COMMENT ON CASH-SETTLED PERPETUAL CONTRACTS

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I. Introduction

I am Professor of Finance at the University of Sussex, where my research focuses on financial risk management, derivatives and digital-asset markets. I submit this comment in my personal academic capacity in response to Question 11 of the Commissions' Joint Request for Comment, particularly the questions concerning the treatment of cash-settled perpetual contracts referencing equity securities and their effects on liquidity, price discovery and hedging activity.

My co-authored research has examined the role of perpetual contracts in price discovery, hedging and volatility transmission across digital-asset markets. Alexander et al. (2020) found that the BitMEX Bitcoin perpetual and other BitMEX derivatives led prices on major Bitcoin spot exchanges, were more informationally efficient than spot prices and provided effective hedges against spot-price volatility.[1] Alexander and Heck (2020) extended this analysis across a wider set of markets. They found that perpetual contracts and futures traded on the unregulated exchanges BitMEX, Huobi and OKEx were the strongest instruments for Bitcoin price discovery, while regulated CME futures and US-based spot exchanges generally reacted to price movements originating in those markets.[2]

The identity of the dominant exchange has subsequently changed. Following the rapid growth of trading on Binance, BitMEX became a relatively minor venue. Alexander, Heck and Kaeck (2022) found that the USDT-margined Bitcoin perpetual on Binance was the principal source of volatility in the markets they examined, continuously transmitting strong volatility flows to other spot and derivatives instruments while receiving relatively little volatility from them.[3] The change from BitMEX to Binance demonstrates that market leadership follows liquidity and trading activity rather than any particular exchange. The underlying mechanics and economic functions of the perpetual contract, however, remain substantially the same.

My research has also addressed the consequences of automatic liquidation for hedging. Alexander, Deng and Zou (2023) derived an optimal Bitcoin futures hedging strategy that accounts jointly for the variance of the hedged portfolio and the probability that the exchange liquidates the futures position because collateral is insufficient.[4] This is important because a hedge that is automatically terminated during a period of extreme volatility may cease to protect the underlying exposure precisely when protection is most needed.

Taken together, this research shows that perpetual contracts do more than passively track spot prices. In sufficiently liquid markets, they can be leading venues for price discovery, important instruments for hedging and major channels through which information and volatility are transmitted across interconnected markets.

II. Summary conclusion

Perpetual contracts are economically hybrid instruments. Their periodic funding payments are swap-like, but their standardisation, exchange trading, central clearing, margining, mark-to-market settlement and linear exposure to the reference asset are futures-like. The funding leg makes the product swap-like, but it does not by itself make the whole instrument a swap.

The appropriate classification should depend on the contract's complete economic structure and trading architecture, rather than its name or any single design feature. A standardised perpetual traded on a regulated exchange, centrally cleared and subject to futures-style margining and market surveillance should be capable of classification as a futures contract. Where such a contract references a single equity security or a narrow-based securities index, it should be capable of treatment as a security futures product rather than necessarily being classified as a security-based swap.

This conclusion need not apply to every instrument described as a perpetual. A bespoke, bilaterally negotiated equity derivative may properly be treated as a security-based swap. The distinction should turn on objective characteristics such as standardisation, fungibility, exchange trading, central clearing, margining and the ability to close a position through an offsetting exchange transaction.

III. Economic mechanics of perpetual contracts

A conventional futures contract has a specified maturity. Cash-and-carry arbitrage and the requirement for the futures price to converge to the spot price at maturity provide an anchor between the two prices:

$$F_{t,T} \rightarrow S_T \quad \text{as} \quad t \rightarrow T$$

A perpetual contract has no maturity and therefore no predetermined date on which such convergence must occur. Instead, periodic funding payments provide the principal mechanism for keeping its price close to the underlying spot or index price. When the perpetual trades above the reference price, long-position holders will normally pay short-position holders. When it trades below the reference price, short-position holders will normally pay long-position holders. These payments create incentives for positions that tend to reduce the basis.

The funding mechanism has clear similarities to a swap. Payments are calculated on a reference notional, recur periodically and may flow in either direction. In this respect, they resemble the periodic interest payments in a currency or basis swap. Unlike a conventional currency swap, however, a perpetual has no scheduled maturity and no terminal exchange of notional. Moreover, its funding rate is generally linked to the difference between the perpetual price and an external reference price and is designed specifically to anchor the traded contract to the underlying market.

The absence of maturity therefore changes the mechanism by which the contract tracks the underlying price, but not the fundamental nature of its price exposure. The holder acquires a linear, margined exposure to changes in the reference asset and normally closes that exposure through an offsetting exchange transaction. Periodic funding replaces terminal convergence as the basis-control mechanism; it does not necessarily convert an otherwise standardised, exchange-traded and centrally cleared futures instrument into a bilateral swap.

IV. Price discovery and volatility transmission

Perpetual contracts can perform the price-discovery function traditionally associated with futures markets. Because they facilitate leveraged long and short positions, informed traders can act on their information without purchasing or borrowing the underlying asset. When liquidity is concentrated in the perpetual market, new information may therefore be incorporated into the perpetual price before it is fully reflected in spot prices.

My research provides direct evidence of this mechanism in Bitcoin markets. Alexander et al. (2020) found that BitMEX derivatives led major Bitcoin spot exchanges, while Alexander and Heck (2020) showed that perpetual contracts and futures traded on BitMEX, Huobi and OKEx were the strongest instruments for Bitcoin price discovery in the markets studied. Alexander, Heck and Kaeck (2022) subsequently found that the USDT-margined Binance perpetual was the principal source of Bitcoin volatility transmission, sending strong volatility flows to other spot and derivatives instruments while receiving comparatively little volatility from them.

These results arise from digital-asset markets and should not be transferred mechanically to equities. They nevertheless demonstrate that the absence of a fixed maturity does not prevent a perpetual contract from performing the central informational functions of a futures market. They also show that price leadership tends to follow liquidity. Permitting equity perpetuals to trade within an appropriately regulated US market could bring some price discovery currently occurring in offshore or synthetic markets within the surveillance of US regulators.

V. Effects on liquidity

A perpetual contract concentrates trading in a single instrument rather than dividing liquidity among contracts with different expiration dates. Market participants do not need to close an expiring contract and establish a position in the next maturity, thereby avoiding the transaction costs, execution risk and temporary price pressure associated with rolling positions. A single continuing contract may consequently support deeper order books and more stable market-making activity.

These benefits are particularly relevant where the economic exposure has no natural termination date. However, introducing a perpetual will not necessarily increase aggregate liquidity. It may partly transfer trading from the underlying shares, listed options or dated futures, and its success will depend on margin requirements, funding design, transaction costs and market-maker participation. The appropriate regulatory objective should therefore be to allow liquidity to form within a transparent and supervised market, while monitoring fragmentation and interactions with the underlying cash market.

VI. Hedging function

Many equity exposures are continuing rather than linked to a predetermined maturity. Asset managers may hold strategic positions indefinitely, while market makers and dealers manage inventories whose size and duration change with customer demand. The appropriate hedging horizon may therefore be uncertain when the hedge is initiated. Using dated futures in these circumstances requires the user to select an arbitrary maturity and, if the exposure continues, repeatedly close the expiring hedge and replace it with another. That process creates transaction costs, execution risk and uncertainty over the price at which each roll can be completed. It may also cause the hedge ratio to change temporarily around expiration. These difficulties are not merely administrative, because repeated rolling can materially affect the realised cost and effectiveness of a long-term hedge. A perpetual contract more closely matches an exposure of uncertain duration because it remains in place until the user chooses to close it.

The resulting hedge is not costless: its total cost includes transaction costs, margin costs, tracking error and funding payments, while its effectiveness also depends on the position remaining open. Alexander, Deng and Zou (2023) show that hedging with Bitcoin futures requires joint consideration of the variance of the hedged portfolio, the leverage selected and the probability that the exchange will automatically liquidate the position because its collateral is insufficient. Automatic liquidation is particularly problematic because it may remove the hedge during an extreme price movement, precisely when protection of the underlying exposure is most valuable. I have also encountered disputes concerning the operation and extent of automatic liquidation through my work as an expert witness in legal proceedings involving perpetual contracts. Thus, the ability of a perpetual to provide effective risk transfer depends not only on its price relationship with the underlying asset, but also on its margin, liquidation and clearing arrangements.

VII. Leverage and margining

Unregulated offshore crypto exchanges have permitted users to select leverage exceeding 100 times their posted collateral. At 100-times leverage, an initial adverse price movement of approximately 1 per cent can exhaust the collateral before allowing for maintenance margin, funding payments, fees or liquidation costs. The exchange may then terminate the position automatically, so user-selected leverage and automatic liquidation are directly connected. Alexander, Deng and Zou (2023) show that collateral selection must account jointly for hedge effectiveness and liquidation probability; a nominal hedge may provide little protection if excessive leverage causes it to be closed during a period of extreme volatility. This approach should not be carried into regulated equity perpetual markets. Traders may choose their position size, but they should not be permitted to select leverage by posting collateral below a binding minimum determined through a proper risk-based margin model. That model should reflect the volatility and liquidity of the underlying equity, the liquidation horizon, basis and funding risk, position concentration, stressed market conditions and the potential market impact of closing a defaulting position, with additional intraday margin collected when market conditions require it.

VIII. Risks, clearing and regulatory safeguards

The remaining risks associated with funding and liquidation are particularly acute on unregulated crypto exchanges because high user-selected leverage is combined with a market structure in which the trading venue commonly performs several functions simultaneously. It may operate the order book, determine margin requirements, hold customer collateral, calculate funding and mark prices, and execute liquidations without the independent clearing arrangements characteristic of regulated futures markets.

A large or rapidly changing funding rate can make a position substantially more expensive to maintain than the investor anticipated. Because funding is calculated on the notional position rather than merely on the collateral posted, its effect is magnified when leverage is high. Adverse price movements can then trigger automatic liquidations, producing additional orders in the same direction and draining liquidity during market stress. The venue may also have considerable discretion over the mark price, the timing and method of liquidation, the use of an insurance fund and the treatment of any remaining collateral. Where all these functions are concentrated within the exchange, conflicts of interest arise and the basis for particular liquidations may be difficult for customers, courts or regulators to reconstruct. Transparent rules governing margin calls, liquidation thresholds, execution priority, insurance funds and the disposition of collateral are therefore essential.

Central clearing does not eliminate liquidation risk, nor should it prevent the timely closure of a position that can no longer meet its obligations. It does, however, place default management within a regulated framework involving independently governed margin models, documented procedures, financial resources and supervisory oversight. For equity perpetuals, that framework must be accompanied by coordinated surveillance of the derivative and underlying cash markets, including controls against manipulation and trading on material non-public information. The distinctive risks of perpetuals therefore support their introduction through regulated, centrally cleared markets rather than their exclusion from the United States.

IX. Objective classification criteria

The Commissions should classify a perpetual by examining its complete economic structure and market architecture. No single characteristic should determine the result, and in particular the presence of periodic funding should not be treated as sufficient to make the instrument a swap. The distinction should instead reflect whether the contract operates as a standardised futures-market instrument or as a bespoke bilateral agreement. This would provide a principled boundary without assuming that every product carrying the same label must receive identical treatment.

A perpetual referencing an equity security should be capable of treatment as a security futures product where:

1. Its payoff provides linear exposure to changes in the price of the reference security
2. Its terms are standardised and positions are fungible
3. It is traded on an organised exchange through a multilateral order book
4. It is cleared through a regulated central counterparty with transparent margin and default-management arrangements
5. Gains and losses are regularly marked to market
6. Positions can be closed through offsetting exchange transactions
7. Funding payments are designed principally to anchor the contract price to the reference price
8. The contract conveys no ownership interest, voting rights or direct entitlement to dividends from the underlying issuer
9. The market is subject to position controls, reporting requirements and coordinated surveillance covering both the derivative and underlying security

A non-fungible contract negotiated bilaterally, customised to the parties' requirements and managed outside futures-market infrastructure may, by contrast, properly be characterised as a security-based swap. Applying these objective criteria would recognise the hybrid economic features of perpetuals while assigning legal classification according to the way each instrument is actually designed, traded, cleared and supervised.

X. Alternative compliance and regulatory coordination

An equity perpetual necessarily engages both derivatives-market and securities-market interests because its trading occurs in a derivatives market while its reference price and associated information originate in the underlying equity market. If the contract is treated as a security futures product, the involvement of both Commissions should not result in duplicative requirements that make an otherwise properly regulated product commercially impracticable. The Commissions should instead identify the regulatory outcomes required in relation to clearing, margin, customer protection, market surveillance, reporting, position controls and enforcement. Where the rules of one Commission achieve an outcome substantially equivalent to those required by the other, compliance with the first framework should be capable of satisfying the corresponding obligation under the second. Substantial equivalence should be assessed by reference to the purpose and effect of the requirements, rather than requiring identical rules or procedures. This outcomes-based approach would preserve both agencies' statutory responsibilities while avoiding unnecessary duplication.

Alternative compliance should not, however, create gaps between the supervision of the perpetual and the underlying equity market. The Commissions should share position, transaction and surveillance data and establish clear responsibility for investigating cross-market manipulation, trading on material non-public information and disruptive liquidation activity. Clearing and margin arrangements should remain subject to a single coherent default-management framework, even where both agencies retain access to the information necessary to discharge their respective mandates.

XI. Conclusion

Perpetual contracts combine features historically associated with both swaps and futures, but their legal classification should reflect the instrument as a whole. The funding leg makes the product swap-like; it does not by itself make the whole instrument a swap. A standardised, fungible, exchange-traded and centrally cleared perpetual performs the principal economic functions of a futures contract, including price discovery, liquidity formation and the transfer of price risk. When the reference asset is an equity security, such an instrument should therefore be capable of treatment as a security futures product, subject to appropriate coordination between the SEC and CFTC.

Automatic liquidation as practised on unregulated crypto exchanges is not an inherent feature of a perpetual contract. It reflects a market structure in which the exchange commonly permits extreme user-selected leverage while also controlling trading, margin, collateral and liquidation without an independent clearing framework, and that model should not be carried into regulated US markets. Regulated equity perpetuals should instead be supported by binding risk-based margin requirements, robust central clearing and orderly default-management procedures, together with surveillance spanning both the derivatives and underlying cash markets. A viable onshore framework built on those safeguards would allow the economic benefits of perpetuals to be realised without reproducing the weaknesses of the offshore markets in which they first developed.

References

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