

## **Analysis of Proposal by FTX US Derivatives to the CFTC (Industry Filing 22-001)**

### **Purpose of Memo**

- The purpose of the document is to respond to the CFTC's Request for Comment on the FTX US Derivatives proposal submitted to the CFTC in two letters each dated 8 February 2022 & available with other, associated documents on the CFTC website at <https://sirt.cftc.gov/sirt/sirt.aspx?Topic=CommissionOrdersandOtherActionsAD&Key=47841> ("the FTX Materials").
- Further, it is to consider what changes, if any, might be required to make the proposal acceptable from a financial stability viewpoint thus supporting the objective of open access.

### **Approach of Analysis**

- This analysis is written by Gordon Alexander Consulting Ltd, a registered company incorporated in the United Kingdom. It is based on experience gained in Gordon Alexander's previous roles as an interest rate derivatives trader, as Chief Operating Officer of a hedge fund management firm, as Head of Business Risk (First Line of Defense) for two major clearing services at a large international clearing house, as Head of Financial Risk (Second Line Risk) for a large international financial markets infrastructure group that included exchanges and as Chief Operating Officer / Chief Financial Officer of a start-up creating solutions in the blockchain and digital assets / crypto spaces. All views expressed are the views of Gordon Alexander Consulting Ltd & are not intended to represent those of any of Gordon Alexander's former employers. At the time of writing, neither Gordon Alexander Consulting Ltd nor Gordon Alexander is engaged or employed by any firm that creates a conflict of interest.
- This memo does not take the form of sequential answers to all of the questions in the Request for Comment. This is because the intention is for this memo to focus on risk management, whereas many of the CFTC questions focus on legislation & regulation. As a result, it was felt that were the suggested format to be followed, sight might have been lost of the big picture.
- The memo has been written following a limited review of the documents without the benefit of discussion with, and challenge by, others. It is also possible that certain extracts of the FTX Materials may have been misinterpreted. It is possible that different conclusions might have been reached without these limitations. This memo is not professional advice & must not be relied upon under any circumstances. Readers should obtain their own professional advice where required. Neither Gordon Alexander Consulting Ltd nor Gordon Alexander accept any liability for the accuracy of the text or the conclusions contained herein.

### **Background**

- FTX is an existing exchange group facilitating trading of crypto assets on a Designated Contract Market ("DCM"). Under US law & regulation including the Commodity Exchange Act, Dodd-

Frank & CFTC Rules, derivatives on these products would need to be cleared by a licensed DCO (Derivatives Clearing Organisation).

- In order to extend its product range to include crypto derivatives, FTX has acquired LedgerX LLC, a crypto derivatives exchange & licensed DCO, & has rebranded it as FTX US Derivatives.
- The current LedgerX DCO Order of Registration (license) is limited to fully collateralised trades, where at all times the DCO holds collateral against a position covering the maximum loss that a given member could suffer. The majority of traditional DCOs clear trades on margin, whereby the member deposits less collateral than the maximum loss that it could suffer. The DCO calculates “margin” covering the expected loss with a high confidence level & puts in place rules defining a “default waterfall” to address the possibility that losses on a defaulting member’s positions exceed this expected loss. FTX cannot offer this model under LedgerX’s DCO license, so has applied to the CFTC to amend its license to accommodate it.
- There is another major difference between the business model of the the majority of DCOs & LedgerX, in that the majority limit direct membership of the DCO to regulated corporate bodies, largely regulated Futures Commission Merchants (“FCM”s) & banks. The typical rulebook dictates a default waterfall whereby losses beyond the defaulter’s resources held by the CCP (typically margin & the defaulter’s guaranty fund contribution) are initially absorbed by a portion of the DCO’s capital (“skin-in-the-game”) followed by a funded guaranty fund (default fund) to which each member has contributed an amount proportional to their risk. In the unlikely event that even this is exhausted, each member will bear a share of the excess loss via a loss distribution process designed to ensure that the DCO does not become insolvent.
- CFTC regulations require guaranty funds for most DCOs to be sized such that they are large enough to absorb the largest loss that could be suffered by a DCO were a single member to default (“Cover 1”). Where a DCO is classified as systemically important, this is increased to accommodate the largest loss that could be suffered were two members to default (“Cover Two”).

### **FTX Proposal**

- FTX has proposed a variation of the default waterfall summarized as follows:
  1. As is the norm, a member is required to post collateral equating to “initial margin” prior to opening a trade. FTX revalues trades & re-assesses margin cover versus a somewhat lower “maintenance margin” level in close to real time, 24x7.
  2. If the market moves such that the member makes a loss, eroding their collateral below “maintenance margin”, & they have not replenished their collateral to keep it above that level, then under Rule 14.3.A a system attempts automatically & without warning or margin call to liquidate 10% of their position at a time into the Central Limit Order Book (“CLOB”) maintained by FTX until such time as the remaining collateral is above maintenance margin

for the reduced position. If a lower “full liquidation” threshold is hit, then it will attempt to liquidate the full position.

3. If FTX in its discretion determines that “it is not practicable or advisable” to liquidate the defaulter’s positions in the CLOB under Rule 14.3.A, it has the following options:
  - a. Rule 14.3.B permits FTX to transfer some or all of them to Backstop Liquidity Providers (“BLP”s), which have committed to take positions irrespective of the position that they themselves hold. Rule 14.3.B is silent as to the price at which they are transferred, however Exhibit G says that “in this step, the account will have its defaulting position closed down at the bankruptcy price (the market price that would set the account value at Zero or “Zero Price”), and the positions will be transferred to the backstop liquidity provider”, so presumably this is the intention rather than any market price. Rule 14.3.B does not seem to explicitly state that BLPs will be made good by the guaranty fund if this is below market price (if the position is closed out in Rule 14.3.B, then Rule 14.3.E, which applies the guaranty fund would never be reached).
  - b. Rule 14.3.C permits FTX to perform a partial tear-up of opposite positions in the same asset held by Secondary BLPs. This tear-up starts with the Secondary BLP with the largest opposite position & then works downwards. Exhibit G refers to the top 10 opposing positions, though the draft rules seem to be silent on number. Rule 14.3.C.d explicitly provides that this partial tear-up takes place at the “Zero Price” rather than a market price. The rules do not seem to explicitly state that Secondary BLPs will be made good by the guaranty fund if this is below market price (if the position is closed out in Rule 14.3.C, then Rule 14.3.E, which applies the guaranty fund would never be reached).
  - c. Rule 14.3.D permits FTX to attempt to liquidate positions by auction.
4. If FTX in its discretion determines that “it is not practicable or advisable” to liquidate the defaulter’s positions pursuant to Rules 14.3.A to 14.3.D, then FTX will apply resources from a guaranty fund to which it is the sole contributor to address shortfalls & then proceed as follows:
  - a. After providing an opportunity for voluntary contributions under Rule 14.3.E.a.i., it will apply Variation Margin Gainer Haircutting under Rule 14.3.E.a.ii. (to all accounts, not just those that step forward for voluntary contributions).
  - b. After providing an opportunity for voluntary tear-ups of open trades under Rule 14.3.E.b.i., it will apply a full tear-up of all open trades under Rule 14.3.E.b.ii.
5. Rule 14.3.E refers to the Guaranty Fund, to which FTX is the sole contributor. The letter from the FTX CRO states that the proposal is to size it on a Cover One basis if that represents

more than 10% of total initial margin, otherwise on a Cover Two basis if that represents more than 10% of total initial margin & failing that on a Cover Three basis. The letter from the FTX GC states that FTX has “committed” \$250 million, presumably to fund a guaranty fund sized as described by the CRO. The default fund rules do not seem to be enshrined in the Rulebook.

## **Analysis of FTX Default Waterfall**

### **Margin**

- Under Rule 7.1.C.1, margin is normally calculated assuming a one-day liquidation period. This period should be extended for markets that are open on weekends or holidays to accommodate the expected lighter liquidity. The margin methodology & backtesting regime should also be specified in detail in the rulebook.

### **Position Closure**

- Exhibit G says that “the clearing house does not have a Default Management committee because the process is highly automated”. This might work for a defaulter with a single position in one asset, however it is not prudent for a complex portfolio unless the intention is to obtain bids for the portfolio in its entirety from one or more large investors or banks, which would by definition be a manual process, so is clearly not the intention. Even with automated systems, there is a need for human judgement in certain situations. For example, suppose the defaulter holds a long position in one asset & a short position of similar size in another, highly correlated asset, & that no liquidity can be found in the second asset. For an automated system to sell the first asset & try unsuccessfully to sell the second actually increases risk – risk is reduced by continuing to hold both positions (potentially adjusting the size of one to reflect the correlation coefficients). In another situation, where a defaulter has a single position in a market with no liquidity, it may even make sense to open a new offsetting position in another asset that is normally highly correlated as a proxy. This would be further complicated by more complex position with hundreds of assets, a default of multiple members with the portfolios being closed out simultaneously, a position that could be closed, but only slowly over time or a position in illiquid options that can only be closed in the underlying. Finally, consider the fact that in a market crisis, markets do not behave in the same way as normal, so even artificial Intelligence trained on normal markets that currently work well in the day-to-day operations of proprietary trading firms may make decisions that an experienced trader would identify as poor. Modern automated trading systems are very powerful & contribute much that humans cannot, but human oversight from an appropriately experienced Default Management committee is essential.
- Whilst the rulebook clearly highlights the automation of position closure, there is potential for disputes and legal action where a trade manifestly off-market triggers position closure (for example a bad actor deliberately triggers a large default with a small trade on a major holiday, or a small order out of hours is unwisely, but in good faith, placed as a “at market order” rather

than a “limit order”) or where a member cannot transfer money to FTX due to operational issues with payments.

- In order to assess the effectiveness of Backstop Liquidity Providers, it will be necessary to see the terms of their commitment & key terms should also be enshrined in the rulebook. In particular, it is important to understand whether situations exist where they are not obliged to accept a position transfer. Top-up from the guaranty fund under Rule 14.3.E seems only to apply “if the Company determines that it is not practicable or advisable under the circumstances in light of liquidity, open interest, market conditions or other relevant factors to carry out the steps set forth in this Rule 14.3.A through Rule 14.3.D” & VMGH “only after carrying out the steps set forth in this Rule 14.3.A through Rule 14.3.E”, so the “Zero-Price” at which a Backstop Liquidity Provider would be transferred positions could be worse than market. It is critical to understand if in these circumstances the BLP is obliged to accept the transfer.
- In light of the importance of backstop liquidity provision, the regulator should clearly set a minimum requirement for the number of liquidity commitment by primary & secondary BLPs taking into account the possibility that the defaulter or defaulters might include one or more BLPs, as well as minimum requirement for the sum of commitments per unit time & a minimum capital requirement for BLPs.
- Proprietary trading firms acting as BLPs are for-profit operations. Whether a BLP can profit from its commitment will depend on whether the market price reverts towards the price prior to the default (such that the BLP makes a profit) or momentum drives it further (in which case the BLP will make a loss & could have picked up the position later at a better price in the open market. Proprietary trading firms will typically include a “mean reversion” and a “momentum” component in their models, & it would be naive to assume that they will be natural buyers or sellers as appropriate just because the market has moved a long way. In fact, in a market crisis situation momentum tends to dominate initially due to a herd mentality resulting from the “animal spirits” identified by John Maynard Keynes and as demonstrated during the financial crisis & previously in the “great bond massacre” of 1994, meaning that in a crisis situation their models may be driven more by momentum than mean reversion.

### **Guaranty Fund**

- The guaranty fund is entirely funded by FTX, which has the advantage of ensuring that the DCO has “skin-in-the-game”, but a plan is required to address the possibility that the required size of the guaranty fund exceeds the funds that they can make available. Whilst FTX tells us that the \$250 million guaranty fund proposed is one of the largest **self-funded** cash contributions for a derivatives clearing house in the US, it is far smaller than the guaranty funds funded by members of many traditional DCOs, which can be in the billions & it is unclear where any increase that might be dictated by the Cover Three calculation would come from, as FTX’s resources will be finite.

- FTX argues that Cover Three is a conservative size for the guaranty fund, noting that the three largest members are likely to be institutions. This ignores the tendency of retail investors to act in “herds”. This tendency is exacerbated by social media and was recently demonstrated by trading patterns in GameStop, where hedge funds were squeezed out of short positions by a “herd” of far smaller retail investors. It also ignores the fact that under a conventional intermediation clearing model, the cover calculations would be applied to FCM accounts that include customers who would, under the FTX model, interact directly with the exchange & thus be excluded from a calculation for default of a given FCM. For the purposes of defining “Cover One”, “Cover Two” or “Cover Three”, retail investors should be categorized into broad classes or “herds”, potentially by type of account, trading style & position & each class should be treated as though it were a single member in sizing the guaranty fund. This may well mean that “Cover Three” is unnecessary & “Cover One” or “Cover Two” adequate, however it is still likely to lead to a larger guaranty fund than “Cover Three” calculated regarding each retail investor as separate. The design of an appropriate classification mechanism is beyond the scope of this memo, & should be carried out by FTX subject to regulatory approval & enshrined in the rulebook. The letter from the FTX CRO also assumes that the largest accounts will be house accounts, however very large client accounts such as hedge funds can exist.
- The guaranty fund sizing calculations are not detailed in the rulebook, & need to be. They should clarify calculation of size & frequency of calculation. The calculation should not assume that any positions have been closed out by BLPs.

### **End-of-Waterfall**

- The proposal uses Variation Margin Gainer Haircutting (VMGH) as a source of additional resources such that a default should not render the DCO insolvent. For this to be effective, VMGH must be applied to all accounts including retail to retain the symmetry of profits & losses by ensuring that there is always a gain eligible for VMGH offsetting every loss by the defaulter(s) (zero-sum game). VMGH is a form of mutualization of losses, as non-defaulters bear a share of the defaulter’s losses. The statement in the CFTC Request for Comment that “FTX does not propose to mutualize losses among its participants in its default waterfall” is, therefore, not entirely accurate. In this proposal, losses are not mutualized via the guaranty fund nor via end-of-waterfall loss distribution, but are mutualized via VMGH. It is naïve to assume that variation margin gains represent “windfalls” & are thus necessarily fair game, as the derivatives positions in FTX may be hedges against or relative value spreads versus other exposures elsewhere. Since neither upfront guaranty fund contributions above & beyond margin nor unfunded end-of-waterfall loss distribution are appropriate with direct retail members, there is not an obvious alternative to VMGH. Certain types of institutional investor such as pension funds & mutual funds may be prevented by their constitutions from exposing themselves to the losses of others by becoming members on that basis. VMGH may also be regarded as unsuitable for retail.

- The final stage of the default waterfall (full tear-up) should ensure that in a worst case scenario, a flat position can be reached. VMGH should ensure that insolvency is avoided in winding up the DCO in this situation.

## Other Risks

- The letter from the FTX CRO says that the cash markets cleared by FTX are “always open”. Important decisions including calculation of margin, position reduction, declaration of defaults & allocation of guaranty fund resources to BLPs are made by an automated system using the prices observed in these markets. Whilst traditional market hours are restrictive, they tend to result in reasonable liquidity as professional trading firms will ensure that they staff those hours. Whilst many US futures markets (including agriculture) have demonstrated that they can function outside traditional business hours, liquidity is likely to be very poor on certain major holidays – for example very few markets open on Christmas Day or New Year’s Day. Whilst there are undoubted advantages of a 24x7 365 day market, & it is absolutely the way forward, it must be understood that erratic market prices are not uncommon outside normal market hours & automated processes driven by them could adversely impact financial stability. Whilst the existence of diverse time zones will to some extent ameliorate this, there will be certain days such as major international holidays & some periods at weekends where there is a higher likelihood of erratic prices being “printed”, only to be reversed at the open on the next traditional business day. This has occur where an “at best” rather than “limit” order has been executed when there were few prices in the market. This means that defaults could be automatically triggered, or that trades may be allocated or torn up at an erratic price that would never have “printed” in a trading venue maintaining traditional hours. Additionally, automated processes driven by price action in an illiquid market could be susceptible to being “gamed” by bad actors. Finally, it must also be understood that the price for a large position is not the same as the price for a small one, & at an illiquid time this difference may be very material. An erroneous declaration of default by FTX could trigger cross-default clauses in other agreements, resulting in a major default covering many asset classes & thus potentially to a reduction in financial stability.
- FTX states that it will rely solely on collateral deposited when evaluating risk exposure, with no capital requirement. In certain circumstances, a specific member may be at a high risk of default (for example if they are from a country to which sanctions appear imminent), so “holistic credit checks” should not be completely foregone. The letter from Brian Mulherin (FTX GC) notes that all of the FTX participants will qualify as “clearing members” & that “CFTC Regulation 39.12(a)(2) requires that clearing members have access to sufficient financial resources to meet obligations arising from participation in the DCO in extreme but plausible market conditions”. Margin alone is not deemed to cover “extreme but plausible market conditions”, which is a term taken to include stress test losses of the type used to size a guaranty fund. This being the case, credit assessment of members beyond collateral and minimum capital requirements will be required to meet the requirements of this regulation. Additionally, members may have open positions on other exchanges over which FTX will have no visibility. Exhibit G does, however,

states that there is a monitoring process with the clearing house having the discretion to increase margin.

- There is no mention of a “Three Lines of Defense” organizational structure within FTX. Under this structure, one or more Heads of Business Risk reporting to the heads of each business line would design risk solutions & an independent CRO reporting directly to the Chair of the Board Risk Committee as well as having a dotted line to the CEO would be responsible for challenging the models proposed, would own the governance & risk policies & would be responsible for risk oversight. Internal audit would be a final line of defense. This structure is well-established in banks & large DCOs & reduces the conflict of interest of a CRO solving business challenges.

### **Conclusion**

- The FTX proposal could work from a financial stability perspective with some minor tweaks, though it is unclear whether it operates as FTX intends in certain respects, especially with regard to mutualization.
- Whilst Variation Margin Gainer Haircutting (VMGH) should prevent a default rendering the DCO insolvent, it must be understood that it is a mechanism that mutualizes losses, it must be applied to all accounts including retail to work properly and that gains are not necessarily windfalls & thus “fair game”. This may prevent certain customer types from becoming members & might be considered inappropriate for retail investors.
- The liquidation period for margin calculation should be extended for markets that are open on weekends or holidays to accommodate the expected lighter liquidity. The margin methodology & backtesting regime should also be specified in detail in the rulebook. Additionally, it cannot be assumed that markets open 24x7x365 will be liquid all of that time & an erroneous declaration of default by FTX could trigger cross-default clauses in other agreements, resulting in a major default covering many asset classes & thus potentially to a reduction in financial stability. This should be addressed in the rulebook.
- The FTX Materials provide for a maximum guaranty fund size of Cover Three (i.e. able to bear the default of the three members whose simultaneous default would result in the largest loss to the DCO). This part of the proposal ignores the propensity of retail investors to act in herds, as recently demonstrated by GameStop, & the model should be enhanced to address this by classifying individual investors into potential “herds” & treating each herd as a single investor for the purposes of sizing the default fund. The guaranty fund is entirely funded by FTX, which has the advantage of ensuring that FTX always has “skin-in-the-game”, but a plan is required to address the possibility that the required size of the guaranty fund to meet the cover requirement exceeds the funds that they can make available. The requirement could easily exceed \$250 million if FTX were to become successful.



- Transfer of positions to a Backstop Liquidity Provider or tear-up of positions with a Secondary Backstop Liquidity Provider would seem to be performed at the “Zero Price”. This is not a market price, so consideration must be given to whether this creates any legal issues.
- The availability in the default waterfall of full tear-up can be used to ensure in a worst case scenario that the DCO has no open positions & thus that liabilities do not accrue after this.
- Whereas an automated position reduction or closure may be appropriate for a single defaulter with a single position, some human intervention by a suitably experienced Default Management committee is essential for more complex defaults.
- FTX & the regulators must be cognizant of the fact that there are situations where bad actors (potentially including BLPs) might be able to “game” a system applying automated close-out of positions, especially in periods of low liquidity. The rulebook might need some tweaking to address this.
- There is no mention of a “Three Lines of Defense” organizational structure within FTX. This structure would reduce conflicts of interest & so should be imposed by the regulators if it is not already in place.

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