

August 18, 2026

Christopher Kirkpatrick, Secretary of the Commission
Commodity Futures Trading Commission
Three Lafayette Centre
1155 21st Street NW
Washington, DC 20581

Vanessa A. Countryman, Secretary
Securities and Exchange Commission
100 F Street NE
Washington, DC 20549

Re: Joint Request for Comment on Further Definition of “Swap” and “Security-Based Swap” and on Alternative Compliance; CFTC RIN 3038-AF71; SEC File No. S7-2026-21

Dear Secretaries Kirkpatrick and Countryman:

We appreciate the opportunity to comment on the joint request by the Commodity Futures Trading Commission and the Securities and Exchange Commission regarding the further definition of “swap” and “security-based swap” and alternative compliance. We write as academic researchers who have studied cryptocurrency derivatives markets, including perpetual futures contracts, in both their early development and subsequent expansion across major cryptocurrency exchanges.

Our purpose in this comment is limited. We do not take a position on the appropriate jurisdictional classification of any particular instrument, nor do we express a view on perpetual futures referencing securities, equities, or other non-crypto assets. This comment is not submitted on behalf of any exchange, trading firm, or industry participant.

Our empirical work concerns cryptocurrency perpetual futures. Because that work has become part of the public discussion around these products, we believe it is useful to clarify what the evidence from our research does and does not show.

Two papers are particularly relevant. In “Towards Understanding Cryptocurrency Derivatives: A Case Study of BitMEX,” authored by Kyle Soska, Jin-Dong Dong, Alex Khodaverdian, Ariel Zetlin-Jones, Bryan Routledge, and Nicolas Christin, we study BitMEX, one of the first major cryptocurrency derivatives platforms and an important early venue for perpetual futures trading. In “The Crypto Carry Trade,” authored by Nicolas Christin, Bryan Routledge, Kyle Soska, and Ariel Zetlin-Jones, we study perpetual futures at broader scale across Binance contracts for 18 cryptocurrencies, considering both Tether-denominated and coin-denominated perpetual futures.

The central lessons from this work are that cryptocurrency perpetual futures are economically important, that their design can generate distinctive leverage and

liquidation dynamics, and that the funding mechanism is central to understanding the economics of these markets. These lessons support regulatory attention to contract design, margining, liquidation rules, reference prices, disclosures, and exchange risk. They do not, in our view, support broad claims that perpetual futures are either inherently beneficial or inherently harmful independent of their institutional setting and design.

I. Cryptocurrency Perpetual Futures Provide a Distinct Form of Leveraged Exposure

Perpetual futures differ from traditional expiring futures because they have no fixed maturity. Instead, exchanges use periodic funding payments to keep the contract price linked to the underlying spot price. When the perpetual futures price is above the reference spot price, long positions typically pay shorts; when the futures price is below spot, shorts typically pay longs. The funding mechanism is therefore not an incidental feature of the product. It is central to how the contract clears and to the economic costs and benefits faced by traders.

Our work finds that cryptocurrency perpetual futures have been used heavily to obtain leveraged long exposure to crypto assets. The BitMEX exchange offered contracts with very high maximum leverage, and our empirical analysis documented substantial liquidation activity.

In the Binance study, we document that a strategy to short perpetual futures and long spot crypto assets earned high realized returns across a broad set of contracts. For example, in the sample studied in that paper, the Bitcoin Tether-denominated carry trade had an annualized Sharpe ratio of 8.76, and the Bitcoin coin-denominated carry trade had an annualized Sharpe ratio of 4.93. We interpret this pattern as evidence of persistent demand for leveraged long exposure: long traders were willing to pay funding to obtain that exposure through the perpetual futures market.

This evidence is important for regulation because it indicates that funding rates can reveal economically meaningful imbalances in demand for leverage. High funding payments should not automatically be interpreted as manipulation or malfunction. They may reflect equilibrium compensation paid by traders seeking leveraged exposure to traders willing to supply the other side while hedging in spot markets. At the same time, persistent and economically large funding payments are relevant to investor protection and market integrity because they are part of the cost of maintaining leveraged positions and may not be fully understood by less sophisticated traders.

II. Liquidation Dynamics Are a Central Market Design Issue

Like most derivatives, perpetual futures are in zero net supply. This means that the cash flows associated with the contracts are transfers between the two sides of the market: sometimes the short side pays the long side, and sometimes the long side pays the short side (abstracting from trading fees for the moment).

Unlike traditional futures markets, crypto perpetual contracts generally do not

rely on a separate clearinghouse. Instead, the crypto exchange itself performs the clearing function. Perpetual futures contracts are not bilateral agreements between individual long and short traders. The exchange stands between the two sides of the market and is responsible for managing the resulting counterparty and default risk. For the system to remain solvent, the exchange must ensure that gains owed to winning positions can be paid even when traders on the losing side are unable to cover their losses.

This counterparty risk is managed primarily through the exchange's margin and liquidation policies. Margin consists of client funds held at the exchange as collateral against potential losses. The amount of margin required relative to the size of a trader's position determines the leverage available to the trader. For example, a trader permitted to hold a \$100 position with \$10 of margin is operating at 10-to-1 leverage.

As prices change, gains and losses on the position change the trader's margin balance. A sufficiently large adverse price movement can therefore exhaust the trader's margin. The exchange does not ordinarily wait for the margin balance to reach zero. Instead, when the margin balance falls below a specified maintenance threshold, an automated liquidation engine begins closing the trader's position. The purpose of liquidation is to terminate a losing position while sufficient collateral remains to cover its losses.

The important risk is that liquidation is not instantaneous. If prices are changing rapidly, the exchange may be unable to close the position at the price prevailing when liquidation is triggered. The position may continue to lose value during the liquidation process. In an extreme case, the realized loss can exceed the trader's remaining margin, leaving a shortfall. That shortfall must then be absorbed by the exchange or through other loss-sharing mechanisms, such as an insurance fund. The high volatility of cryptocurrency prices makes the design and operation of liquidation procedures particularly important. Exchanges should have transparent policies both for limiting the risk of liquidation shortfalls and for allocating losses when such shortfalls nevertheless occur.¹

Solvency therefore requires more than simply imposing a maximum leverage ratio. The exchange must choose both the amount of initial margin required to establish a position and the maintenance-margin threshold at which liquidation begins. Triggering liquidation while positive margin remains provides a buffer against adverse price movements during the liquidation process. The exchange must also maintain sufficient resources or other mechanisms to absorb losses when liquidation nevertheless results in a shortfall.

There are consequently two related notions of solvency. At the individual trader level, the concern is that losses may exceed the margin posted by the trader. Liquidation is designed to prevent this outcome. At the exchange level, the

¹As an example, Wolfie Zhao, "OKEx Confirms \$9 Million Clawback After 'Enormous' Bitcoin Future Fails," CoinDesk, Aug. 3, 2018, available at <https://www.coindesk.com/markets/2018/08/03/okex-confirms-9-million-clawback-after-enormous-bitcoin-future-fails>

concern is that shortfalls from unsuccessful liquidations may exceed the resources available to absorb them. Exchange solvency ultimately requires that these losses can be absorbed while payments owed to profitable positions continue to be honored.

The central tradeoff in margin policy is therefore straightforward. Higher initial margin requirements and earlier liquidation reduce the probability that a trader's losses will exceed the collateral available to cover them, thereby reducing counterparty risk and protecting the solvency of the exchange. But these policies also reduce the amount of leverage available to traders and increase the likelihood that positions will be liquidated during temporary adverse price movements. Thus, the prudential risk associated with perpetual futures depends not simply on the maximum leverage offered by an exchange, but on the combination of initial margin, maintenance margin, liquidation policy, market liquidity, and the resources available to absorb liquidation shortfalls.

Our BitMEX study documents that liquidations were a prominent feature of early cryptocurrency perpetual futures markets, particularly for smaller traders. The evidence suggests that many relatively small and retail-like traders used substantial leverage and were frequently exposed to liquidation. The paper also documents a mix of participants, including both highly leveraged speculative traders and more professional accounts. The market should therefore not be characterized as purely retail or purely institutional.

Liquidation dynamics matter because they can amplify price movements. A leveraged position that moves sufficiently against the trader is not merely marked down but may be forcibly closed by the exchange's liquidation engine. In stressed conditions, many positions can be liquidated in a short period of time. Such liquidations can increase order-flow pressure in the same direction as the price movement that triggered them, raising the possibility of liquidation cascades.

Our evidence supports concern about this mechanism. It does not establish that perpetual futures are the sole or primary cause of sharp cryptocurrency price movements. Nor does it establish that every liquidation cascade is avoidable through regulation. It does suggest that margin requirements, maintenance-margin rules, liquidation fees, partial versus full liquidation procedures, insurance funds, auto-deleveraging rules, and public transparency around liquidation events are central design features rather than technical details.

For retail-facing cryptocurrency perpetual futures, we believe regulators should pay close attention to whether market participants understand the speed with which leveraged positions can be liquidated, the cost of liquidation, the role of funding payments, and the conditions under which the exchange may take control of or close positions. Disclosure that merely states that leverage is risky may be insufficient if it does not explain the mechanics and frequency of liquidation in a way that maps to the actual contract design.

III. Funding Rates Are Informative but Require Careful Interpretation

The funding rate is the economic mechanism that makes a perpetual future perpetual. In a traditional futures contract, convergence occurs through expiration and delivery or cash settlement. In a perpetual future, there is no expiration date, so convergence is encouraged through recurring payments between longs and shorts.

Our carry-trade evidence shows that funding payments have been large enough to create substantial realized returns for traders shorting perpetuals and hedging with spot positions. That result has two implications. First, the demand to hold long perpetual positions can be strong and persistent. Second, the cost of that demand is borne through funding payments that may accumulate meaningfully over time.

Regulatory review of crypto perpetuals should therefore consider not only whether the reference price is robust, but also how the funding rate is calculated, how often it is paid, whether it is capped, whether the methodology is transparent, and whether traders receive clear information about realized and projected funding costs. Funding design can affect leverage, liquidation probability, and the distribution of gains and losses between long and short positions.

The distinction between Tether-denominated and coin-denominated contracts also matters. Our work shows that contract denomination can affect the economics of exposure and liquidation. Two contracts that appear similar because they reference the same underlying cryptocurrency may have materially different risk properties because of their settlement asset and collateral structure. Regulators should therefore avoid treating all perpetual futures referencing the same asset as economically equivalent without considering collateral, settlement, and denomination.

IV. Reference Prices and Market Integrity Remain Important

Cryptocurrency perpetual futures generally rely on reference prices or indexes to anchor contract value and funding payments. A robust reference price can reduce susceptibility to manipulation and improve the connection between the derivative and the underlying spot market. Conversely, a weak reference price can transmit problems from spot markets into the derivatives market or create incentives to manipulate the reference.

Our research does not provide a full analysis of optimal index design. However, the evidence from perpetual futures markets indicates that reference prices are central to the product. Regulatory review should consider the number and quality of constituent spot markets, volume and liquidity screens, safeguards against outlier prices, governance of index methodology, treatment of exchange outages, and transparency around index calculation. These issues are especially important where the same or related trading firms participate across both spot and derivatives markets.

V. Exchange and Collateral Risk Should Not Be Treated as Separate from Contract Design

Cryptocurrency derivatives markets have often operated through centralized exchanges that also hold customer collateral, operate matching engines, administer liquidations, and manage insurance funds. This structure makes exchange risk a central part of the economics of perpetual futures trading.

In the crypto carry-trade paper, we analyze the implications of exchange bankruptcy risk for the returns to the carry trade. The collapse of FTX and other crypto-market stress events illustrate that exchange solvency and collateral arrangements are not remote considerations. A trader may correctly understand the market risk of a hedged spot-perpetual strategy but still face material risk from the venue or collateral arrangement.

For regulated cryptocurrency perpetual futures, this implies that customer collateral protections, segregation, bankruptcy treatment, insurance fund governance, and the management of default losses are key regulatory questions. These issues should be considered together with the product’s payoff design because the perpetual futures contract cannot be separated cleanly from the exchange mechanisms that support margining, funding, and liquidation.

VI. What Our Evidence Does Not Show

It is important to distinguish between empirical findings and broader policy conclusions. Our work does not show that cryptocurrency perpetual futures should be prohibited. It also does not show that all perpetual futures markets will replicate the experience of offshore cryptocurrency exchanges. A regulated market with different margin rules, customer protections, disclosures, reference-price methodology, surveillance, and default-management procedures could have materially different outcomes.

At the same time, our work does not support the view that perpetual futures are merely conventional futures with a different label. The absence of maturity, the funding mechanism, the availability of high leverage, automated liquidation, and the close connection between exchange design and trader outcomes make these products economically distinctive.

The evidence also does not establish that high funding rates are, by themselves, evidence of market abuse. High funding can reflect the price of leverage in a market with heterogeneous beliefs and constraints. But large and persistent funding payments are economically meaningful and should be salient to traders and regulators.

Finally, our work does not prove that perpetual futures cause cryptocurrency bubbles or crashes. It does, however, provide evidence consistent with the possibility that highly leveraged perpetual futures markets can support long-biased speculation and amplify price movements through liquidation cascades. That possibility is enough to justify careful attention to leverage limits, liquidation design, funding-rate transparency, and trader disclosures.

VII. Regulatory Considerations for Cryptocurrency Perpetual Futures

Based on our empirical work, we believe the Commissions would benefit from focusing on the following considerations when evaluating cryptocurrency perpetual futures:

1. Margin and leverage. Maximum leverage, initial margin, maintenance margin, and portfolio-margin rules are central to the risk of forced liquidation and to the degree of speculative exposure supported by the contract.
2. Liquidation design. Regulators should evaluate whether liquidation rules are transparent, whether partial liquidation is used where appropriate, how liquidation fees are set, how insurance funds operate, and how losses are allocated in extreme conditions.
3. Funding-rate methodology. The funding formula, payment frequency, caps, settlement asset, and disclosure of historical and projected funding costs are central to the economics of the product.
4. Contract denomination and collateral. Tether-denominated, dollar-denominated, and coin-denominated perpetuals can differ materially in risk. Collateral type and settlement asset should be part of the product analysis.
5. Reference-price construction. Index design should be robust to manipulation, outages, thin liquidity, and conflicts arising from related spot and derivative trading.
6. Retail disclosures and suitability. Where retail traders can access leveraged perpetual futures, disclosures should explain funding, liquidation, non-recourse margin, fees, and the possibility of rapid loss in concrete terms.
7. Exchange and default risk. Customer collateral protections, segregation, bankruptcy treatment, insurance-fund governance, and default-loss allocation are central to market integrity.
8. Transparency and data. Public information about funding rates, open interest, liquidations, insurance-fund balances, index inputs, and realized trading conditions would improve outside evaluation of these markets.

These considerations are consistent with a neutral approach to the product. They do not require assuming that cryptocurrency perpetual futures are categorically inappropriate. They do require recognizing that the market outcomes observed in our work were shaped by specific design choices, especially high leverage, funding payments, and automated liquidation.

VIII. Conclusion

Cryptocurrency perpetual futures are not simply a marginal variation on traditional futures contracts. They are perpetual, heavily dependent on funding payments, often closely integrated with exchange margin and liquidation systems, and historically associated with substantial leveraged long demand. Our empirical work shows that these features matter.

The main regulatory lesson from our research is that the details of contract and exchange design are central. A regulatory framework for cryptocurrency perpetual futures should focus on leverage, liquidation, funding, collateral, reference prices, exchange risk, and disclosures. Our evidence supports careful scrutiny of these areas, particularly where products are available to retail traders. It does not support broad conclusions that perpetual futures are inherently harmful or inherently beneficial independent of design and market structure.

We appreciate the opportunity to provide these comments and would be pleased to discuss our research further with the Commissions or their staffs.

Respectfully submitted,

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References

Christin, Nicolas, Bryan R. Routledge, Kyle Soska, and Ariel Zetlin-Jones, “The Crypto Carry Trade,” working paper, August 18, 2023.

Soska, Kyle, Jin-Dong Dong, Alex Khodaverdian, Ariel Zetlin-Jones, Bryan R. Routledge, and Nicolas Christin, “Towards Understanding Cryptocurrency Derivatives: A Case Study of BitMEX,” Proceedings of The Web Conference 2021.