LUNA holders to create a "wrapped" version of LUNA, named wLUNA, that could be traded on non-Terraform blockchains but was otherwise identical to LUNA. Defs.' Response to SEC 56.1 ¶ 42.

was developed, Terraform entered agreements to sell LUNA to buyers in exchange for both fiat currency and other crypto assets, such as Bitcoin. Id. ¶¶ 51, 117; e.g., ECF No. 73, Ex. 26 (July 11, 2018 token sale agreement for an institutional investor to purchase LUNA tokens from Terraform for \$3,000,000 worth of Bitcoin). The terms of those agreements referred to an “Initial Token Launch,” which was defined as “the online sale and/or distribution of Tokens by the Vendor [Terraform or its subsidiary Terraform BVI] to the general public in a campaign to be initiated and conducted by the Vendor.” Defs.’ Response to SEC 56.1 ¶ 118.

The agreements further contemplated that “Terraform would undertake efforts to generate a secondary trading market for the LUNA tokens.” Id. The terms of the sales provided incentives for the purchasers to resell LUNA tokens by, for example, setting the purchase price at discounts of 40% or more from expected market prices. Id. ¶ 119. In a fundraising update in December 2018, Terraform co-founder Daniel Shin wrote that Terraform had “begun exchange listing discussions given token listing is a precondition for Terra/Luna ecosystem to operate.” Id. ¶ 121. Terraform used proceeds from selling LUNA to, in part, fund Terraform’s operating costs. Id. ¶ 56.

In November 2019 and September 2020, Kwon negotiated and signed, on behalf of Terraform, agreements with a U.S. crypto asset trading firm, Jump Crypto Holdings LLC (“Jump”), to receive loans

of 30 million and 65 million LUNA tokens, respectively. Id. ¶¶ 124, 130. In a January 13, 2020 email to "Terra's leading investor group," Kwon announced that Terraform had "agreed to enter a partnership with Jump," in which Jump would "deploy its own resources to improve liquidity of Terra and Luna." Id. ¶ 126. Kwon stated that, until then, LUNA's liquidity had been "rather lackluster partly due to our team's inexperience with secondary markets & trading operations." Id. Kwon further explained that Terraform's loan of LUNA tokens to Jump was "with the expectation that they are going to fill bids and offers to improve liquidity of LUNA in secondary trading markets." Id. Moreover, Kwon acknowledged that Jump later provided periodic reports to Terraform of its trading on various crypto asset trading platforms. Id. The second loan agreement, in September 2020, came about because a Jump executive emailed Kwon a proposal to obtain tens of millions of additional LUNA tokens at a discounted price to "thicken up LUNA markets further." Id. ¶ 129.

In a Tweet on April 7, 2021, Kwon wrote: "A bet on the moon [LUNA] is very simple: it goes up in value (inc. scarcity) the more Terra money is used; it goes down in value (inc. dilution) the less Terra money is used. The moon's fate in the long run is tied to how widely the money gets used and transacted." ECF No. 75, Ex. 105. In another post that day, Kwon wrote: "But in the long run, \$Luna value is actionable -- it grows as the [Terraform]

ecosystem grows. As a holder of the [moon], you then have three choices: Sit back and watch me kick ass; Take profits and buy unvaluable assets; Or you can roll up your sleeves and build cool shit.” Id., Ex. 108. Around the same time, SJ Park, Director of Special Projects at Terraform, stated in a videotaped presentation that “[o]wning LUNA is essentially owning a stake in the network and a bet that value will continue to accrue over time.” Defs.’ Response to SEC 56.1 ¶ 63. In a public interview, Jeff Kuan, business development lead at Terraform, explained that “VCs investing in Terra means they’re buying LUNA, which is the ‘equity’ in our co.” Id. The price of LUNA increased from under \$1.00 in January 2021 to a high of over \$119 in April 2022, before plummeting to under a penny in May 2022. ECF No. 175, Ex. 125.

B. UST and the Anchor Protocol

In December 2019, Terraform created another crypto asset called UST, which it described as a “stablecoin” whose value was permanently and algorithmically pegged to one U.S. dollar. Defs.’ Response to SEC 56.1 ¶¶ 21-24. As part of the algorithm, one UST could always be exchanged for \$1 worth of LUNA, and \$1 worth of LUNA could always be exchanged for one UST. Id. ¶ 23. In March 2021, Terraform launched “the Anchor Protocol,” which it described as a key component of “the Terra money market,” allowing UST holders to earn interest payments by depositing their tokens in a shared pool from which others could borrow UST. ECF No. 73, Ex. 44

at 2; id., Ex. 67. Terraform publicly announced, in a Tweet by Kwon, that “Anchor will target 20% fixed APR,” which was “by far the highest stablecoin yield in the market.” Id., Ex. 66. A June 2020 white paper described the Anchor Protocol as “an attempt to give the main street investor a single, reliable, rate of return across all blockchains.” Id., Ex. 44 at 2.

Returns from the Anchor Protocol were paid out in proportion to the amount of UST a person or entity had deposited. Defs.’ Response to SEC 56.1 ¶ 80. The Anchor Protocol website stated that “[d]eposited stablecoins are pooled and lent out to borrowers, with accrued interest pro-rata distributed to all depositors.” Id. By May 2022, there were approximately 18.5 billion tokens of UST, 14 billion of which had been deposited in the Anchor Protocol. Id. ¶ 36.

C. MIR, the Mirror Protocol, and mAssets

In December 2020, Terraform launched “the Mirror Protocol.” Id. ¶ 38. The Mirror Protocol allowed users to obtain “mAssets” – tokens whose value would “mirror” the price of a pre-existing non-crypto asset, such as a publicly traded security. Id. ¶ 39. A Mirror Protocol user could mint an mAsset by depositing collateral of 150% or more of the value of the underlying security (the “reference stock”). Id. ¶ 113. The holder of the mAsset would thus hold the value of the deposit without holding the underlying reference stock or its attendant ownership interests. There was a

catch, however. Whenever the price of the underlying reference stock rose above the holder's initial buy-in, the holder would need to deposit additional collateral to maintain the mAsset. Id. ¶ 114. In other words, there is no evidence that suggests, and the SEC does not contend, that an mAsset would lead to profit for its holders or that any holders expected as much.

The same was not true, however, for the Mirror Protocol's governance token, MIR. MIR's value was based on the Mirror Protocol's usage. Id. ¶ 38. A Terraform subsidiary sold MIR tokens directly to purchasers through "Simple Agreements for Farmed Tokens," or SAFTs. Id. ¶ 135. Those agreements did not restrict purchasers from reselling their MIR tokens in secondary trading markets or to U.S. investors. Id. ¶ 136. Terraform also loaned as many as 4 million MIR tokens to Jump, in an agreement that expressly required Jump to trade MIR tokens on crypto asset trading platforms and to provide Terraform with reports of its trading. Id. ¶ 138. Terraform also sold LUNA and MIR tokens to secondary market purchasers on Binance and other crypto trading exchanges. Id. ¶ 142. The record provides no evidence that Terraform took steps to determine whether those trading platforms were available to U.S. investors. Id. ¶ 143.

In September 2020, Kwon emailed promotional materials to a potential purchaser, including a set of slides that described MIR as "a farmable governance token that earns fees from asset trades."

Id. ¶ 101. Another slide proclaimed that the “Mirror token will accrue value from network fees and governance” and stated that MIR token holders could receive “trading fee revenues.” Id. Kwon even included in those materials a spreadsheet with a revenue projection table, estimating how the price of MIR would increase in tandem with greater usage of the Mirror Protocol. Id.; ECF No. 75, Ex. 148. In a June 2021 presentation, SJ Park, Terraform’s Director of Special Projects, stated that the Mirror Protocol had “grown to two billion [dollars] in total value locked and a billion [dollars] in liquidity.” Defs.’ Response to SEC 56.1 ¶ 110.

D. Chai’s Use of the Terraform Blockchain

In mid-2019, Terraform’s co-founder Daniel Shin developed Chai, a Korean mobile payment application. Id. ¶¶ 150-51. Terraform and Chai were closely associated until early 2020, including sharing office space and overlapping personnel. Id. ¶ 153. In a July 26, 2019 Terraform “Community Update,” Kwon wrote that “Chai launched using the Terra Protocol, and . . . already it is one of the most heavily used blockchain applications in existence.” Id. ¶ 168. In a February 9, 2020 Terraform chat message available to the public, Kwon stated that “Chai has 12 merchants, all of whom get settled in KRT [a crypto asset pegged to the Korean fiat currency, the won] on the Terraform blockchain.” Id. ¶ 173. In an April 16, 2021 interview, Kwon stated that by paying “merchants directly in stablecoin, we’re able to cut down settlement times

from seven days to six seconds, which [is] the average block time of the entire blockchain.” Id. ¶ 181. In another public interview, on March 31, 2022, Kwon added that “the idea was that we could, you know, bootstrap a large network of merchants and users that are willing to transact using Terra.” Id. ¶ 182.

According to the SEC, however, the above statements were misrepresentations because Chai never used the Terraform blockchain to process transactions. In a May 26, 2020 email, a Chai employee explained that Chai would “process transaction[s] outside [the] blockchain” and then “write a record on the Terra blockchain in parallel.” Id. ¶ 185. In a May 9, 2019 message, Kwon told Shin that he would “do fake transactions on the mainnet to generate staking returns of SDT,” another Terraform crypto asset. Id. ¶ 187. Kwon added, “[I] can just create fake transactions that look real which will generate fees and we can wind down as chai grows.” Id. When asked by Shin whether people would learn that the transactions were fake, Kwon responded, “All power to those that can prove it[']s fake because I will try my best to make it indiscernable.” Id.

Shortly thereafter, Terraform developed what became known as the “LP Server.” Id. ¶ 188. On October 9, 2020, a Terraform engineer messaged another Terraform employee, Paul Kim, to ask, “can you quickly explain me what’s the role of the lp-server?” Id. ¶ 200. Kim responded, “lp-server creates multisend transactions by

receiving transaction information from Chai,” adding, “[i]n short: it basically replicates chai transactions.” Id. Jihoon Kim, a former Terraform employee who had left to join Chai as lead engineer for its e-wallet and card business, told Chai’s Chief Product Officer -- an SEC whistleblower in this case -- that “there’s no crypto going on within Chai.” Id. ¶ 186. When that whistleblower confronted Kwon in September 2021 about the fact that Chai did not really use the Terraform blockchain, Kwon did not deny the allegation but stated merely that he did not “give a fuck about Chai.” Id. ¶ 183.

E. UST’s May 2021 Depeg

On May 19, 2021, UST’s price fell below \$1. Id. ¶ 209. On May 23, 2021, it dropped to around \$0.90. Id. That same day, Kwon had multiple communications with a Jump executive. Id. ¶ 210. When asked about those communications at a deposition, that Jump executive -- as well as another -- invoked the Fifth Amendment and refused to answer. Id. ¶ 211. The SEC asserts that Terraform reached a deal with Jump to take action to restore UST’s \$1 peg, and that, in return, Jump would no longer be required to achieve vesting conditions to receive additional LUNA tokens under earlier agreements. Id. On the day in question, May 23, 2021, a different Jump executive told employees, “I spoke to Do [Kwon] and he’s going to vest us.” Id. ¶ 214. The same day, Kwon told Terraform’s head of business development that he was “speaking to jump about a

solution.” Id. ¶ 217. Terraform’s head of communications, Brian Curran, took notes at a division head meeting that day, writing that Kwon announced that the “[p]eg had to be defended” and that “Jump was deploying \$100 million to buyback UST.” Id. ¶¶ 217-18. Indeed, Jump purchased large amounts of UST in bursts that day, and UST’s market price was eventually restored to near \$1.00. Id. ¶¶ 214-15. Later that year, Kwon told Curran that if Jump had not stepped in, Terraform “actually might’ve been fucked.” Id. ¶ 219. Another Terraform employee added that “they [Jump] saved our ass.” Id.

On May 24, 2021, after UST’s price had largely recovered, Terraform published dozens of Tweets describing the benefits of “algorithmic, calibrated adjustments of economic parameters” as compared to the “stress-induced decision-making of human agents in [a] time of market volatility.” Id. ¶ 222. Terraform referred to UST’s \$1 peg as the “lynchpin for the entire [Terra] ecosystem” and described the depeg and repeg as a “black swan” event that was “as intense of a stress test in live conditions as can ever be expected.” Id. In a June 2021 Terraform Community Update, Terraform stated that “[i]ndustry-wide volatility stress-tested the stability mechanism of the Terra protocol.” Id. ¶ 223.

Kwon discussed the depeg again in a May 2022 talk show appearance, at which he pronounced that the UST algorithmic “protocol automatically self-heals the exchanged rate” and that

"it took a few days for the slippage cost to naturally heal back to spot." Id. ¶ 224. Later that same month, however, Terraform's crypto assets lost nearly all of their value -- according to the SEC, more than \$45 billion -- and have not recovered. Id. ¶ 49.

F. Procedural History

The SEC filed this action against Terraform and Kwon on February 16, 2023 and filed an Amended Complaint on April 3, 2023. See ECF Nos. 1, 25. The Amended Complaint contains six claims for relief: fraud in the offer or sale of securities in violation of Section 17(a) of the Securities Act (Count I); fraud in connection with the purchase or sale of securities in violation of Section 10(b) of the Exchange Act and accompanying Rule 10b-5 (Count II); control person liability against Kwon under Section 20(a) of the Exchange Act, for the Section 10(b) violation (Count III); offering and selling unregistered securities in violation of Sections 5(a) and 5(c) of the Securities Act (Count IV); offering unregistered security-based swaps to non-eligible contract participants in violation of Section 5(e) of the Securities Act (Count V); and effecting transactions in unregistered security-based swaps with non-eligible contract participants in violation of Section 6(1) of the Exchange Act (Count VI).

Defendants timely moved to dismiss the Amended Complaint on a smattering of grounds, including, among others, the argument that none of the crypto assets at issue is a security. See ECF No.

29. After full briefing and oral argument, the Court denied the motion to dismiss. See ECF No. 51. Discovery closed on October 27, 2023. See ECF No. 44. Each side moved under Rule 702 to exclude the expert witnesses of the other, and after full briefing, the Court heard oral argument on those motions on November 17, 2023. On November 20, 2023, the Court issued a “bottom-line” order granting the motions to exclude two of defendants’ three experts, but denying the motions to exclude defendants’ other expert and the SEC’s two experts. See ECF No. 130. This Opinion and Order first explains the reasons for those Rule 702 rulings, and then goes on to resolve the parties’ cross-motions for summary judgment, on which the Court heard oral argument on November 30, 2023 after full briefing.

II. Motions to Exclude Expert Testimony

The SEC offers two expert witnesses, economist Dr. Bruce Mizrach and computer scientist Dr. Matthew Edman, in support of the fraud claims. Defendants offer three expert witnesses: economist Dr. Terrence Hendershott, as a rebuttal witness to Dr. Edman; software developer Mr. Raj Unny, as a rebuttal witness to Dr. Edman; and economist Dr. Christine Parlour.³ Rule 702 of the

³ Importantly, neither side relies on its experts in connection with the motions for summary judgment. However, because the Court denies both sides’ motions for summary judgment on the fraud claims, the Court’s resolution of the Rule 702 motions will affect what can be offered as expert testimony at the forthcoming trial of those claims.

Federal Rules of Evidence provides that: "A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if the proponent demonstrates to the court that it is more likely than not that: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert's opinion reflects a reliable application of the principles and methods to the facts of the case." Fed. R. Evid. 702.⁴ The Court must thus make "a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue." Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 592-93 (1993); see Kumho Tire Co. v. Carmichael, 526 U.S. 137, 147 (1999) (extending Daubert to non-scientific expert testimony).

A. Dr. Bruce Mizrach

The Court denies defendants' motion to exclude Dr. Bruce Mizrach's testimony. Dr. Mizrach is a professor of economics at

⁴ The quoted language includes some small changes that took effect on December 1, 2023, but the Court's decision would be identical under both the old and the new versions.

Rutgers University, where he has taught since 1995. ECF No. 93-2 ("Mizrach Rep."), at ¶ 1.1. Dr. Mizrach has a Ph.D. in economics from the University of Pennsylvania and has also taught at Boston College, the Stern School of Business at NYU, and the Wharton School at the University of Pennsylvania. Id. Dr. Mizrach specializes "in market microstructure," or "the trading mechanisms of financial markets." Id. Subject to challenge by defendants is Dr. Mizrach's conclusion that third-party trading firm Jump played a role in restoring the price of UST to \$1.00 after the May 2021 depeg.

Dr. Mizrach's analysis is based on a variant of an economic model developed and elaborated by Joel Hasbrouck in a 1991 article, "Measuring the information content of stock trades," in The Journal of Finance. Hasbrouck's model has proved highly influential and has been cited in more than 2,000 later publications, including in multiple papers of defendants' expert Dr. Hendershott. See ECF No. 93-3 ("Mizrach Rebuttal Rep."), at 14 n.40. All parties agree on the soundness of Hasbrouck's work.

Defendants nevertheless argue that Dr. Mizrach's analysis is methodologically flawed because Hasbrouck's model "was designed to measure the information content of asset trades, not whether the asset price would have moved more or less if the trading being studied had not occurred." ECF No. 96 ("Mem. against Mizrach"), at 4. Defendants concede that "Hasbrouck's methodology can be used to

study what price changes [Jump's] May 23, 2021 trading might have predicted," but contend that the model "cannot be used" "to determine what prices that trading caused." Id.

But in the instant context, this distinction between "predicted" and "caused" is largely semantic and immaterial. Dr. Mizrach's report explains that his model "measure[s] the impact of one additional buy or sell purchase on [UST's] market price." Mizrach Rep., Appendix 1. Because the model "takes into account all the other factors that might be influencing the price," it "enables [one] to isolate the impact of Jump's trading from other factors." Id. And although defendants argue that the model fails to account for the trading of firms other than Jump, Dr. Mizrach explained in his deposition that the model captures such trades by reflecting them in "the mid-quote," or the price of UST in between two Jump trades. Mizrach Dep. 94:16-21. Moreover, Dr. Mizrach also looked at "certain critical junctures" in which "Jump was the only buyer." Mizrach Rebuttal Rep. at 5.

The SEC also points out that in another case, defendants' rebuttal expert Dr. Hendershott (who, as elaborated below, the Court has not excluded) himself relied on two papers by Dr. Mizrach to use a similar model in coming to similarly causal conclusions. See ECF No. 112 ("SEC Opp. for Mizrach"), at 10-11. In a declaration for that other case, Dr. Hendershott wrote that the model "shows that the orders like those from the Layering Algorithm

significantly impact the price of the E-mini contract.” Id. at 10 (emphasis omitted).⁵ Stated differently, as Dr. Hendershott explained in that declaration, the model showed that a particular algorithm “caused prices to decline.” Id. Rather than attempt to explain in briefing the apparent discrepancy between Dr. Hendershott’s prior work and defendants’ criticisms of Dr. Mizrach’s analysis in this case, defendants replied that Dr. Hendershott could provide the explanation in person. ECF No. 113 (“Reply against Mizrach”), at 4. Dr. Hendershott may have a chance to do so at trial, but in connection with the Rule 702 motions, he chose not to do so.

To be sure, defendants also advance other alleged flaws in Dr. Mizrach’s analysis that Dr. Hendershott, as a rebuttal expert, does describe in his report. For instance, Dr. Mizrach, according to defendants, neither differentiated “between the types of trades that [Jump] appeared to have engaged in for arbitrage or other non-directional trading strategies and potential ‘interventional’ or directional trades, nor explained why the non-directional strategies should be included in the analysis of [Jump’s] supposed trading impact.”⁶ Mem. against Mizrach at 7. Similarly, defendants

⁵ Here and elsewhere, internal alterations, citations, and quotation marks have been omitted unless otherwise indicated.

⁶ “Directional trading refers to strategies based on the investor’s view of the future direction of the market.” Investopedia, Directional Trading: Overview, Example, Types (May 23, 2022). By

note that Dr. Mizrach did not differentiate between active and passive trading or otherwise categorize Jump's trading beyond "buy" or "sell." Id. at 7-9. But these arguments are red herrings. The specific nature of Jump's trading is immaterial to Dr. Mizrach's analysis, which analyzed whether Jump's trading, in any form and in its entirety, played a role in restoring UST's \$1 price in May 2021. Indeed, defendants and Dr. Hendershott do not refute that any of Jump's trading -- including passive buys -- could affect UST's price.

Defendants also criticize Dr. Mizrach's model for using average trade sizes to calculate price impact, rather than "using [Jump's] actual trade data." Mem. against Mizrach at 9. That criticism misapprehends the nature of the model. By leaving volume out of his model, as Hasbrouck also does, Dr. Mizrach assessed price impact as "the weighted average across all the trade size groups (i.e. an average size trade)." Mizrach Rebuttal Rep. at 14. Again, Dr. Mizrach's objective was to assess the role of all of Jump's trading on UST's price in May 2021, not to determine the differences in effect of the volume of particular trades. Defendants do not explain why the lack of actual trading volume in Dr. Mizrach's model makes it unreliable or inaccurate. Indeed, for

contrast, non-directional trading strategies -- such as purchasing both a call and put option of the same asset -- can allow an investor to profit regardless of the future direction of the market.

his rebuttal report to Dr. Hendershott, Dr. Mizrach conducted a sensitivity analysis to compare the price impact across four different groups of Jump trading volumes "and compute an average weighted by the frequency of each trade size group." Id. The result was a set of figures that were "less than one cent different" from the estimates in his initial report, a statistically insignificant difference. Id. at 14 & n.41.

Defendants assert that Dr. Mizrach "did not conduct a sanity check" of his model "against the real-world data." Mem. against Mizrach at 11. For instance, the model predicts that, in response to sufficient panic in the UST market, UST's trading price would have been negative -- a clear impossibility. But, as the SEC explains, "[s]uch predictions are common in economic modeling and require the application of logic by the economist and the recognition that selling would stop once the price hit zero." SEC Mizrach Opp. at 18. Similarly, defendants note that Dr. Mizrach's model shows Jump's trading to have increased UST's price by \$0.62 over a particular half-hour period, when the actual price increased by just \$0.03. In defendants' telling, such a difference shows "the utter lack of reliability of Prof. Mizrach's model." Mem. against Mizrach at 13. But a price can be pulled in different directions from different sources. Dr. Mizrach's model is perfectly consistent with the explanation, which he advances, that in the absence of Jump's trading during that period, the price

would have been \$0.62 lower than it was. In other words, had Jump not made its trades during that period, UST's price would have declined by \$0.59 rather than increase by \$0.03, as it did.

Finally, defendants urge the Court to exclude any opinions by Dr. Mizrach about UST's later price crash in 2022. But there are no such opinions to exclude. The SEC and Dr. Mizrach are clear that his opinions are only about the May 2021 depeg, not events in 2022. SEC Mizrach Opp. at 19-20. The Court accepts that representation.

At bottom, some of defendants' criticisms are immaterial, and some are legitimate differences of opinion between two bona fide experts. None, however, is a reason to jettison Dr. Mizrach's testimony.

B. Dr. Matthew Edman

The SEC's other expert, Dr. Matthew Edman, is a computer scientist who founded a cybersecurity and investigations firm that specializes in cryptocurrency, cybersecurity, and digital forensic investigations. ECF No. 87-2 ("Edman Rep."), at ¶¶ 2-3. Dr. Edman has authored multiple peer-reviewed research papers about "techniques for cryptographic security and authentication in wireless networks." Id. ¶ 3. After reviewing the source code of Terraform's "LP Server," Dr. Edman concluded that the "primary functionality" of the LP Server software "was to replicate purported Chai user and merchant transactions onto the Terra

blockchain.” Id. ¶ 11. Moreover, his review revealed, “[t]he purported Chai user transactions occurred within a ‘closed system’ of Terra blockchain wallet addresses, and so the purported Chai transactions on the Terra blockchain represented transfers between wallet addresses controlled by Terraform Labs rather than the processing and settlement of Chai transactions between Chai users and merchants.” Id. The Court denies defendants’ motion to exclude Dr. Edman’s testimony.

Defendants’ threshold argument is that Dr. Edman “lacks sufficient expertise in financial payment systems or payment processes.” ECF No. 97 (“Mem. against Edman”), at 8. But Dr. Edman does not purport to hold such expertise, nor do his conclusions require it of him. Dr. Edman is a computer scientist who draws conclusions about the Terraform blockchain by examining the source code of a server and its programming. Such analysis and conclusions are well within Dr. Edman’s bailiwick. There is no indication that the features of or methods for analyzing source code differ when a financial payment system is involved.

Defendants next contend that Dr. Edman failed to consider sufficient data because he did not “examine each component of the Chai payment system, its data or logs, and the data that was input into the LP Server that resulted in the blockchain transactions.” Id. at 11. The rub is that Dr. Edman did not “have enough information to say for certain whether or not the underlying

transactions were real.” Id. (quoting Edman Dep. 139:25-140:04). But all that meant was that Dr. Edman could not say whether the purported Chai transactions replicated on the Terra blockchain were real Chai transactions that had elsewhere occurred through traditional means of payment or were entirely fake transactions. See Edman Dep. 139:1-14 (“Q. Did any of the information that you did have and did review indicate to you that the purported Chai user merchant transactions were not real? A. Well, the information available to me made clear that they were intended to replicate purported Chai user and merchant transactions. Whether there’s a corresponding real world transaction that occurred off of the Terra blockchain, I don’t believe I can answer that based on the information that . . . was provided.”). The answer to that question had no bearing on Dr. Edman’s conclusions, nor is it relevant to the ultimate issue of whether defendants fraudulently misrepresented that Chai used the Terraform blockchain to process transactions. Quite aside from the notable fact that the information that defendants criticize Dr. Edman for not considering is information that defendants were unable to produce, ECF No. 136 (“Daubert Hearing Tr.”), at 60-61, Dr. Edman was able to reach his conclusions based on the LP Server source code and public blockchain data. Defendants provide no satisfying account of why the information Dr. Edman relied on was insufficient to

conclude that the LP Server replicated purported Chai transactions.

Defendants also assert that Dr. Edman's analysis relies on improper speculation about inputs into the LP Server. To the contrary, however, Dr. Edman's analysis is based on his review of the LP Server itself, the "repository" of which contained "scripts" that "use the private keys controlled by the LP Server to create transactions associated with purported merchant user wallets." Edman Dep. 150:9-151:15. That Dr. Edman testified at his deposition that he "would just be speculating" in response to questions from defense counsel about matters he did not analyze and that were outside the scope of his inquiry does not mean that what he did analyze was unreliable.

Defendants also make the puzzling argument that "Dr. Edman's methodology used in forming his opinions fatally lacks any definition of 'processing and settlement' or a framework (let alone an industry-recognized one) for evaluating the meaning of 'processing and settlement' within the Chai payment system." Mem. against Edman at 14. But Dr. Edman did not refer to the "processing and settlement" of payments as a term of art. He "instead was using it to describe that Chai merchants were not being paid by their customers on the Terra blockchain." ECF No. 110 ("SEC Edman Opp."), at 17. It is common parlance to refer to credit card readers or other payment devices as "processing" a payment. And most anyone

who has visited a hotel or restaurant has heard reference to "settling" -- in another word, paying -- a bill. Dr. Edman's failure to define those terms in his report will not impede a jury's understanding of his conclusions.

Defendants also argue that Dr. Edman did not reliably apply a proper methodology in concluding that the purported Chai transactions "occurred within a 'closed system' of Terra blockchain wallet addresses." Mem. against Edman at 16. While cast as an argument about methodology, defendants' gripes appear to be mere disagreements with Dr. Edman's categorizations and conclusion. Defendants point to three digital wallet addresses -- out of the more than 2.7 million that Dr. Edman reviewed -- that "were not identified by Dr. Edman as being associated with" Terraform but that made transfers to the LP Server wallet. Id. In his rebuttal report, Dr. Edman explained that "two were associated with Terra blockchain validators operated by Terraform and one appears to be an omnibus wallet on a centralized exchange that received funds from a Terraform wallet address and which Terraform used to send funds to the LP Wallet when it needed to be replenished." SEC Edman Opp. at 21; see ECF No. 87-3 ("Edman Rebuttal Rep."), at ¶¶ 18-29. Defendants describe Dr. Edman's explanation as a silent switch of methodology, because he previously assessed whether Terraform controlled given digital wallet addresses only by looking to whether Terraform held the

"private keys" to those wallet addresses. Defendants' assertion is an overreach. The Court agrees with the SEC that "the three wallet addresses mentioned by [defendants' expert] Mr. Unny do nothing to undermine Dr. Edman's opinion that the LP Server operated a closed system involving millions of supposed Chai merchant and customer wallet addresses," and "even if they did, this is exactly the type of criticism that should be addressed on cross-examination." SEC Edman Opp. at 22.

Lastly, defendants challenge Dr. Edman's conclusions by contending that he failed to account for an alternative explanation that the record provides no evidence to support. Defendants mobilize the opinion of their rebuttal expert, Mr. Raj Unny, that Terraform's control of the digital wallet addresses making and receiving payments on the LP Server is also consistent with Terraform operating the LP Server with "custodial wallets" rather than as a closed system that merely replicates transactions. Mem. against Edman at 18. A "custodial wallet" allows a third party to a transaction to manage assets on behalf of users, so that users need not transfer their crypto assets directly and thus have an added layer of protection. See ECF No. 109-1 ("Unny Rep."), at ¶ 19. For a potentially useful analogy, one might think of a password management system that a person can use to create and store passwords to sign in and out of accounts without having to remember or type in the passwords themselves.

As Dr. Edman explained, “[i]f the LP Server were a ‘custodial wallet implementation,’ . . . [one] would expect to observe deposits to and withdrawals from the supposed Chai user and merchant custodial wallets” at some point. Edman Rebuttal Rep. ¶ 14. Yet, “there are none.” Id. Indeed, Mr. Unny testified at his deposition that he saw no evidence on the Terraform blockchain that either Terraform or Chai were providing custodial wallets to Chai customers. Edman Dep. 160:17-161:1. Nor is there any other evidence in the record suggesting as much. There is nothing unreliable about Dr. Edman’s failing to credit or discuss an alternative explanation that is nowhere supported by the evidence.⁷ Accordingly, Dr. Edman may testify at trial.

C. Dr. Terrence Hendershott

Defendants offer Dr. Terrence Hendershott, a professor of finance at the Haas School of Business at the University of California at Berkeley who focuses on market microstructure, as a rebuttal expert to SEC expert Dr. Mizrach. ECF No. 93-1 (“Hendershott Report”), at ¶¶ 1-2. Dr. Hendershott has “published numerous articles on the structure, design, and regulation of financial markets and how market participants . . . affect price discovery and the liquidity of different financial markets.” Id.

⁷ Defendants also argue that Dr. Edman improperly opines about intent. But Dr. Edman’s opinions are about software, not the state of mind of any individuals or any broader assessments of corporate strategy.

¶ 3. Dr. Hendershott concludes that “Dr. Mizrach’s price impact analysis is conceptually flawed” and cannot “establish[] that UST’s re-peg would not have happened in the absence of Jump’s trading” in May 2021. Id. ¶ 10. In addition, Dr. Hendershott concludes that Dr. Mizrach’s price impact analysis is methodologically flawed because it does not distinguish between different types of trades -- such as active versus passive -- and because it uses average trade size rather than Jump’s “actual number of net buy trades,” leading to “economically nonsensical results.” Id. ¶¶ 11-12. The Court denies the SEC’s motion to exclude his testimony.

The SEC’s primary argument is that Dr. Hendershott’s opinions are unreliable because he ignored key factual evidence that Terraform had agreements allowing Jump to acquire LUNA at below-market prices, which gave Jump a strong financial incentive to make trades that pushed UST’s price back up to \$1.00. ECF No. 93 (“Mem. against Hendershott”), at 6-7. But the SEC fails to explain why it would have been necessary for Dr. Hendershott to consider those agreements for his critiques of Dr. Mizrach’s model. By Dr. Mizrach’s own description, his model simply assessed whether Jump’s trading played a role in moving UST’s price back to \$1.00 in May 2021. Jump’s motive for those trades has no bearing either on Dr. Mizrach’s model or on the conceptual and methodological critiques that Dr. Hendershott offers. See ECF No. 104 (“Defs.’

Hendershott Opp."), at 2 n.3 ("Prof. Hendershott did not address the agreements about which the SEC complains because the . . . methodology employed by Dr. Mizrach did not incorporate any information from those agreements in any way.").

The SEC also contends that Dr. Hendershott should not be permitted to testify regarding the overview in his report "of blockchain technology, as well as the crypto assets and aspects of the Terra ecosystem that relate to his opinions," because he lacks relevant training and experience in these areas. Mem. against Hendershott at 12; see Hendershott Rep. ¶¶ 17-32. But the SEC itself acknowledges that that "[t]his explanation is in service to Dr. Hendershott's analysis of the May 2021 UST depegging." Mem. against Hendershott at 13. Rather than purport to offer opinions about blockchain technology, Dr. Hendershott simply provides context for his analysis that is helpful to the reader. If, at trial, the SEC disagrees with any of Dr. Hendershott's characterizations, it is free to cross-examine him about them or otherwise rebut them.

D. Mr. Raj Unny

Defendants offer software developer Raj Unny as a rebuttal expert to SEC expert Dr. Edman. Mr. Unny has "been deeply involved in software technologies across a broad spectrum of industries" for 28 years and is the founder and CEO of Indus Finch Group, a Swiss software design and development company. ECF No. 109-1 ("Unny

Rep.”), at ¶¶ 1-2. He has degrees in computer science and advanced computing. Id. ¶ 7. Mr. Unny has “been involved in several projects that built blockchain applications during the past several years,” including developing and launching a cryptocurrency. Id. ¶ 5. Mr. Unny concludes that “Dr. Edman provides insufficient evidence to substantiate his claims and opinions that the ‘purported Chai transactions on the Terra blockchain’ did ‘not represent the actual processing and settlement of real world Chai transactions’ and were instead ‘transactions generated by the LP Server.’” Id. ¶ 11.

The Court grants the SEC’s motion to exclude Mr. Unny’s testimony because he has not demonstrated sufficient expertise in blockchain analysis to opine on Dr. Edman’s conclusions and, by contrast with Dr. Hendershott’s brief excursion into blockchain description to provide context, Mr. Unny’s blockchain analysis is central to his opinions here offered. At his deposition, Mr. Unny could not name any specific tools he had used in his professional experience to review blockchain transactions and, even more strikingly, admitted that he did not personally analyze the Terraform blockchain data in this case. See Unny Dep. 9:10-11:6, 11:16-20, 23:23-24:9, 57:11-19. Rather, the analysis discussed in Mr. Unny’s report was performed by employees of the consulting firm Cornerstone Research, whose qualifications or methodology Mr. Unny did not know at all. Nor could Mr. Unny even recall which

computer program the Cornerstone analysts had used. Unny Dep. 188:2-11.

Defendants retort that Mr. Unny has "substantial experience with building and developing both blockchain applications and payment systems." ECF No. 109 ("Defs.' Unny Opp."), at 7 (emphasis omitted). Yet, as the SEC points out, neither defendants nor Mr. Unny "explain how such experience would allow Mr. Unny to trace and analyze blockchain transactions." ECF No. 118 ("SEC Unny Reply"), at 2. As Mr. Unny acknowledged at his deposition, the projects that defendants reference -- from Mr. Unny's role as Chief Technology Officer at a company called ft.digital Fintech -- were incomplete, had no paying clients, and were never deployed. *Id.* at 2-3; see Unny Dep. 73:22-74:1 (referring to one project as "an experimental proof of concept").

Moreover, even if Mr. Unny met the threshold level of qualification, the Court would exclude his testimony for the further reason that it is speculative and wholly unsupported by evidence. At his deposition, Mr. Unny testified that the extent of his opinion was that, in addition to Dr. Edman's explanation that the LP Server is a closed system that merely replicated purported Chai transactions, "it's also possible that [the LP Server] is consistent with a custodial wallet system." Unny Dep. 157:7-12. But Mr. Unny disclaimed any opinion that Terraform in fact offered a custodial wallet service. Unny Dep. 169:13-15. Indeed, he

acknowledged seeing no evidence on the Terraform blockchain that either Terraform or Chai provided custodial wallet services. Unny Dep. 160:17-161:1 (“Q. Did you see anything on the blockchain that indicated that Terra was custodifying crypto assets for its users or merchants? A. No.”).

Mr. Unny’s conclusion that certain Chai applications “may have interacted with or even directed the LP Server” is similarly conjectural. Unny Rep. ¶ 45. At his deposition, Mr. Unny was unable to explain how any documents or data showed that those Chai applications interacted with the server. See Unny Dep. 116:5-22 (“[A]ll I can do is I can guess from the file names.”). Such unsupported, gestural testimony would not aid, and could only mystify, a jury. Because “a trial judge should exclude expert testimony if it is speculative or conjectural,” Zerega Ave. Realty Corp. v. Hornbeck Offshore Transp., LLC, 571 F.3d 206, 213-14 (2d Cir. 2009), the Court will not permit Mr. Unny to testify.

E. Dr. Christine Parlour

Defendants’ final expert is economist Dr. Christine Parlour, who teaches at the Haas School of Business at the University of California at Berkeley and conducts research on market microstructure and cryptocurrency. ECF No. 94-1 (“Parlour Rep.”), at ¶ 1. Dr. Parlour holds a Ph.D. in economics from Queen’s University at Kingston. Id. ¶ 3. She has authored a book chapter on cryptocurrencies in the Handbook of Alternative Finance and has

published articles on price dynamics and informed trading in limit order markets (where trades are executed once a particular price is reached). Id. ¶ 4. Dr. Parlour's testimony would "provide an overview of the characteristics and underlying economics of certain tokens on the Terra blockchain" and "discuss whether risks, such as the risk of a de-peg with respect to the TerraUSD [UST] stablecoin, had been discussed by [Terraform], regulators, and other market participants." Id. ¶ 9.

The Court grants the SEC's motion to exclude Dr. Parlour's testimony because it consists of a factual narrative that would not aid a jury. Notwithstanding the language of her report, the SEC correctly points out that "Dr. Parlour does not offer any opinion about how the Terraform crypto assets actually functioned, just how they were 'designed' to work." ECF No. 94 ("Mem. against Parlour"), at 7; see Parlour Dep. 134:9-23 ("Q. So you're not offering any opinions about how UST was actually used, just how it was designed. Is that fair? A. That's fair."). And Dr. Parlour's opinions about the designs of Terraform's crypto assets are largely based on Terraform's own marketing materials. See Parlour Rep. ¶¶ 39-67. Such opinions are, at best, unhelpful to a jury, and at worst, have a serious potential to mislead.

Dr. Parlour's second category of testimony -- whether Terraform, regulators, and market participants discussed the risks of a UST depeg -- is even less defensible as a proper subject of

expert opinion. Whether or not certain people were discussing a certain subject is not here relevant, let alone a matter that calls for expert testimony. Moreover, Dr. Parlour did not base her second conclusion on sufficient facts and data. It appears that Dr. Parlour reviewed certain public statements, papers, and communications favorable to defendants' perspective -- that the public was aware of the risk of UST losing its value -- but did not mention a white paper in which Terraform itself downplayed such risk. Yet Dr. Parlour testified at her deposition and at the Daubert hearing that she knew about the white paper, but chose to ignore it because, in her view, it "wasn't relevant" and was "abstruse." Parlour Dep. 201:22-202:10; Daubert Hearing Tr. 16.

Even more problematic is the fact that Dr. Parlour specifically disclaimed performing a comprehensive review of Terraform's or Kwon's Twitter accounts or other public communications. Parlour Dep. 22:11-17 ("Q. Did you make any effort to review the public statements of Terraform Labs before issuing your report? A. I did not do a comprehensive analysis of the statements issued by Terraform Labs when I put together my report."). In other words, Dr. Parlour did not conduct a comprehensive review of the very documents on which the SEC relies to argue that defendants committed fraud by reassuring the public that UST's price was algorithmically stable. And when she was asked at her deposition whether Terraform "ever publicly state[d] that

the risk of a depeg was low," her answer was that she did not know. Parlour Dep. 82:15-20.

Nor has Dr. Parlour articulated a reliable methodology to form her conclusions. When asked about any such methodology at her deposition, Dr. Parlour referred only to "the training and experience that [she] got in [her] economics Ph.D." and "the usual economic and general understanding." Parlour Dep. 53:15-23, 54:8-15, 224:11-14. When asked again by the Court at the Daubert hearing, Dr. Parlour explained that she "took" a "long literature" "that basically talks about microeconomics, incentives, how markets work, [and] understanding the relationship between markets" "and then . . . put the facts that we know about this new type of business model into that literature just so that it sort of makes sense from an economics and finance point of view." Daubert Hearing Tr. 13-14. This is not remotely the kind of specific methodology that Daubert and Kumho Tire prescribe. Ultimately, the basis for Dr. Parlour's conclusions boils down to her own "ipse dixit," which is plainly insufficient for admission of her testimony under Daubert and Rule 702. Kumho Tire, 526 U.S. at 157. In sum, the Court excludes Dr. Parlour's testimony because it would place her not in the role of expert, but of narrator -- and not even a reliable narrator, at that.

III. Motions for Summary Judgment

A. Offering and Selling Unregistered Securities

1. There is no genuine dispute that UST, LUNA, wLUNA, and MIR are securities because they are investment contracts.

The SEC argues that four of Terraform's crypto assets -- UST, LUNA, wLUNA, and MIR -- are securities, as defined in Section 2(a)(1) of the Securities Act for the purposes of the federal securities laws, because they are "investment contract[s]." 15 U.S.C. § 77b(a)(1). Defendants first argue that, even if all the SEC's allegations are credited, those assets are not investment contracts as a matter of law. In the alternative, defendants contest the SEC's assertion that undisputed facts do indeed demonstrate that the crypto assets here at issue are investment contracts.

Defendants' first argument in effect asks this Court to cast aside decades of settled law of the Supreme Court and the Second Circuit. In the seminal decision of SEC v. W.J. Howey Co., 328 U.S. 293 (1946), the Supreme Court held in no uncertain terms that "an investment contract for purposes of the Securities Act means a contract, transaction or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party." Id. at 298-99. Defendants urge this Court to scrap that definition, deeming it "dicta" that is the product of statutory interpretation of a

bygone era.⁸ The Court declines defendants' invitation. Howey's definition of "investment contract" was and remains a binding statement of the law, not dicta. And even if, in some conceivable reality, the Supreme Court intended the definition to be dicta, that is of no moment because the Second Circuit has likewise adopted the Howey test as the law.⁹ See, e.g., Revak v. SEC Realty Corp., 18 F.3d 81, 87 (2d Cir. 1994).

There is no genuine dispute that the elements of the Howey test -- "(i) investment of money (ii) in a common enterprise (iii) with profits to be derived solely from the efforts of others" (id.) -- have been met for UST, LUNA, wLUNA, and MIR.

⁸ Defendants made other arguments at the motion to dismiss stage, similarly seeking to avoid the application of Howey's test to determine whether their crypto assets are securities. The Court rejected those arguments, which involved the major questions doctrine, due process, and the Administrative Procedure Act. See ECF No. 51, at 18-29. Although the legal argument defendants now newly make was equally available at that earlier stage of this litigation, the SEC does not contend that the argument has been waived or forfeited, so the Court carries on to the merits of it.

⁹ Defendants' argument that the Supreme Court conducts statutory interpretation differently nowadays, and thus would not today independently reach the same holding it did in Howey, is no more persuasive even if the premise is credited arguendo. The Supreme Court has cautioned that "other courts should [not] conclude that [its] more recent cases have, by implication, overruled an earlier precedent." Agostini v. Felton, 521 U.S. 203, 237 (1997). When a Supreme Court precedent "has direct application in a case," as Howey does here, this Court must follow it, even if it "appears to rest on reasons rejected in some other line of decisions." Id. In any event, neither the Supreme Court nor the Second Circuit has ever suggested that Howey rests on a shaky foundation.

UST. Defendants make much of the fact, undisputed by the SEC, that UST on its own was not a security because purchasers understood that its value would remain stable at \$1.00 rather than generate a profit. But, beginning in March 2021, holders of UST could deposit their tokens in the Anchor Protocol, which defendants' efforts developed and which Kwon himself publicly announced would generate "by far the highest stablecoin yield in the market," with a "target" of "20% fixed APR." ECF No. 73, Ex. 66; id., Ex. 67. On May 11, 2021, Terraform wrote in a promotional Tweet that the Anchor Protocol would allow "third parties to seamlessly integrate 20% yield on \$UST to expand stable savings opportunities to a greater audience." Id., Ex. 135. A 2020 white paper described Terraform's work on the Anchor Protocol as "an attempt to give the main street investor a single, reliable, rate of return across all blockchains." Id., Ex. 44 at 2.

Once launched, returns from the Anchor Protocol were indeed paid out in proportion to the amount of UST tokens a person or entity had deposited. Defs.' Response to SEC 56.1 ¶ 80. The Anchor Protocol website stated that "[d]eposited stablecoins are pooled and lent out to borrowers, with accrued interest pro-rata distributed to all depositors." Id. Terraform promoted in an October 2021 Tweet that it had configured its website to allow deposits of UST into the Anchor Protocol "directly from the Terra Station desktop wallet." ECF No. 75, Ex. 136. A Terraform manager,

Matthew Cantieri, led a team that worked on the Anchor Protocol. Defs.’ Response to SEC 56.1 ¶ 83. His responsibilities included the “strategic direction of the protocol, user adoption, making sure that people were accountable for product roadmap items, [and] working with Do [Kwon] and the team on what those products should be.” Id. By May 2022, there were approximately 18.5 billion tokens of UST, 14 billion of which had been deposited in the Anchor Protocol. Id. ¶ 36.

The above undisputed evidence clearly demonstrates that UST in combination with the Anchor Protocol constituted an investment contract. As the Supreme Court has held, it is of no legal consequence that not all holders of UST deposited tokens in the Anchor Protocol, and thus that some holders “ch[ose] not to accept the full offer of an investment contract.” Howey, 328 U.S. at 300.

LUNA and wLUNA. Defendants’ efforts to rebut the evidence that LUNA and wLUNA were securities are even further off the mark. In denying the motion to dismiss, the Court held that, “by alleging that the defendants ‘pooled’ the proceeds of LUNA purchases together and promised that further investment through these purchases would benefit all LUNA holders, the SEC has adequately pled that the defendants and the investors were joined in a common,

profit-seeking enterprise.” ECF No. 51, at 37. Those well-pleaded allegations have now been substantiated with undisputed evidence.¹⁰

Kwon and others made specific, repeated statements that would lead a reasonable investor in LUNA to expect a profit based on defendants’ efforts to further develop the Terraform blockchain. Terraform’s business development lead, Jeff Kuan, stated in a 2021 public interview that “investing in Terra means . . . buying LUNA, which is the ‘equity’ in our co.” Response to SEC 56.1 ¶ 63. Terraform’s head of communications, Brian Curran, remarked in a June 2021 public interview that “[o]wning LUNA is equivalent to owning a stake in the transaction fees of a network like Visa” because “[a]ll the transaction fees from Terra stablecoins are distributed to LUNA stakers in the form of staking rewards.” ECF No. 75, Ex. 107.

In a similar vein, Terraform’s Director of Special Projects, SJ Park, stated in a videotaped presentation around the same time that “[o]wning LUNA is essentially owning a stake in the network and a bet that value will continue to accrue over time.” Defs.’ Response to SEC 56.1 ¶ 63. And Kwon himself wrote in a public Tweet that “\$Luna value is actionable -- it grows as the [Terraform]

¹⁰ As the Court explained in its opinion denying the motion to dismiss, the analysis of LUNA applies equally to wLUNA. See ECF No. 51, at 37 (“[T]he wLUNA investors were just a variation on this theme since wLUNA tokens could be exchanged for LUNA tokens.”); see also Defs.’ Response to SEC 56.1 ¶ 42.

ecosystem grows.” ECF No. 75, Ex. 108. In Kwon’s own words, a holder of LUNA could simply “[s]it back and watch [him] kick ass.” Id. In other words, a person could invest their “money in a common enterprise” and be “led to expect profits solely from the efforts of the promoter or a third party,” namely, Terraform and Do Kwon himself.¹¹ Howey, 328 U.S. at 299. Indeed, the price of LUNA increased from under \$1.00 in January 2021 to a high of over \$119 in April 2022, before plummeting to under a penny in May 2022. ECF No. 75, Ex. 125.

MIR. Finally, the evidence shows beyond dispute that MIR was a security for similar reasons. “[T]he proceeds from sales of the MIR tokens were ‘pooled together’ to improve the Mirror Protocol,” and “[p]rofits derived from the use of the Mirror Protocol . . . were fed back to investors based on the size of their investment.”

¹¹ Defendants challenge as inadmissible the declaration of Donald Hong, the SEC’s summary witness who reviewed Terraform’s financial records to show that the funds from LUNA purchases were indeed pooled. Defendants argue that Hong’s declaration is a last-minute, back-door expert report because he states that “the evidence reflects that defendants pooled investor funds into wallet addresses, crypto trading platform accounts, and bank accounts they controlled and used those funds to make payments for business expenses.” ECF No. 123 (“Defs.’ Opp.”), at 7. But a witness providing “a summary of the relevant financial records” is not supplying expert testimony under Federal Rule of Evidence 702. United States v. Lebedev, 932 F.3d 40, 50 (2d Cir. 2019), abrogated on other grounds, Ciminelli v. United States, 598 U.S. 306 (2023). And, as the SEC points out, “Hong’s summary is even more mechanical than the analyses approved as summary testimony in Lebedev . . . , which relied on accounting methodologies.” ECF No. 127 (“SEC Reply”), at 8; see also Fed. R. Evid. 1006 (allowing summary testimony).

ECF No. 51, at 37. Terraform described MIR as a “governance token that earns fees from asset trades” on the Mirror Protocol that Terraform launched. Defs.’ Response to SEC 56.1 ¶¶ 38, 101; ECF No. 73, Ex. 80. A Terraform press release at the launch of the Mirror Protocol touted that “[b]y adding the Mirror governance token -- MIR -- to liquidity pools, MIR holders can earn 0.25% from trading fees.” ECF No. 73, Ex. 80. Although Terraform labeled “the protocol [as] decentralized,” it explained that “the team behind Terra contributed most of the core development work behind the Mirror.” Id. Kwon himself sent promotional materials to a potential MIR purchaser, including a spreadsheet with a revenue projection table estimating how the price of MIR would increase as a result of greater usage of the Mirror Protocol. ECF No. 75, Ex. 148.

Terraform also described to potential investors its efforts to strengthen the Mirror Protocol, such as “deploying its UST reserves to make the markets for mAssets for the first year of the protocol,” building the Mirror Protocol website and hiring a firm to audit Terraform’s code for doing so, and publishing “dashboards” showing the Mirror Protocol’s growth. Defs.’ Response to SEC 56.1 ¶¶ 102, 103, 107. In a public question-and-answer session, Terraform’s Community Lead, Aayush Gupta, stated on behalf of Terraform that the company was “very upbeat on our marketing campaign” and was “doing [its] best with its global suite of talent

and organizing stuff like trading competitions and referral campaign to increase visibility for Mirror.” Id. ¶ 108. In an April 2021 interview, Terraform’s head of communications, Brian Curran, stated that Terraform intended to launch a “V2” of the Mirror Protocol, which would bring “several major improvements,” and that Terraform planned to expand the Mirror Protocol “beyond SE Asia and the typical US market.” Id. ¶ 109. Terraform employed a “product manager” for the Mirror Protocol and retained an administrative key to provide software updates to it. Id. ¶ 111. Terraform used proceeds from the sale of MIR, which it pooled, “to make payments for services, salary, and operations.” ECF No. 77, at ¶ 25; see id. at ¶¶ 29-32.

In light of all this, defendants cannot meaningfully dispute that they led holders of MIR to expect profit from a common enterprise based on Terraform’s efforts to develop, maintain, and grow the Mirror Protocol -- in other words, that MIR passes the Howey test with flying colors.

2. There is no genuine dispute that defendants offered and sold unregistered securities, in violation of Sections 5(a) and 5(c) of the Securities Act.

The Court grants summary judgment to the SEC on Count IV of the Amended Complaint because defendants offered and sold unregistered securities, in violation of Sections 5(a) and 5(c) of

the Securities Act. In particular, defendants offered and sold LUNA and MIR in unregistered transactions.

“Section 5 requires that securities be registered with the SEC before any person may sell or offer to sell such securities.” SEC v. Cavanagh, 445 F.3d 105, 111 (2d Cir. 2006). Section 5(a) covers unregistered sales and Section 5(c) covers unregistered offers. See 15 U.S.C. § 77e(a), (c). To prove liability under Section 5, the SEC must show “(1) lack of a registration statement as to the subject securities; (2) the offer or sale of the securities; and (3) the use of interstate transportation or communication and the mails in connection with the offer or sale.” Cavanagh, 445 F.3d at 111 n.13. Only the second element is contested here.

Terraform sold LUNA tokens directly to institutional investors through sales agreements that expressly contemplated Terraform’s development of a secondary market. Defs.’ Response to SEC 56.1 ¶¶ 117-19. The terms of those agreements provided a built-in incentive for secondary resale because Terraform sold LUNA to initial investors at discounts of up to, and sometimes more than, 40%. Id. ¶ 119. In a fundraising update in December 2018, Terraform co-founder Daniel Shin wrote that Terraform had “begun exchange listing discussions given token listing is a precondition for [the] Terra/Luna ecosystem to operate.” Id. ¶ 121. Similarly, as Terraform provided loans of tens of millions of LUNA tokens to

trading firm Jump, Kwon announced Terraform's expectation that Jump would "improve liquidity of LUNA in secondary trading markets." Id. ¶ 126. Kwon stated that, before Jump's involvement, LUNA's liquidity had been "rather lackluster partly due to our team's inexperience with secondary markets & trading operations." Id.

Terraform's offers and sales of MIR were similar. A Terraform subsidiary sold MIR tokens directly to purchasers through "Simple Agreements for Farmed Tokens," or SAFTs. Id. ¶ 135. Those agreements did not restrict purchasers from reselling their MIR tokens in secondary trading markets or to U.S. investors. Id. ¶ 136. Terraform also loaned up to 4 million MIR tokens to Jump, in an agreement that expressly required Jump to trade MIR tokens on crypto asset trading platforms and to provide Terraform with reports of its trading. Id. ¶ 138. Terraform also sold both LUNA and MIR tokens to secondary market purchasers on Binance and other crypto trading exchanges. Id. ¶ 142. The record provides no evidence that Terraform took steps to determine whether those trading platforms were available to U.S. investors. Id. ¶ 143.

Defendants argue that even if LUNA and MIR were securities, they were exempt from registration. But "[o]nce a prima facie case" of Section 5 liability "has been made, the defendant bears the burden of proving the applicability of an exemption." Cavanagh, 445 F.3d at 111 n.13. Defendants have not carried that burden here.

Defendants contend that their distributions of LUNA and MIR were not public offerings because they only sold directly to sophisticated investors. See ECF No. 100 ("Defs.' Mem."), at 25-27; SEC v. Ralston Purina Co., 346 U.S. 119, 125 ("An offering to those who are shown to be able to fend for themselves is a transaction 'not involving any public offering.'"). But to avail themselves of that exemption, defendants would need to also show that they "intended" the LUNA and MIR tokens "to come to rest with" those sophisticated investors. SEC v. Telegram Grp. Inc., 448 F. Supp. 3d 352, 380 (S.D.N.Y. 2020). The natural problem for defendants is that "securities do not come to rest with investors who intend a further distribution." Id. at 380. Terraform's own repeated statements about developing a liquid secondary market for LUNA, and its express requirement that Jump trade MIR on exchanges -- and even that Jump provide reports to Terraform about that secondary trading -- make plain that neither Terraform nor its institutional investors had any intent to simply hold onto LUNA or MIR without further trades. It is immaterial that the vesting period in certain sales agreements "precluded immediate resale" or "that LUNA was not listed on any trading platform at the time of the purchases" by those institutional investors. Defs.' Mem. at 25.

Defendants also argue that certain sales agreements for LUNA were exempt from registration under Regulation S, which states

that Section 5's reference to offers and sales refers only to those "that occur within the United States." 17 C.F.R. § 230.901. But defendants point to no evidence -- as they must, given that they bear the burden of proof on this exemption -- showing that they reasonably believed "at the commencement of the offering" that there was "no substantial U.S. market interest" or that they took any steps to prevent resale of LUNA and MIR into the U.S. market. Id. § 230.903. Conjecture that "if a purchaser intended to sell its LUNA, it could have done so without violating Section 5 by selling on any of several foreign platforms under Regulation S's exemption," is not evidence that purchasers limited their resales to foreign exchanges or that Terraform believed purchasers did so. Defs.' Mem at 25-26.

The SEC is thus entitled to summary judgment of liability on Count IV of the Amended Complaint for defendants' unregistered offers and sales of LUNA and MIR. The SEC's motion for summary judgment made no mention of potential remedies, which will be determined once the question of liability has been resolved for all claims.

3. As a matter of law, defendants did not offer or effect transactions in security-based swaps.

The Court grants summary judgment for defendants on Counts V and VI of the Amended Complaint, alleging that defendants offered unregistered security-based swaps to non-eligible contract

participants, in violation of Section 5(e) of the Securities Act, and effected transactions in security-based swaps with non-eligible contract participants, in violation of Section 6(l) of the Exchange Act. Although the SEC makes no argument that an mAsset is itself a security, see ECF No. 142 ("Summary Judgment Arg. Tr."), at 6 (counsel for the SEC conceding the point), the SEC asserts that by creating and maintaining the Mirror Protocol through which others could mint mAssets, defendants offered and effected transactions in security-based swaps. The Court holds, however, that an mAsset does not meet the statutory definition of a security-based swap.

The Commodity Exchange Act defines a "swap" as "any agreement, contract, or transaction . . . that provides on an executory basis for the exchange . . . of 1 or more payments based on the value or level of 1 or more . . . securities . . . and that transfers, as between the parties to the transaction, in whole or in part, the financial risk associated with a future change in any such value or level without also conveying a current or future direct or indirect ownership interest in an asset." 7 U.S.C. § 1a(47)(A)(iii). A "security-based swap" is such a swap that, as relevant here, "is based on . . . a single security." 15 U.S.C. § 78c(a)(68).

The Mirror Protocol's mAssets satisfy most -- but not all -- of the definition's requirements. A user who mints or purchases an

mAsset through the Mirror Protocol indeed exchanges a payment based on the value of some underlying reference security, such as a share of Apple. Defs.' Response to SEC 56.1 ¶¶ 112-14. And the user does so without receiving any ownership interest in the underlying security. Id. But, crucially, there is no transfer of financial risk involved here. Whenever the price of an underlying security increases above the user's initial payment, or collateral, for the mAsset, the user is required to deposit additional collateral to meet the higher price. Id. ¶ 114. In other words, a user cannot profit from holding an mAsset because his deposit must always exceed the value of the underlying reference security. If the user fails to deposit sufficient additional collateral, the mAsset will be lost. Id. ¶ 114.

As a result, there is no evidence in the record showing how a holder of an mAsset transfers any "financial risk associated with a future change" in the value of a security to or from a counterparty in a transaction. 7 U.S.C. § 1a(47)(A)(iii). Rather, the holder bears all the risk for himself. The SEC nevertheless waves its hand and contends "that the financial risk is actually being transferred to the investor, to the one minting the asset." Summary Judgment Arg. Tr. 13. But the fact that the minter of an mAsset bears financial risk from his own choice to deposit collateral, which could lead to the loss of that collateral, does not mean that any of that risk was "transfer[red]" to him by a

counterparty in a transaction. 7 U.S.C. § 1a(47)(A)(iii). Instead, the minter holds the risk all along. As a result, because mAssets are not security-based swaps, the Court grants summary judgment for defendants dismissing Counts V and VI of the Amended Complaint.

B. Fraud

Unlike the claims involving offering or selling unregistered securities or security-based swaps, which the Court has resolved as a matter of law, genuine disputes of material fact linger that preclude summary judgment for any party on the fraud claims. Much of the SEC's evidence of scienter for its two fraud allegations -- regarding the UST depeg and Chai's use of the Terraform blockchain, respectively -- comes from third-party whistleblowers whose credibility is critical and whose testimony is subject to numerous challenges that are best resolved at trial. "Credibility determinations, the weighing of the evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge." Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 255 (1986). Moreover, defendants have shown that there is a genuine dispute whether a reasonable investor would have found the statements involving the UST depeg and Chai to be materially misleading. "Determination of materiality under the securities laws is a mixed question of law and fact that the Supreme Court has identified as especially well suited for jury determination." United States v. Litvak, 808 F.3d 160, 175 (2d Cir. 2015).

The SEC pursues its fraud claims under Section 17(a) of the Securities Act and Section 10(b) of the Exchange Act, including the latter's companion Rule 10b-5. Section 17(a) makes it "unlawful for any person in the offer or sale of any securities . . . by the use of any means or instruments of transportation or communication in interstate commerce . . . (1) to employ any device, scheme, or artifice to defraud; or (2) to obtain money or property by means of any untrue statement of a material fact or any omission to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading; or (3) to engage in any transaction, practice, or course of business which operates or would operate as a fraud or deceit upon the purchaser." 15 U.S.C. § 77q(a).

Similarly, Section 10(b) of the Exchange Act makes it unlawful "[t]o use or employ, in connection with the purchase or sale of any security[,], . . . any manipulative or deceptive device or contrivance in contravention of such rules and regulations as the [SEC] may prescribe." 15 U.S.C. § 78j(b). One such regulation prescribed by the SEC under Section 10(b) is Rule 10b-5, which makes it "unlawful for any person, directly, or indirectly, by the use of any means or instrumentality of interstate commerce . . . (a) To employ any device, scheme, or artifice to defraud, (b) To make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in

light of the circumstances under which they were made, not misleading, or (c) To engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security." 17 C.F.R. § 240.10b-5.

"Rule 10b-5 and Section 17(a), which largely mirror each other, both consist of a 'misstatement subsection' that is sandwiched between two 'scheme subsections.'" SEC v. Rio Tinto plc, 41 F.4th 47, 49 (2d Cir. 2022); see SEC v. Sason, 433 F. Supp. 3d 496, 508 (S.D.N.Y. 2020) ("Exchange Act § 10(b), Rule 10b-5(a) and (c), and Securities Act § 17(a)(1) and (3) create what courts have called scheme liability for those who, with scienter, engage in deceitful conduct.").

Here, the SEC pursues both standalone misstatement liability and scheme liability. To demonstrate scheme liability, "the SEC must [prove] that defendants: (1) committed a deceptive or manipulative act; (2) in furtherance of the alleged scheme to defraud; (3) with scienter." Id. at 508-09. "[M]isstatements and omissions alone" are not "sufficient to constitute a scheme." Rio Tinto, 41 F.4th at 54. While "misstatements and omissions can form part of a scheme liability claim, . . . an actionable scheme liability claim also requires something beyond misstatements and omissions, such as dissemination." Id. at 49. The requisite scienter is intent to defraud or recklessness for each of the

scheme liability provisions except Section 17(a)(3), for which “[a] showing of negligence is sufficient.” SEC v. Ginder, 752 F.3d 569, 574 (2d Cir. 2014); see Sason, 433 F. Supp. 3d at 509.

The SEC contends that “Kwon was the primary architect of the scheme to mislead investors into believing that Chai was processing and settling transactions on the Terra blockchain, when it was not.” ECF No. 71 (“SEC Mem.”), at 42. As part of that scheme, according to the SEC, “[d]efendants made and disseminated countless misrepresentations to investors, potential investors, and the public that Chai was processing and settling transactions on the Terra blockchain.” Id. at 43. Similarly, the SEC advances a separate scheme wherein “Kwon, on behalf of Terraform, engaged in deceptive conduct when he secretly made a deal with Jump to step in and restore the \$1 peg [of UST] in exchange for modifying the terms of an agreement for LUNA tokens.” Id. Central to that scheme was that, in the SEC’s view, “Kwon and Terraform . . . made and disseminated numerous false and misleading statements to investors, potential investors, and the public suggesting that the algorithm alone had caused UST’s repeg.” Id.

The SEC also presses for liability on a standalone basis, under Section 10(b) and Rule 10b-5(b), as well as Section 17(a)(2), for defendants’ materially misleading statements. To establish such liability, “the SEC must prove that the defendant[s] (1) made one or more misstatements of material fact, or omitted to state

one or more material facts that the defendants had a duty to disclose; (2) with scienter; (3) in connection with the purchase or sale of securities.” SEC v. Thompson, 238 F. Supp. 3d 575, 591 (S.D.N.Y. 2017).¹² The required scienter is again “intent to deceive, manipulate, or defraud” or “reckless disregard for the truth” for Section 10(b) and Rule 10b-5(b). SEC v. Frohling, 851 F.3d 132, 136 (2d Cir. 2016). But, like its neighbor Section 17(a)(3), Section 17(a)(2) can be met with “[a] showing of negligence.” Ginder, 752 F.3d at 574.

1. UST’s May 2021 Depeg

The SEC’s evidence that defendants engaged in a scheme to deceive investors about UST’s \$1.00 peg, by secretly arranging for Jump to make bulk purchases of UST to drive the price back up to \$1.00, is compelling but circumstantial, relying in large part on the testimony of Jump whistleblowers whose credibility the jury will need to determine. There is undisputed evidence that on May 23, 2021, after UST’s price had fallen below \$1.00, Kwon communicated multiple times with a Jump executive. Defs.’ Response to SEC 56.1 ¶ 210. And it is also undisputed that Jump purchased

¹² Section 17(a)(2) contains the more specific requirement that a defendant “obtain money or property by means of” such a misstatement or omission. 15 U.S.C. § 77q(a)(2). Defendants contest that this requirement is met. Because the Court denies summary judgment on the issue of whether there were any such misstatements or omissions, the Court does not reach whether the additional “by means of” element has been satisfied.

additional shares of UST at various points that day. See ECF No. 123 (“Defs. Opp.”), at 29. But those facts alone do not show any secret agreement, and the rest of the SEC’s evidence, while damning, does not foreclose a genuine dispute of material fact about the alleged deceptive conduct or related potential misstatements.

The SEC’s best evidence of a scheme with Jump comes from text messages between Jeff Kuan, Terraform’s business development lead, and Brian Curran, the company’s head of communications.¹³ In discussing the May 2021 depeg, Curran wrote to Kuan, “Do [Kwon] said if Jump hadn’t stepped in we actually might’ve been fucked lol.” ECF No. 76, Ex. 275. Kuan responded, “yeah i know they saved our ass.” Id. In another set of texts between Curran and Kuan discussing the depeg, on May 23, 2021, Kuan wrote to Curran, “Do just randomly called me . . . [W]e’re speaking to jump about a solution.” Id. at 23. Curran added, “Spoke with Do, we’re gonna deploy \$250 million from stability reserve through Jump to stabilize the peg.” Id. Curran followed up just over 20 minutes later, “Jump has already started buying . . . May not need entire \$250 million.” Id. A day later, Terraform’s official Twitter account posted, “Terra’s not going anywhere . . . \$1 parity on UST

¹³ Defendants object to such messages on hearsay grounds, but when introduced by the SEC, they are admissible statements of a party-opponent under Federal Rule of Evidence 801(d)(2)(A) and (D).

already recovered.” Id. at 33. Those messages may prove difficult for defendants to explain away, but a reasonable jury could find that they and other circumstantial evidence do not add up to a fraudulent scheme to deceive investors.

In a sworn declaration, an SEC whistleblower (“CW-1”) states that he worked at Jump in May 2021 and participated in a Zoom meeting on or about May 23, 2021, in which Jump officers were present. ECF No. 88 (“CW-1 Decl.”), ¶¶ 2-12. In that meeting, CW-1 heard the executive tell Jump’s co-founder, “I spoke to Do and he’s going to vest us.” Id. ¶ 12. Before that statement, Jump’s co-founder had told CW-1 “that Terraform had made a deal with Jump to promote the adoption of UST.” Id. ¶ 13. Later on or about May 23, 2021, CW-1 saw and heard Jump’s co-founder direct traders “to adjust the parameters of the [Jump] trading models to control the price, quantity, and timing of UST orders.” Id. ¶ 14. CW-1 saw automated alerts about Jump’s UST trading. Id. CW-1 also heard Jump’s co-founder say that “he was willing for Jump to risk about \$200 million to help restore the peg.” Id. ¶ 16. In the aftermath, once UST’s price returned to \$1.00 a few days later, CW-1 “heard [Jump’s co-founder] provide general feedback to the Jump Crypto trading team on the sale of UST, for example, advising them not to cause another depeg by selling too quickly.” Id. ¶ 18. Jump’s co-founder and the other implicated Jump executive refused to answer

a single substantive question at their depositions, invoking their Fifth Amendment rights. Defs.' Response to SEC 56.1 ¶ 211.

Defendants categorize nearly all of the above statements from CW-1's declaration as inadmissible hearsay, because they are all statements of other Jump employees that the SEC seeks to offer for their truth. While that argument is not without force, the Court holds that the above statements are admissible under Federal Rule of Evidence 804(b)(3) as statements against interest.¹⁴ Statements suggesting Jump's, and those individuals', participation in a secret agreement to restore UST's peg would tend to expose those individuals "to civil or criminal liability." Fed. R. Evid. 804(b)(3)(A). Indeed, the Jump executives invoked their Fifth Amendment rights rather than answer any questions about those statements at their depositions. And because they have done so, they are unavailable declarants. See United States v. Miller, 954 F.3d 551, 561 (2d Cir. 2020) ("When a witness properly invokes his Fifth Amendment right against self-incrimination, he is unavailable for the purposes of Rule 804(a)."). Moreover, the Court agrees with the SEC that "contemporaneous statements by Jump executives concerning the capital Jump was willing to risk and what Terraform was offering in return, together with changes in

¹⁴ The Court does not foreclose any other potential objections defendants may raise to those statements, should they be offered at trial.

Jump's trading practices, tend to show the state of mind of Jump executives -- specifically, their intent, motive, and plan to conspire with Terraform to restore UST's peg." SEC Reply at 4. Such statements are thus likewise admissible under Federal Rule of Evidence 803(3).¹⁵

The fact that such statements are admissible, however, does not mean that they show beyond dispute that Terraform engaged Jump in a scheme to maintain UST's peg. The evidence remains subject to a determination of CW-1's credibility, which must be made by a jury. Moreover, even if CW-1 may testify about what he heard, any inferences about what those statements meant and what they suggest about defendants' intent are likewise in the ken of a jury.

The SEC also submitted declarations from Keone Hon, another former Jump employee, and Brandon Ackley, a current member of "ownership entities within Jump Trading Group" and former employee of Jump Operations LLC. ECF No. 90 ("Ackley Decl."), at ¶ 1; see

¹⁵ The SEC also contends that such statements are admissible non-hearsay as statements by Terraform's coconspirator "during and in furtherance of the conspiracy" to inflate UST's price through a secret agreement. Fed. R. Evid. 801(d)(2)(E). To admit the statements on that basis, the Court must determine by a preponderance of the evidence "(a) that there was a conspiracy, (b) that its members included the declarant and the party against whom the statement is offered, and (c) that the statement was made during the course of and in furtherance of the conspiracy." United States v. James, 712 F.3d 79, 105 (2d Cir. 2013). Although the Court could make such a finding based on the record, it need not do so at this pre-trial stage, given the other routes to admission of the statements.

ECF No. 91 ("Hon Decl."). Both declarations state that Jump indeed made trades of UST on May 23, 2021. For instance, Hon wrote that "[s]ometime over the weekend of May 22, 2021, . . . [he] was instructed to purchase UST for Jump Trading" even though he "was not responsible for trading crypto assets" at that time. Hon Decl. ¶¶ 6, 8. But other parts of the declaration lack proper foundation and are vague and speculative. E.g., id. ¶ 9 ("I believe, other Jump Crypto team members were also purchasing UST."). Moreover, Hon's declaration itself creates a genuine dispute about whether the implicated Jump executive stated during the May 23 Zoom meeting that Kwon "was going to vest" Jump. Hon joined that Zoom meeting and makes no mention of such a statement. See id. ¶ 8. And, even if admissible, the Ackley declaration also contains facts that a reasonable jury could take to support defendants' position -- that for much of the day on May 23, Jump made no manual purchases of UST and that Jump "primarily . . . traded UST through automated strategies." Ackley Decl. ¶¶ 12-14. In any event, the admissibility of Ackley's declaration is questionable because he concedes that it "is not based on [his] personal knowledge." Id. ¶ 2. The Court will need to make any decision about the admissibility of Ackley's testimony at trial in the context of a live record and more information about its basis.

Even assuming arguendo that a jury credits all of the above evidence in the SEC's favor, an agreement with Jump to defend UST's

peg is only fraudulent if a reasonable investor would have been materially misled. For evidence of such deception, the SEC points to what it contends were defendants' misstatements, which are relevant to both the scheme liability and standalone misstatement liability theories of fraud.

Once more, the evidence is compelling but susceptible of skepticism by a reasonable jury. In a public message posted on Twitter on May 24, 2021, Terraform wrote that "Assets (LUNA) and liabilities (UST) maintain parity by the Terra protocol acting as a market maker, inflating the LUNA supply during UST contractions and deflating the LUNA supply during UST expansions." Defs.' Response to SEC 56.1 ¶ 222. Other public Terraform Twitter messages that day referred to the "algorithmic, calibrated adjustments of economic parameters" as preferable to "stress-induced decision-making of human agents in [a] time of market volatility." Id. Terraform described UST as the "lynchpin for the entire ecosystem" and categorized the depeg as a "black swan" event that was "as intense of a stress test in live conditions as can ever be expected." Id.

Defendants genuinely dispute the significance of that evidence. In their reading, "the lynchpin statement in its full context is about the demand for UST not the reliability of UST, and is used when comparing UST to other stablecoins." Id. Similarly, defendants insist that "the black swan comment in

context stated that the circumstances created as extreme of an event and stress test based on enumerated stresses identified in the cited evidence but not included for context [by the SEC], including drawn down price in LUNA, UST peg deviation, and collateral effects across the ecosystem." Id.

The SEC's most direct evidence of a misstatement to investors was a comment by Kwon during a March 1, 2022 Twitter talk show. In discussing the May 2021 depeg, Kwon stated that "it took a few days for the slippage cost to naturally heal back to spot. So that's another feature of the market module where when the exchange rate has deviated from the peg, the protocol automatically self-heals the exchange rate back to whatever the spot price is being quoted by the oracle. So that's why it took several days for the peg to recover." Id. ¶ 224. But defendants contend "that when the interview with Mr. Kwon is read in context, it is clear that Mr. Kwon was discussing the speed at which the mint-burn mechanism -- which itself depends on human intervention by those who use the mechanism -- 'heals' the exchange rate in times of high slippage cost." Id.

Whether to credit the SEC's interpretation or defendants' interpretation of the statements at issue, or whether any distinction between those interpretations would have been material

to a reasonable investor, is a question for a jury, not for the Court.¹⁶

2. Chai's Use of the Terraform Blockchain

There is also a genuine dispute about whether Chai indeed used Terraform's blockchain to process and settle transactions with crypto assets in addition to traditional payment methods. Defendants argue, with considerable force, that direct evidence of how Chai's data processing system works would require review of Chai's source code "or logs, data, or records from operation of the Chai System." Defs.' Mem at 30-31. Such evidence is not available because it was never produced by Chai, a Korean corporation, and is not accessible to defendants. Moreover, for summary judgment purposes, the SEC does not rely on -- or even mention -- the testimony of Dr. Mathew Edman, its computer science expert who concluded based on a review of the source code of a Terraform server that the blockchain was merely replicating purported Chai transactions that did not occur on the blockchain itself.

Defendants assert that Chai did use Terraform's blockchain and contend that the SEC's circumstantial evidence does not show otherwise. The evidence, which consists mainly of vague messages

¹⁶ Although the SEC has submitted a handful of investor declarations to make its case about what a reasonable investor would have understood, those cannot compel a jury to reach the same conclusion.

that a jury will need to interpret and weigh, is such that a reasonable jury could find either way. In a May 9, 2019 message with Terraform co-founder Daniel Shin, Kwon wrote, "i can just create fake transactions that look real . . . which will generate fees . . . and we can wind that down as chai grows." ECF No. 76, Ex. 245. Shin responded, "Wouldn't people find out it's fake?" Id. Kwon replied, "All the power to those that can prove it[']s fake because I will try my best to make it indiscernable." Id. Shin followed up, "Well let's test in small scale and see what happens." Id.

Defendants genuinely dispute the meaning of those messages, which were from before Chai began operations. According to defendants, "[a]t that time, members of the Terraform network were publicly discussing the launch of 'Project Santa,' an endeavor to generate transactions to subsidize staking rewards for the purpose of ensuring the security of the nascent Terra ecosystem." Defs.' Response to SEC 56.1 ¶ 187. A jury will need to decide whether those messages, when read in context, are referring to planning fake Chai transactions on the Terraform blockchain or, as defendants' argue, to an altogether different project.

Other messages are similarly open to interpretation. In a September 2020 internal message, Terraform employee Nicolas Andreoulis asks another Terraform employee, Paul Kim, whether "we have a list of all the wallets associated with Chai (merchants +

customers).” Id. ¶ 195. Kim responds yes, and says that there are “1297041” wallets “so far haha.” Id. According to the SEC, Kim created an internal Terraform server, the LP Server, to merely replicate Chai transactions. The SEC contends that certain messages between Terraform personnel, including Kim and Kwon, show that Terraform was merely moving its own assets from one digital wallet it controlled, to another digital wallet it controlled. In a December 11, 2019 message, Kim wrote, “[d]ue to changes in the LP server, we will make transactions.” Id. ¶ 196. Kwon responded by telling Kim to “request KRT funding from CJ,” Terraform’s Chief Financial Officer.¹⁷ Id. Kwon asked Kim, “[a]fter 14 days, the coins automatically return to the lp server, right?” Id. In an April 21, 2020 chat with another Terraform engineer, Kim writes that “it might be better to just put money back into the merchant wallet in reverse.” Id. ¶ 197. Defendants dispute the significance of that message, noting that “in context, Paul Kim is inquiring about ‘a transaction from a user to a user’ that ‘looks strange,’ and if [a] particular address is ‘a user wallet’ because he does not ‘fully understand’ the issue yet.” Id. Indeed, Kim continued, “seems like a case of negative transactions,” where “if the merchant’s balance becomes zero, there’s an issue where cancellations become impossible.” Id.

¹⁷ KRT is another Terraform crypto asset, a stablecoin that is tied to the value of the Korean won.

In other sets of messages, the SEC makes much of the word “mirror” used by different Terraform employees to describe the relationship between the blockchain and Chai transactions. In an August 20, 2020 message thread between Terraform employees and a vendor, a Terraform employee asked about a series of blockchain transactions in which “[i]t seems that every block or 2, the same addresses pass funds between themselves.” Id. ¶ 199. Another employee, who had been involved in developing the LP Server, responded, “[w]e currently mirror all the actual transactions between user, chai, and merchant accounts.” Id. Similarly, in an October 9, 2020 internal chat, a Terraform engineer asked Paul Kim, “can you quickly explain me what’s the role of lp-server?” Id. ¶ 200. Kim responded that the “lp-server creates multisend transactions by receiving transaction information from Chai,” adding “[i]n short: it basically replicates chai transactions.” Id. The engineer replied, “ahhh yes ok, this is mirroring chai traffic on chain kinda,” and Kim said, “yes.” Id. In a February 28, 2022 internal message, another Terraform employee made a reference to “Chai tx mirroring.” Id.

Defendants genuinely dispute what Terraform employees meant by “mirroring.” For instance, defendants contend that, when read in context, the October 2020 discussion of mirroring “refers to the fact that the LP Server was not executing transactions” during an outage, but that when the server began functioning again, “48

transfers were recorded on the blockchain.” Id. In another message on October 9, 2020, Terraform engineer William Chen wrote to a Terraform communications employee, “we don’t want to say stuff about LP server too much . . . it breaks the perception that chai depends on Terra . . . Basically chai doesn’t need Terra to work . . . It’s what copies chai’s transactions from their data base to create tx activity.” Id. ¶ 201. Defendants dispute the foundation for and meaning of Chen’s message, because Chen testified at his deposition that he did not work on the LP Server, did not review any LP Server code, and was never told by anyone at Terraform to make such a statement. Id.

The SEC has also submitted the declaration of another whistleblower (“CW-2”), who served as a Chai executive. According to CW-2, each of Chai’s “three main business lines (Chai e-wallet, Chai card, and I’mport) involved traditional payment processes of bank accounts, credit cards, and debit cards -- all using fiat currency.” ECF No. 78 (“CW-2 Decl.”), ¶ 34. CW-2 asserts that with one exception -- the “limited use of KRT top-ups,” which allowed Chai customers “to use Terraform crypto assets to fund their Chai e-wallets” -- “Chai did not use the blockchain at all” and “did not execute or settle transactions on Terraform’s blockchain.” Id. ¶¶ 37-38.

But defendants argue that “CW-2 . . . was fired by Chai and attempted to extort Daniel Shin and Do Kwon . . . while leaving

the company.” Defs.’ Opp. at 1. Defendants also contend that CW-2’s story has shifted over time. For instance, in a recorded conversation with Chai’s head of engineering for the Chai e-wallet, CW-2 stated that he did not “have any understanding of the Chai side.” Id. at 22 (citing Defs.’ Response to SEC 56.1 ¶ 151). And at his deposition, CW-2 stated that his knowledge was based on statements from other Chai employees. CW-2 Dep. 197:7-12. In his declaration, however, CW-2 stated that he personally “had access to an administrative console through which [he] could see how transactions using Chai’s e-wallet were settled.” CW-2 Decl. ¶ 32. Even assuming all of CW-2’s testimony is admissible, a jury has reason to question his credibility or view his testimony as lesser in weight.

Of course, the jury will not be asked to determine all the elements of the fraud claims. In particular, the Court’s foregoing rulings as to which of the defendants’ products are securities will remain binding on the jury, and the jury will be so instructed. But because a reasonable jury could find for either the SEC or for defendants on other elements of the fraud claims, including scienter and materiality, the Court denies both cross-motions for summary judgment on those claims.¹⁸

¹⁸ In addition to primary liability, Count III of the Amended Complaint alleges that Kwon is liable for the fraudulent misstatements as a control person of Terraform under Section 20(a) of the Exchange Act. To prevail on “a claim of control person

C. Due Process

On September 29, 2023, the Court ordered that Kwon, who remains incarcerated in Montenegro for an unrelated offense but may be extradited to face criminal charges in the United States, could not submit a declaration in connection with summary judgment if the Montenegrin authorities did not make him available for a deposition by the close of discovery. See ECF No. 61. The Montenegrin authorities did not so oblige, and Kwon thus did not submit a declaration. Kwon now argues that granting summary judgment for the SEC in the absence of such a declaration violates his Fifth Amendment right to procedural due process. That argument wins credit for color, but that is all.

Kwon relies on the Supreme Court's elaboration of procedural due process in Mathews v. Eldridge, 424 U.S. 319 (1976). But that very case demonstrates that Kwon's procedural due process rights have been satisfied here. "Due process is flexible and calls for

liability under § 20(a), a plaintiff must show (1) a primary violation by the controlled person, (2) control of the primary violator by the defendant, and (3) that the defendant was, in some meaningful sense, a culpable participant in the controlled person's fraud." Carpenters Pension Tr. Fund v. Barclays PLC, 750 F.3d 227, 236 (2d Cir. 2014). Because the Court denies summary judgment on the claims for primary fraud liability, the Court likewise denies summary judgment for either party on Count III. There is no genuine dispute, however, that Kwon is a control person of Terraform under the relevant standard, and the jury will be so instructed. Many of the allegedly fraudulent statements are attributed to him directly and it is undisputed that he was the founder, CEO, and 92% owner of Terraform. Defs.' Response to SEC 56.1 ¶ 17.

such procedural protections as the particular situation demands.” Id. at 334. Identifying “the specific dictates of due process generally requires consideration of three distinct factors: First, the private interest that will be affected by the official action; second, the risk of an erroneous deprivation of such interest through the procedures used, and the probative value, if any, of additional or substitute procedural safeguards; and finally, the Government’s interest, including the function involved and the fiscal and administrative burdens that the additional or substitute procedural requirement would entail.” Id. at 335.

Applying that three-part balancing test here, it is clear that procedural due process does not require that Kwon be able to submit a self-serving declaration with no opportunity for cross-examination. While Kwon’s interest in saying his piece in his own words is not insignificant, Kwon has been able to actively litigate this case through counsel with whom he is in contact. The risk of an erroneous deprivation of his property interests in this civil suit, simply because he could not submit a declaration, is slight, if it exists at all. The evidence in this case is voluminous -- and plenty of it consists of documents and public statements made by Kwon himself. Kwon’s counsel has been able, throughout their papers, to provide rebuttals and counter-explanations of that documentary evidence, and they have done so capably. Indeed, Kwon’s counsel has shown that despite the force of that evidence, genuine

disputes of material fact preclude summary judgment against him or Terraform on the fraud claims. Finally, the Government's interest firmly counsels against allowing as evidence a statement from a defendant, who has otherwise been involved in the litigation, without the ventilation of a vigorous cross-examination. Accordingly, Kwon's procedural due process rights pose no barrier to the entry of summary judgment against him, which the Court has granted on Count IV.

IV. Conclusion

For the reasons stated above, the Court denies defendants' motions to exclude the testimony of the SEC's experts, Dr. Bruce Mizrach and Dr. Matthew Edman; denies the SEC's motion to exclude the testimony of defense expert Dr. Terrence Hendershott; grants the SEC's motion to exclude the testimony of defense experts Mr. Raj Unny and Dr. Christine Parlour; grants summary judgment for the SEC on Count IV of the Amended Complaint, involving defendants' unregistered offers and sales of LUNA and MIR in violation of Sections 5(a) and (5c) of the Securities Act; grants summary judgment for defendants on Counts V and VI of the Amended Complaint, involving the alleged unregistered offers of and transactions in security-based swaps; and denies both sides' cross-motions for summary judgment on the remaining claims (Counts I-III) of fraud. The Clerk is respectfully directed to close document 71 on the docket of this case.

As previously and firmly scheduled, the jury trial of the remaining claims in this case will commence at 9:30am on Monday, January 29, 2024. However, to accommodate other cases before other judges, the selection of the jury to hear the case will occur at 10:00am on the prior Wednesday, January 24, 2024.

SO ORDERED.

Dated: New York, NY
December 28, 2023



JED S. RAKOFF, U.S.D.J.