



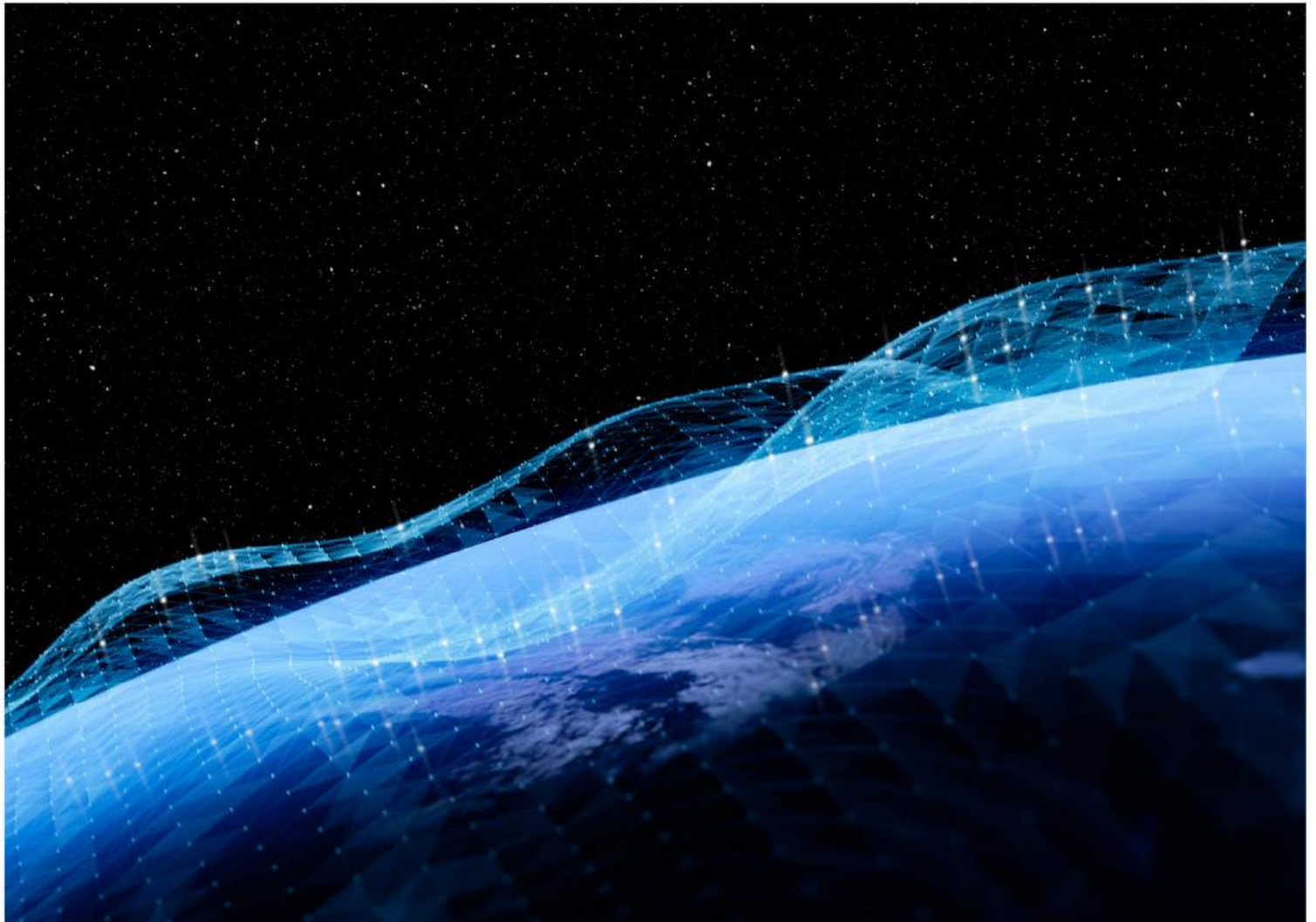
GBBC
Global Blockchain
Business Council

INSIGHT REPORT

GLOBAL STANDARDS MAPPING INITIATIVE (GSMI) 2.0 STANDALONE REPORT

INTRODUCTION TO CRYPTO-DERIVATIVES

November 2021



The GBBC would like to thank our many partners, members, and supporters who worked tirelessly and enthusiastically over the past months to produce this standalone report as a part of GSMI 2021, version 2.0.

Contributors

Borsa Italiana	Nicolas Bertrand (co-chair)
	Giacomo Spedini
Latham & Watkins	Yvette Valdez (co-chair)
	Deric Behar
	Alex Dubose
	Adam Fovent
	Alex McKenzie
	Nicholas Steele
Miami University Ohio	Alex Stan (GSMI fellow)
Cumberland DRW	Andrew Ridenour
Digital Asset	Beth Sendra
Digital Gold Institute	Ferdinando Ametrano
Diversifi	Eitan Katz
Eqonex	Marieke van Kleef
ErisX	Matthew Trudeau
Former Deloitte	Alessia Di Noto
Genesis Global Trading	Garynn Noel
	Leon Kelly
JPMorgan Chase & Co.	Yousuf Siddiqui
Kaiko	Ambre Soubiran
	Clara Medalie
London Stock Exchange Group	Kristen Mierzwa
SIX Digital Exchange	Peter T. Golder
	Niamh Lane

Contents

Introduction	5
Product Description.....	6
<i>What is a Derivative?</i>	6
<i>Where are derivatives traded?</i>	8
What are the types of derivatives?	9
<i>Forward Contracts</i>	10
<i>Futures Contracts</i>	10
<i>Options Contracts</i>	11
<i>Swaps</i>	11
<i>Crypto-Derivatives</i>	12
<i>Crypto Futures</i>	12
<i>Crypto Options</i>	13
<i>Crypto Perpetual Swaps</i>	13
ETPs, ETFs, and ETNs.....	14
<i>Exchange Traded Funds (ETFs)</i>	15
<i>Exchange Traded Notes (ETNs)</i>	15
<i>Bitcoin ETFs</i>	16
Uses of Derivatives Products	16
<i>Trading</i>	16
<i>Hedging</i>	17
<i>Risk Management</i>	18
<i>Arbitrage</i>	18
Trading Venues and Exchanges.....	19
<i>Trading Venues</i>	19
<i>Regulated</i>	20
<i>Unregulated</i>	20
<i>Over the Counter</i>	20
Evolution of Trading Activity of Derivatives on Digital Assets	21
<i>Exchange Market Share</i>	21
<i>Trade Volume</i>	21
<i>Open Interest</i>	22
<i>Exchange Coverage by Contract Type</i>	23

<i>Perpetual Futures</i>	24
<i>Dated Futures</i>	25
<i>Options</i>	26
<i>BTC vs. Altcoins</i>	26
Opportunities and Development Potential	29
<i>State of the market</i>	29
<i>Development of DeFi</i>	29
Complexities and Challenges	29
<i>Normalization and Standardization</i>	30
Crypto-Derivatives – Infrastructure Perspectives	32
Endnotes	37

Introduction

Global economic and financial systems are undergoing major transformations today, and in the coming years. Competitive pressures, technological innovations, and the deregulation process have brought about profound changes in finance. Thanks to financial innovation, the offer has been enriched with a multiplicity of products able to meet the increasingly complex needs of operators.

The phenomena of innovation, techniques and negotiated instruments, which represent a key element of the evolution of finance in recent decades, have found their main expression in derivatives. Derivatives have attracted a lot of trading interest both in volumes and positions held in classic areas such as interest rates, equities, and commodities. Digital assets represent a greenfield opportunity, though there is significant development in the product offering and volume of activity of these instruments.

There are other innovations on the horizon: the payment regime, the presence of borderless exchange, business financing, the management of property deeds. The level of activity in cryptocurrencies has reached previous unthinkable levels in terms of market capitalization, trading activity in notional amount, and number of trades. Diffusion takes on planetary characteristics, borders are eliminated, information is more constantly and broadly available on these new assets.

Institutional adoption of cryptocurrency by institutional investors is underway. The futures market is already playing a pivotal role in this advancement. Derivatives are first and foremost an extremely effective tool for risk management and trading; they also broaden access to digital asset exposure. Some platforms trading crypto derivatives have a larger reach, and synthetic exposure removes the need for investors to deal with the complexities of managing the actual digital token. 2021 has seen a few successful launches of ETPs and ETFs in the U.S., Europe, and Asia, which will allow traditional investors to access this asset class.

There is a unique opportunity for market participants not to see this simply as new contract listing within an existing operating model, but also to consider how technology can be leveraged to create a next generation futures trading and clearing model. If this model is indeed superior, there may also be an extra opportunity for these new ways of trading derivatives to be adopted for more traditional products and ultimately create significant innovation in the entire derivatives ecosystem.

This report will:

- Provide for an introduction to derivatives products and their uses
- Detail key elements and evolution of derivatives products in the digital asset space
- Analyze market structure specificities and potential business opportunities

Product Description

*What is a Derivative?*¹

We will start with a few basic points on derivatives to lay the foundations to look at the specificities of derivatives applied to digital assets.

A derivative is defined as “a financial security with a value that is reliant upon or derived from, an underlying asset or group of assets—a benchmark. The derivative itself is a contract between two or more parties, and the derivative derives its price from fluctuations in the underlying asset”²

Derivative trading has gained popularity as a means to manage risk, particularly counterparty and market risks. But these products provide traders with exposure to assets that they would otherwise have difficulties gaining exposure to. The seller of the derivative contract does not have to own or to be able to trade the underlying asset; rather, they can settle with the buyer in cash or with another offsetting derivative contract.

Traditionally, the underlying assets represented by derivatives include stocks, bonds, commodities, currencies, indexes, interest rates, and in our case cryptocurrencies.

Counterparties may be interested in trading derivatives for the following reasons:

1. To hedge against price movements of the underlying asset: by opening a contract that moves in the opposite direction of the underlying. For example, a farmer producing corn can sell his expected harvest ahead of when he needs to deliver it, immunizing his revenues from the fluctuation of the corn market.
2. To speculate: provide leverage which would result in large fluctuations in the price of the derivative with small movements to the underlying. A trader will make a profit of a move in the market with a multiplying effect due to the deposit required to trade a derivative is a percentage of its total value.

3. To manage counterparty risk for regulated/cleared contracts: position is managed with the intermediation of a central counterparty between the seller and the buyer, guaranteeing that the obligations are fulfilled.
4. To arbitrage: investors look to make profit by exploiting market inefficiencies.

Trading the physical digital asset bitcoin (or other tokens) can present risks and may be difficult to understand for investors. Custody poses significant challenges, both operational and regulatory. Derivatives are managed mostly with traditional centralized systems, and some are totally within the framework of regulated markets, for example, Bitcoin and Ethereum futures trade on CME. These products offer exposure to certain digital assets within the context of products trading in a regulated, traditional products and will contribute to a significant increase in access to digital assets.

Derivative traders may experience large losses and gains when they use leveraged products. Traditionally, leveraged products amplify the return one gets from trading the derivative, such that if the price of the underlying moves up or down by $x\%$, the payoff of the leveraged product is a multiple of x . When exposed to high leverage, tiny fluctuations in the underlying asset can thus result in amplified returns or losses, and the potential benefits and risks of leverage should therefore be carefully considered.

In the crypto industry leverage is a common concept, but leveraged trading is more like margin trading³ – the derivative products itself are not leveraged. Instead, traders have the option to fund each dollar of notional exposure with a smaller amount of capital, called margin or collateral. For example, using 5x leverage means one can trade a notional that is 5 times larger than the amount of margin one has put down, or, in other words, one will need to pre-fund 1/5th of the notional one wants to trade.

Generally, the amount of leverage available to trade depends on the size of the position - the larger the position, the less amount of leverage that is allowed.

Links to Volume Statistics of Derivatives Products (divided by asset class):

- <https://www.bis.org/statistics/derstats.htm?m=6%7C32%7C71>
- <https://stats.bis.org/statx/srs/table/d5.1?f=pdf>
- <https://stats.bis.org/statx/srs/table/d5.2?f=pdf>
- <https://stats.bis.org/statx/srs/table/d6?f=pdf>
- <https://stats.bis.org/statx/srs/table/d7?f=pdf>
- <https://stats.bis.org/statx/srs/table/d8?f=pdf>
- <https://stats.bis.org/statx/srs/table/d10.1?f=pdf>

Where are derivatives traded?

There are two primary market infrastructures for organized derivatives trading: exchange-traded and over-the-counter (OTC) venues.

Exchange-traded derivatives are derivatives that are traded on centralized, or in the case of cryptocurrencies sometimes decentralized, exchanges. Derivatives traded on licensed, regulated exchanges, and cleared through licensed, regulated clearinghouses are subject to disclosure and compliance requirements and are highly standardized. Centralized exchanges aim to foster liquidity and price discovery. Clearinghouses are designed to reduce and ultimately eliminate counterparty and settlement risk. These venues are highly regulated and designed to ensure market stability and protect investors. Decentralized exchanges are designed to run autonomously and independently on public blockchains, are unregulated, and may introduce novel risks, such as flaws in smart contract code and gas auction competition.⁴

Therefore, key questions for derivatives traders are where those contracts trade, the degree to which they are regulated (or legal), transparency of price discovery, counterparty risk, and investor protection. Derivatives traded without a regulated clearing house, on unregulated and/or decentralized exchanges, may expose the trader counterparty or smart contract risk, potentially without recourse. Some exchanges are mitigating that risk with risk management and insurance protocols.

OTC derivatives are not traded on regulated exchanges, may or may not be cleared, and are typically custom contracts between two or more parties. Unlike exchange-traded derivatives, OTC derivatives are negotiated and customized to fit the risk profile and return needs of all the parties involved. Uncleared OTC derivatives are typically less regulated than exchange-traded derivatives and pose counterparty risk because of the lack of clearinghouse guarantees. Since 2008 there has been a strong push by regulators for more bilaterally traded derivatives to be subject to centralized clearing to ensure better risk controls and investor protection. Due to the increased risk, uncleared OTC derivatives are typically traded by large corporations or institutional investors and some of these contracts are made available to trade on dedicated trading platforms.

Regarding crypto derivatives, many centralized and decentralized crypto trading platforms and OTC trading desks with derivatives offerings are providing an unregulated solution rather than a traditional regulated exchange and clearinghouse solution. Therefore, it is essential for the client to understand exactly the type of risk they are taking when executing a trade on a particular venue, as well as the risk of leverage. Some platforms may advertise clearinghouse-type default

financial resources in the form of an internally managed emergency fund (e.g., a “guarantee fund”) but the existence and balance of these resources are not often verified by independent third-parties or regulators. As a result, anyone trading on such platforms is assuming the counterparty risk of the platform.

Pros of exchange-traded, cleared derivatives:

- High regulatory oversight
- Standardized instruments
- Fully transparent, fair access visibility
- Concept of a fair and orderly market with surveillance regimes to prevent and punish manipulation, processes protecting the user at various levels
- Central clearing house centered on the principles of innovation
- Clear guidelines and thresholds on investor protection
- Robust framework to manage risk and events of default

Cons of exchange-traded derivatives:

- Less customizability
- Regulation is often seen as burdensome
- Little flexibility and controlled access.
- All-in cost base

Pros of OTC derivatives:

- Increased flexibility in terms and tenor
- Ability for customization
- Tailor-made products to the exact needs of the client

Cons of OTC derivatives includes:

- Counterparty risk
- Potentially fewer regulatory protections
- More due diligence required counterparty risk/credit analysis for each counterparty
- Potential conflicts of interest and information asymmetry
- Has become more balance sheet intensive for counterparties unless centrally cleared

What are the types of derivatives?

There are many different types of derivatives available on the market. Such a variety of products can be confusing for a trader therefore we will group derivatives into four main categories: forward contracts, futures contracts, options contracts, and swaps.

Forward Contracts

Simply put, a forward contract is an agreement between two or more parties to buy and sell something at a future date at a price set in the present day. These contracts are only traded OTC and therefore are very customizable and typically used for commodities such as grain, oil, and livestock to hedge against the risk of price fluctuations. Forward contracts are also frequently used in currency markets. The following example illustrates a forward contract:⁵

“Assume that an agricultural producer has two million bushels of corn to sell six months from now and is concerned about a potential decline in the price of corn. It thus enters into a forward contract with its financial institution to sell two million bushels of corn at a price of \$4.30 per bushel in six months, with settlement on a cash basis.

In six months, the spot price of corn has three possibilities:

1. It is exactly \$4.30 per bushel. In this case, no monies are owed by the producer or financial institution to each other, and the contract is closed.
2. It is higher than the contract price, say \$5 per bushel. The producer owes the institution \$1.4 million, or the difference between the current spot price and the contracted rate of \$4.30.
3. It is lower than the contract price, say \$3.50 per bushel. The financial institution will pay the producer \$1.6 million, or the difference between the contracted rate of \$4.30 and the current spot price.”

Forward contracts are also used extensively in the FX and rate business to manage cash flow in different currencies. The FX forward and forward-forward business are very mature OTC markets trading globally and used extensively by banks and corporates.

Futures Contracts

Futures are very similar to forward contracts, but the main difference lies in the fact that futures contracts are traded on exchanges. They are standardized contracts both in terms of contract size and expiry date and must be cleared via the centralized clearing house of the exchange on which they are traded. The exchange matches anonymous buyers' bids and offers via a centralized order book and the filled orders are then novated by the clearing house that becomes the counterparty to each side of the trade. Investors must deposit “initial margin”, generally on trade date +1, to the clearing house, via their clearing house member. The “initial margin” level is set by the clearing house, based on regulatory guidelines, at an adequate level to cover the worst possible wrong-way risk in the event of a counterparty default. Additionally, futures contracts are marked-to-market daily, using the daily closing price of the exchange and the investor settles the variation margin daily. Initial margin levels can generally be funded by

cash and clearing house approved non-cash collateral. For contracts that are cash settled, after trading ceases any remaining open positions are cash settled against the Exchange Delivery Settlement Price (EDSP).

With regards to the crypto market, the most liquid, regulated futures contract is the CME Bitcoin Futures. However, most cryptocurrency futures are OTC and are not regulated. Top cryptocurrency futures exchanges include Binance, OKEx, FTX, and HuobiGlobal.⁶

Options Contracts

An options contract is fundamentally different from forward and futures contracts. The primary difference is that with options contracts, only one party has an obligation, whereas the other has a right. In forward and futures contracts both parties have an obligation. On the expiration date of an options contract the Seller of the option has the obligation to buy (if it is a “call option”) or sell (if it is a “put option”) and the Buyer has the right, but no obligation, to exercise the option. In the case of futures or forward contracts both parties have an obligation to deliver (Seller) or receive (Buyer) at settlement. The Buyer of the option pays a ‘premium’ to the Seller, which is calculated to represent the ‘risk’ to the Seller that the Buyer exercises the option.

Options contracts are traded both on exchanges and OTC

A call option gives you the right to buy the underlying at the expiration date at a predetermined price while a put option gives you the right to sell the underlying at the expiration date at a predetermined price. The buyer of the option pays a “premium” to the seller, which is calculated to represent the “risk” to the seller that the buyer exercises the option.

Swaps

Generally, swaps are traded OTC and are rarely seen on exchanges. A swap is a type of derivative that gives parties the opportunity to swap cash flows. A typical swap contract includes fixed and floating interest rates and are often used for currency exchanges as well. For example:⁷

“Company A and Company B enter into a five-year swap with the following terms:

Company A pays Company B an amount equal to 6% per annum on a notional principal of \$20 million. Company B pays Company A an amount equal to one-year LIBOR + 1% per annum on a notional principal of \$20 million.”

Crypto-Derivatives

The crypto-derivatives market has now overtaken the crypto spot market by trading volume as it continuously expands with new products. Although crypto derivatives represent a new set of tradeable products, they have many of the same characteristics as traditional derivative products.

Crypto-derivatives are “secondary contracts or financial tools that derive their value from a primary underlying asset. A primary underlying asset could be a cryptocurrency such as Bitcoin.”⁸ These derivatives can be traded OTC, over centralized exchanges, and even over decentralized exchanges.

There are many different types of crypto-derivative and structured products on the market. These can be summarized in three main categories: crypto futures, crypto options, and perpetual contracts.

Crypto Futures

Crypto futures are structured the same as traditional futures contracts. Within the crypto space, there are two different types of futures, inverse futures, and non-inverse futures, also referred to as vanilla futures. Vanilla futures work the same way as in traditional finance – the P&L is linear and paid out in the quote currency, such as USD or a USD-based stablecoin when trading a pair like BTC/USD or ETH/USD.

Inverse futures were designed to eliminate the need to hold any fiat or stablecoin on a platform. For those contracts the margining and P&L are calculated in the base currency of the contract, for example in BTC when trading BTC/USD futures. As a result, the P&L calculation is non-linear.

- **Inverse Futures:**

If one thinks BTC will increase in price against USD, one can buy 20,000 BTC-USD futures at 10,000 USD per BTC. Each contract is worth 1 USD. Let's say the price of BTC increases and one sells the futures contracts for 12,000. One can calculate your P&L by using this formula:

$$(1 / \text{Entry Price} - 1 / \text{Exit Price}) * \text{Position Size} = (1 / 10,000 - 1 / 12,000) * 20,000 =$$
$$0.33 \text{ bitcoin}$$

- **Vanilla Futures:**

If one thinks that ETH will increase against USD, one can buy 1,000 ETH-USD at 3,000 USD per ETH. Luckily, the price of ETH increases, and one sells the futures for 4,000. In this case the P&L would be calculated as:

$$(Exit\ price - Entry\ price) * Position\ Size = (4,000 - 3,000) * 1,000 = 1,000,000\ USD$$

Crypto Options

Like crypto futures, crypto options share the same structure as its traditional counterpart, but the underlying asset is a cryptocurrency.

Example:

- At the beginning of the month BTC is trading for \$40,000 but one believes it will go higher, so they buy 10 European-style call options and a strike price of \$44,000 for a 0.003 BTC premium. This contract expires at the end of the month. The premium that one paid for this contract is 0.003 BTC at \$40,000 = \$120 x 10 = \$1200 premium.
- Each contract gives one the right to purchase 0.1 BTC, therefore 10 * 0.1 = 1 BTC. Upon expiration, if the price of BTC is \$46,000 and one exercises the call option, one would make a \$2000 profit (\$46,000 - \$44,000) and net \$800 after subtracting the premium (\$2,000 - \$1,200). Conversely, if the price of BTC is \$38,000 one would not exercise the call option and record a loss of \$1,200, the price of the premium.

Crypto options are relatively nascent and simple at this stage of development. Over the coming years, exotic crypto options with more complex structures, as well as embedded option structures, may emerge for multiple purposes, including for hedging, synthetic exposure, and speculation.

Crypto Perpetual Swaps

Crypto Perpetual Contracts, which are sometimes referred to as Perpetual Swaps and other times referred to as Perpetual Futures, but generally referring to the same concept, were originally invented by BitMEX. When cryptocurrencies grew in popularity and started attracting more retail traders, these traders kept complaining that their positions “disappeared” when in reality they were trading dated futures which had expired. To solve for this, BitMEX developed the Perpetual Contract. Unlike other futures and options, perpetual contracts are unique to cryptocurrencies.

Perpetual contracts are the most popular derivative in the current crypto market. A perpetual contract can be thought of as a futures contract that never expires.

Traders are able to keep their positions open for as long as they want under certain conditions. One of these is that the account must contain a minimum amount of BTC

(margin). Another distinct factor to consider is the funding rate. This is a unique mechanism that helps align the price of the perpetual contract to that of Bitcoin. Because of its time limit, the price of a futures contract will always converge with the price of the underlying asset at expiration. Since perpetual contracts don't expire, their prices can start deviating significantly from bitcoin's prices. A solution to this problem is to have one side of traders pay the opposing side.⁹

Perpetual futures are futures contracts with no maturity, as opposed to dated futures, which expire at a pre-set date and time such as every month or every quarter. Any position in a perpetual future stays open until the trader decides to close the trade by executing an offsetting trade, or until the trade gets liquidated.¹⁰

As perpetual futures have no set expiry they are, in a way, akin to spot exposure. To ensure that perpetual prices are kept in line with the spot market, the contracts have an exchange of payment between buyers and sellers depending on where the future price is trading relative to the underlying spot price. The spread between spot and perpetual futures prices is commonly known as 'basis' in traditional finance, but in crypto is often referred to as 'funding'. The resulting payment that is exchanged between long and short holders of the contract is mostly referred to as the funding payment.¹¹

The MTM ('mark-to-market') of perpetual contracts is determined by the 'funding rate'. The funding rate is the mechanism that ties the perpetual contracts price to the underlying spot price. Depending on how often the exchange processes the funding rate, the spread between the perpetual contracts and spot prices is generally smaller than the spread between the perpetual contracts and dated futures (the exception being when approaching expiry date).

To date, perpetual contracts are the most popular product in the crypto market.

ETPs, ETFs, and ETNs¹²

Exchange Traded Products (ETPs) are a class of investment instruments that trade intraday like stocks on stock markets. Their primary goal is to track a financial instrument, such as an index of share prices, a currency, a commodity, or an interest rate. Exchange-traded funds (ETFs) are the most popular ETPs. Other types of ETP include exchange-traded notes (ETNs) and exchange-traded vehicles (ETVs). ETPs were first introduced in the 1990s, and since then, their popularity has grown significantly. In the following paragraphs, we refer predominantly to the US markets.

Exchange Traded Funds (ETFs)

An ETF is a fund structure that issues shares traded on an exchange (just like equities), tracking equity and fixed income benchmarks. The funds are baskets of securities that typically track a sector or industry. They behave in the same way that a stock would and can be traded when the market is open.

Due to the continuous creation of new shares and redemption of existing shares, the number of shares outstanding of an ETF may change daily. Since shares of an ETF can be issued and redeemed regularly, the price of the ETF remains aligned with the value of its underlying securities.

For an ETF to maintain its liquidity and tracking integrity, institutional investors are critical. In cases in which the price of the ETF deviates from the underlying asset value, institutions can arbitrage the price of the ETF back in line with the underlying asset value by purchasing creation units.

In recent years, ETFs have become one of the most important products for individual investors. There is an ETF for every conceivable asset class, from traditional investments to alternative assets such as commodities, currencies, and more recently, cryptocurrencies in the United States. Investing in ETFs offers investors opportunities to short markets, gain leverage, and avoid short-term capital gains taxes.

Looking at the US markets, ETFs were introduced in earnest in 1993 with the SPY ETF, which became the highest volume ETF in history. A total of 2,354 ETF products are expected to trade on US stock exchanges in 2021, with a value of 5.83 trillion dollars.¹³

Exchange Traded Notes (ETNs)

Like ETFs, these trade on a stock exchange and track a benchmark index.

However, there are some key differences:

- Unlike an ETF that holds assets such as stocks or currencies, ETNs are senior, unsecured debt securities issued by banks. An ETN's return is linked to an index or benchmark.
- An ETN is a contract that promises to pay the full value of an index at maturity, minus the management fee. Investors who invest in this debt securities are subject to the credit risk of the bank issuer.

With the introduction of ETNs in 2006, Barclays Bank enabled retail investors to invest in difficult-to-access instruments, such as currencies and commodities. By moving to a debt

structure, Barclays eliminated the costs associated with holding commodities, currencies, and futures and improved the tax structure for investors.

Bitcoin ETFs

A Bitcoin ETF tracks bitcoin's value and trades on exchanges (rather than on dedicated crypto exchanges). They give investors the opportunity to get exposure to bitcoin's price changes without buying the underlying asset on crypto exchanges.

A Bitcoin ETF listed on major stock exchanges decreases barriers to entry, allowing more investors to participate. Bitcoin ETF proposals in the US have been circulating since 2013, and only recently, a bitcoin ETF based on CME Futures was approved. On October 19, 2021, ProShares BTC ETF (ticker: BITO) launched and within days, broke ETF records for investment inflows (over \$1 billion in two days).¹⁴ Other cryptocurrency ETFs trade on the Toronto Stock Exchange (TSX), on Europe's Euronext, XETRA, and B3 in Brazil. Currently European regulated markets only offer ETNs on digital assets or digital assets proxies.

Uses of Derivatives Products

In general derivatives products can be used for different purposes:

- Trading
- Hedging
- Risk management (including synthetic risk exposure to underlying spot)
- Arbitrage

The use of these products has become increasingly important in recent years as corporations look for new and better ways to manage financial and operating risks. When an investor wants to take one side of a contract, there is usually no problem in finding someone to take the other side.

Three broad categories of traders can be identified: hedgers, speculators, and arbitrageurs:

- Hedgers use derivatives to reduce the risk that they face from potential future movements in a market variable.
- Speculators use them to bet on the future direction of a market variable.
- Arbitrageurs take offsetting positions in two or more instruments to lock in a profit.

Trading

Derivatives trading is financial trading operations on a particular type of instrument. Traders can seek to profit from the change in the price of underlying assets such as securities or indices.

Hedging

Companies face multiple types of risks which are mitigated or eliminated through different risk management practices, including hedging. A hedge is simply a trade that reduces the price risk of a position.¹⁵ Companies mostly hedge the risks associated with interest rates, foreign exchange rates (FX), and commodity prices. In the context of globalization, firms increasingly engage in international activities and are more exposed to fluctuations of foreign exchange rates.

To manage price fluctuations across these markets, counterparties enter into interest rate, foreign exchange or commodity hedges. Hedging is typically characterized by the use of different financial derivative instruments which include forward, futures, options and swap contracts. Combining risk exposures and types of derivatives will generate a variety of hedging instruments, e.g. foreign currency forwards, interest rate swaps, commodity futures, etc. Unlike financial institutions, non-financial firms usually engage in a single or a few types of derivative contracts to hedge the particular risks that they are exposed to.

Thus, hedging is a technique or strategy that comes as a form of investment designed to avoid market volatility or to protect another investment or portfolio against potential investment risk or loss. Loss can be in the form of protecting a profit or reducing the risk of a loss. When it comes to profit loss, the hedging strategy safeguards the capital but fails to accumulate profits in the process when the risk does not happen. Meanwhile, a risk loss is what the hedging aims to protect against in a volatile and unpredictable financial market.

Hedging works and acts like insurance because it serves as a preventive measure against negative or unexpected events. Hedging via derivatives allows risk related to the price of the underlying asset to be transferred from one party to another. For example, a wheat farmer and a miller could sign a futures contract to exchange a specified amount of cash for a specified amount of wheat in the future.

There is a fundamental difference between the use of forward contracts and options for hedging. Forward contracts are designed to neutralize risk by fixing the price that the hedger will pay or receive for the underlying asset. Option contracts, by contrast, provide insurance. They offer a way for investors to protect themselves against adverse price movements in the future while still allowing them to benefit from favorable price movements.

It is important to note that "hedging" is the practice of risk mitigation, but the goal of most hedge funds is to maximize return on investment. The name is mostly historical, as the first hedge funds tried to hedge against the downside risk of a bear market by shorting the market. Hedge funds are alternative investments using pooled funds that employ different strategies to earn

active returns, or alpha, for their investors. Hedge funds may be aggressively managed or make use of derivatives and leverage in both domestic and international markets with the goal of generating high returns (either in an absolute sense or over a specified market benchmark). Hedge funds are generally only accessible to accredited investors as they require less SEC regulations than other funds. One aspect that has set the hedge fund industry apart is the fact that hedge funds face less regulation than mutual funds and other investment vehicles. One of the essential parts of a hedge fund's value proposition is its ability to enhance the basic return from security selection and directionality with leverage.

Risk Management

Risk management is a crucial part of any firm's core strategies. A wide range of risk management approaches are available to the companies. They can be implemented using diverse operational activities or different financial products. Risk management researchers group them into three categories:¹⁶

- **Diversification:** This is conventional. Exposure to one business activity will be mitigated if a firm diversifies into uncorrelated businesses.
- **Insurance:** At an upfront cost, companies seek protection against unfavorable outcomes (downside risk) and will keep the potential gains.
- **Hedging:** Hedging locks in the future cash flow that the company is going to receive. The exposure is eliminated completely. While they can avoid losses, the companies must also give up the possible upside gain.

Risk management, the managerial process that is used to control such price volatility, has consequently risen to the top of financial agendas. It is here that derivative instruments are of utmost utility. As instruments of risk management, these generally do not influence the fluctuations in the underlying asset prices. However, by locking in asset prices, derivative products minimize the impact of fluctuations in asset prices on the profitability and cash flow situation of risk-averse investors.

Arbitrage

Arbitrage involves locking in a riskless profit by simultaneously entering into transactions in two or more markets. Arbitrageurs are a third important group of participants in futures, forward, and options markets.

Below the concept of arbitrage is illustrated with a simple example¹⁷:

Consider a stock that is traded on both the New York Stock Exchange (NYSE) and the London Stock Exchange (LSEG). Suppose that the stock price is \$150 in New York and £100 in London

at a time when the exchange rate is \$1.5300 per pound. An arbitrageur could simultaneously buy 100 shares of the stock in New York and sell them in London to obtain a 'risk-free' profit of

$$100 \times [(\$1.53 \times 100) - \$150]$$

or \$300 in the absence of transactions costs. Transactions costs would probably eliminate the profit for a small investor. However, a large investment bank faces very low transactions costs in both the stock market and the foreign exchange market. It would find the arbitrage opportunity very attractive and would try to take as much advantage of it as possible.

Arbitrage opportunities such as the one just described cannot last for long. As arbitrageurs buy the stock in New York, the forces of supply and demand will cause the dollar price to rise. Similarly, as they sell the stock in London, the sterling price will be driven down. Very quickly the two prices will become equivalent at the current exchange rate. Indeed, the existence of profit-hungry arbitrageurs makes it unlikely that a major disparity between the sterling price and the dollar price could ever exist in the first place. Generalizing from this example, we can say that the very existence of arbitrageurs means that in practice only very small arbitrage opportunities are observed in the prices that are quoted in most financial markets.

Trading Venues and Exchanges

An exchange, bourse, trading exchange or trading venue is an organized market where tradable securities, commodities, foreign exchange, futures, and options contracts are sold and bought.

In particular, a derivatives exchange is a market where individuals trade standardized contracts that have been defined by the exchange.

Trading Venues

The types of trading venues, according to the European MIFID, are:

- **Regulated Market (RM):** a multilateral system operated and/or managed by a market operator, which brings together or facilitates the bringing together of multiple third-party buying and selling interests in financial instruments in accordance with non-discretionary rules.
- **Multilateral Trading Facility (MTF):** a multilateral system operated by an investment firm or a market operator, which brings together multiple third-party buying and selling interests in financial instruments in accordance with non-discretionary rules.
- **Organized Trading Facility (OTF):** a multilateral system which is not a regulated market or an MTF and in which multiple third-party buying and selling interests in bonds, structured finance products, emission allowances or derivatives are able to interact in

the system in a way that results in a contract. Unlike RMs and MTFs, operators of an OTF have some discretion in execution.

Generally, references to trading venues in crypto markets include both regulated and unregulated venues, as well as exchange and over-the-counter trading, which are defined below.

Regulated

A regulated market is defined as a market over which government bodies or, less commonly, industry or labor groups, exert a level of oversight and control.¹⁸ Market regulation principles are often controlled by a governmental entity and may involve for example determining who can enter the market. The government body's primary function in a market economy is to regulate and monitor the financial and economic system.

Generally, regulation includes rules regarding how goods and services can be marketed; what rights consumers have; safety standards for products, workplaces, food, and drugs; mitigation of environmental and social impacts; and the level of control a given participant is allowed to assume over a market.

Regulated markets are typically subject to, and/or, in the case of self-regulatory organizations (SROs) implement their own rules and regulations aimed at investor protection and maintaining fair and orderly markets. While adding to the cost of compliance, the upholding of such market rules and oversight responsibilities must be inspected and audited by independent third parties. Failure to meet their obligations may result in fines or other enforcement actions by the appropriate regulatory agency.¹⁹

Unregulated

Technological innovation has made significant changes in the structure and organization of markets. On one hand, there has been rapid change in the traditional exchange venues, from the dealing rooms on the floors of stock exchanges to virtual environments where today's IT systems allow computerized trading. The effects of technological innovation have also become apparent on the competitive side; the use of IT systems for the management of trading orders has encouraged the rise of trading venues other than traditional stock exchanges²⁰.

Over the Counter

Not all derivatives trading happens on exchanges. Many trades take place in the over the counter (OTC) market. Banks, other large financial institutions, fund managers, and corporations are the main participants in OTC derivatives markets. Once an OTC trade has

been agreed to, the two parties can either present it to a central counterparty (CCP) or clear the trade bilaterally. A CCP may be a clearing house or other similar institution that provides a settlement guarantee so that one party does not have to bear the risk that the other party will default.

An OTC market is a market in which market participants trade stocks, commodities, currencies, or other instruments directly between themselves and without a central exchange.²¹

In an OTC market, dealers act as market-makers by quoting prices at which they will buy and sell a security, currency, or other financial products. A trade can be executed between two participants in an OTC market without others being aware of the price at which the transaction was completed, although there are rules in many jurisdictions regarding the publicity of trades, even in the OTC markets. In general, OTC markets are less transparent than exchanges and are also subject to fewer regulations.

Evolution of Trading Activity of Derivatives on Digital Assets

Over the past few years, the growing volume, coverage, and diversity of contracts has transformed the derivatives industry into a structurally critical force in cryptocurrency markets.

The below charts focus primarily on unregulated derivatives markets, which account for the majority of global volume and liquidity. The charts highlight the breakdown of market share, the types of contracts trading, and the breadth of coverage.

Exchange Market Share

The vast majority of cryptocurrency derivatives trade volume occurs on unregulated exchanges. The top unregulated exchanges are: Binance, Okex, Huobi, FTX, Bybit, Bitmex, and Deribit. Kraken, Bitfinex, and Bitflyer also offer derivatives, but their volumes are lower than top-tier unregulated markets. CME Group is one of the only regulated exchanges that offers futures on Bitcoin and Ethereum. There are several other smaller regulated exchanges such as LedgerX, Bakkt, and ErisX, although volumes remain low.

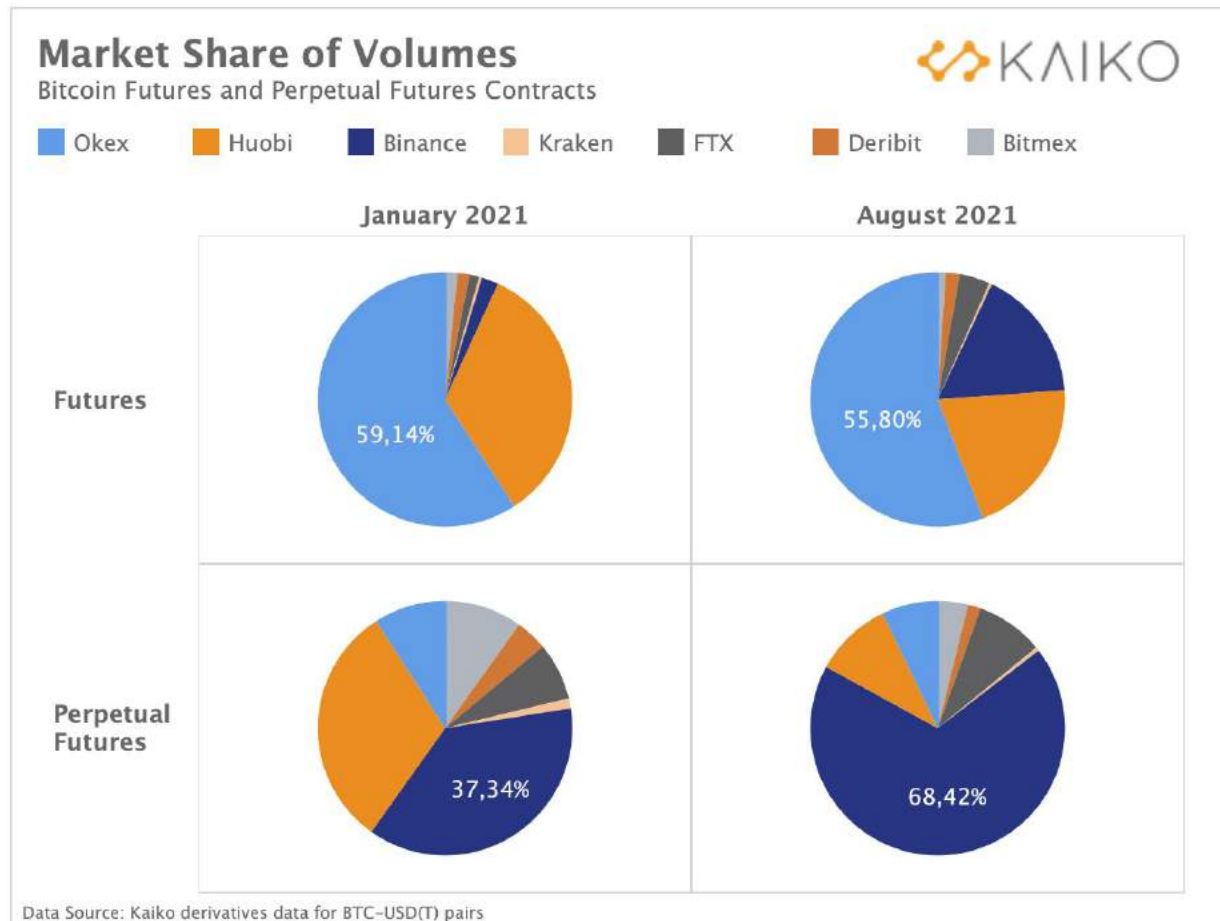
All unregulated exchanges offer both perpetual futures and dated futures, but only a few exchanges— Deribit, Okex, and Huobi – offer options on cryptocurrencies. For options, Deribit accounts for the vast majority of market share.

Trade Volume

Since the start of 2021, exchange market share of trade volume has changed drastically for dated futures and perpetual futures. Since January, Binance went from accounting for just 2% of

dated futures volume and 37% of perpetual futures volume to 16% and 68%, respectively. For futures, Binance's market share grew by more than eight times, and for perpetual futures Binance's market share now accounts for a majority of all volume.

Okex still accounts for the majority of dated futures volume, although its market share fell 4% since January.

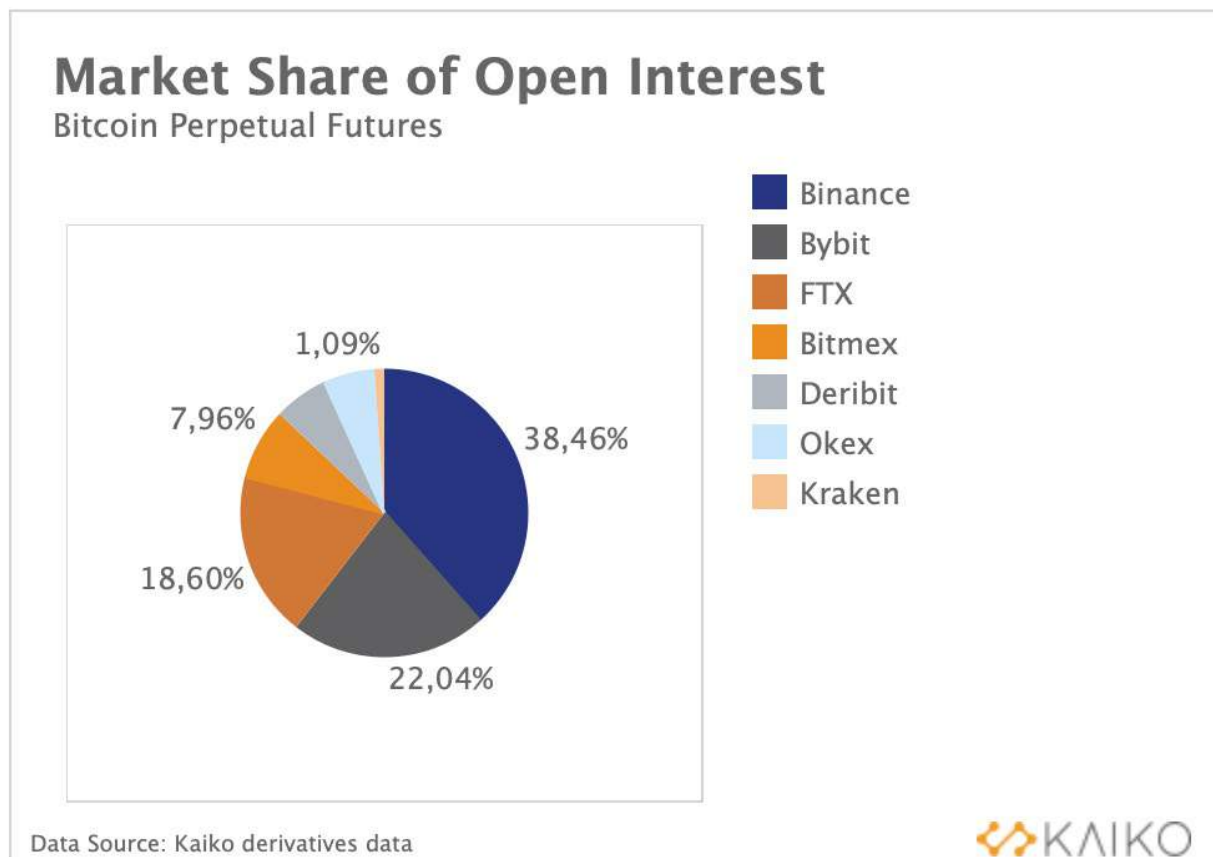


FTX also slightly gained market share since the start of the year, growing from 1% to 3% of futures volumes and 7% to 8% of perpetual market share. Huobi has lost the most market share since the start of the year, losing more than half for both futures and perpetual futures.

Open Interest

Binance also dominates perpetual futures open interest, much like volume. We can observe that Binance's market share is greater than all other exchanges, at 38% of total, but is followed closely by Bybit and FTX. Bybit targets retail derivatives traders and offers higher leverage than most other exchanges. FTX also has a high proportion of open interest, although its proportion

of trade volumes is less dominant, which suggests traders on these two exchanges use more leverage.



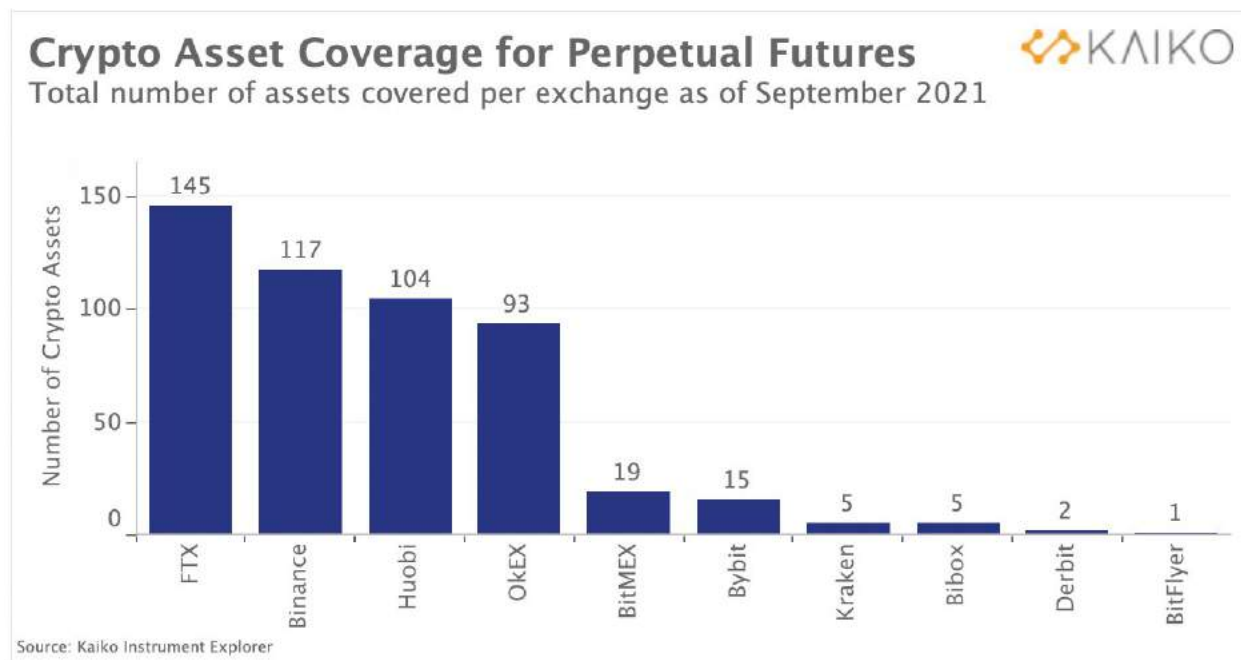
The trends in market share show that the exchange landscape is constantly evolving, but increasingly favoring Binance. However, the recent regulatory crackdown on Binance's unregulated derivatives products could seriously dampen growth in the coming months. Exchanges like FTX are increasingly walking the regulatory-compliant line, best exemplified by their acquisition of regulated derivatives platform LedgerX.²² FTX could gain market share should they win the favor of regulators in the key U.S. and European markets.

Exchange Coverage by Contract Type

Cryptocurrency derivatives markets have undergone massive growth over the past couple of years, but nothing has been as impressive as the soaring popularity of perpetual futures. Almost every cryptocurrency derivatives exchange offers perpetual futures, and most offer both USD and USDT denominated contracts. Perpetual futures contracts cover the widest range of crypto assets, more so than dated futures. Only a handful of exchanges offer options contracts, and most only on Bitcoin and Ethereum.

Perpetual Futures

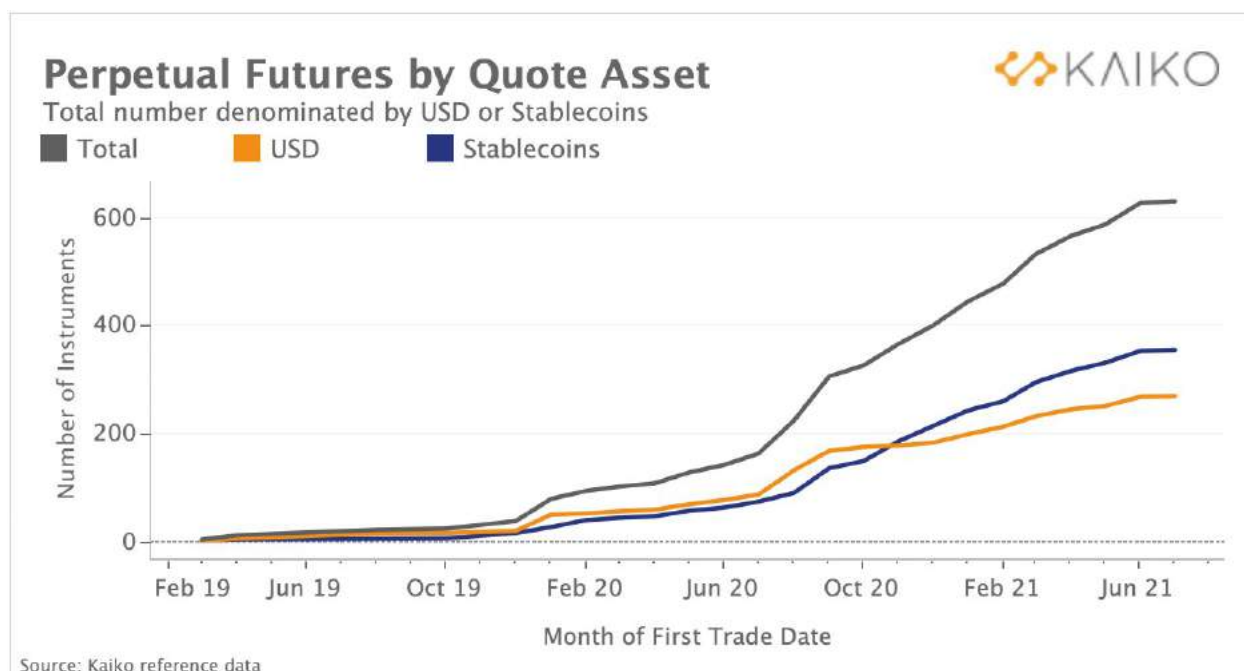
The below chart shows the number of crypto assets covered by each exchange as of September 2021.



Today, FTX leads the market for perpetual futures with the largest number of contracts on crypto assets. FTX is known for rapidly listing contracts on new crypto assets and offering the widest variety of derivatives. FTX is a relative newcomer to the derivatives space, launching their first contract in 2019, but has rapidly gained market share and relevance due to their fast-paced listing strategy.

Binance, Huobi, and Okex are relatively even when it comes to the range of perpetual futures offered today. Binance is poised to continue gaining market share due to a similar listing strategy that FTX pioneered in the derivatives space. Bitmex, the first exchange to offer a cryptocurrency perpetual future, lags sharply behind in terms of total asset coverage, although the exchange has historically boasted the highest volumes for their bitcoin perpetual.

We can observe that the quantity of perpetual futures has increased sharply since 2019. Today, there are more than 600 total contracts. Around 400 are denominated in stablecoins (USDT-margined) and 200 in USD (coin-margined).



Dated Futures

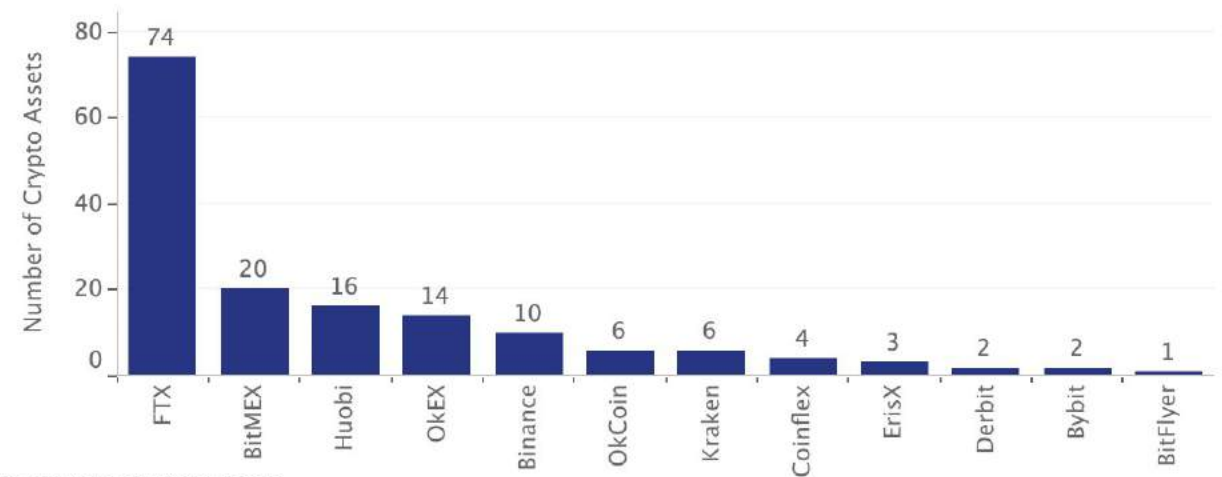
For standard dated futures contracts, most exchanges offer only a fraction of the coverage compared with perpetual futures. Most exchanges offer futures contracts with expiries ranging from weekly to quarterly, although the quantity of dated futures varies by exchange. For example, Binance only offers a quarterly contract while FTX offers monthly, quarterly, and biannual contracts. Huobi offers weekly, bi-weekly, and quarterly contracts.

The below chart shows the quantity of crypto assets that have a dated future on each exchange. FTX is again the market leader offering the widest range of futures on crypto assets. Bitmex comes in second, and Binance lags far behind. Binance launched their derivatives exchange more recently, and recognized that perpetual futures contracts see the largest volumes, thus sought this strategy over the more standardized dated futures listings that exist in traditional markets.

Crypto Asset Coverage for Dated Futures



Total number of assets covered per exchange as of September 2021



Source: Kaiko Instrument Explore

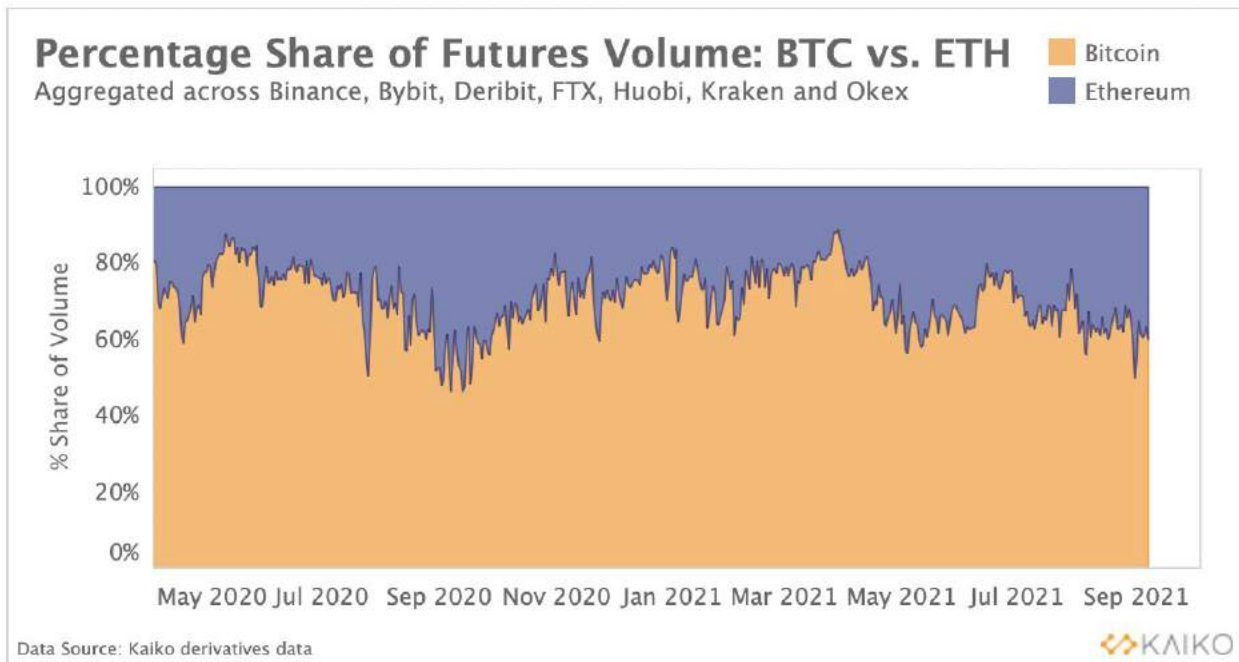
Options

Okex, Huobi and Deribit are the only unregulated exchanges to offer these contracts and all three only offer options on Bitcoin and Ethereum. Options markets are far more complex than futures, which has prevented them from gaining widespread popularity, although volumes have increased in recent years. Today, Deribit accounts for over 90% of total market share of options volume.

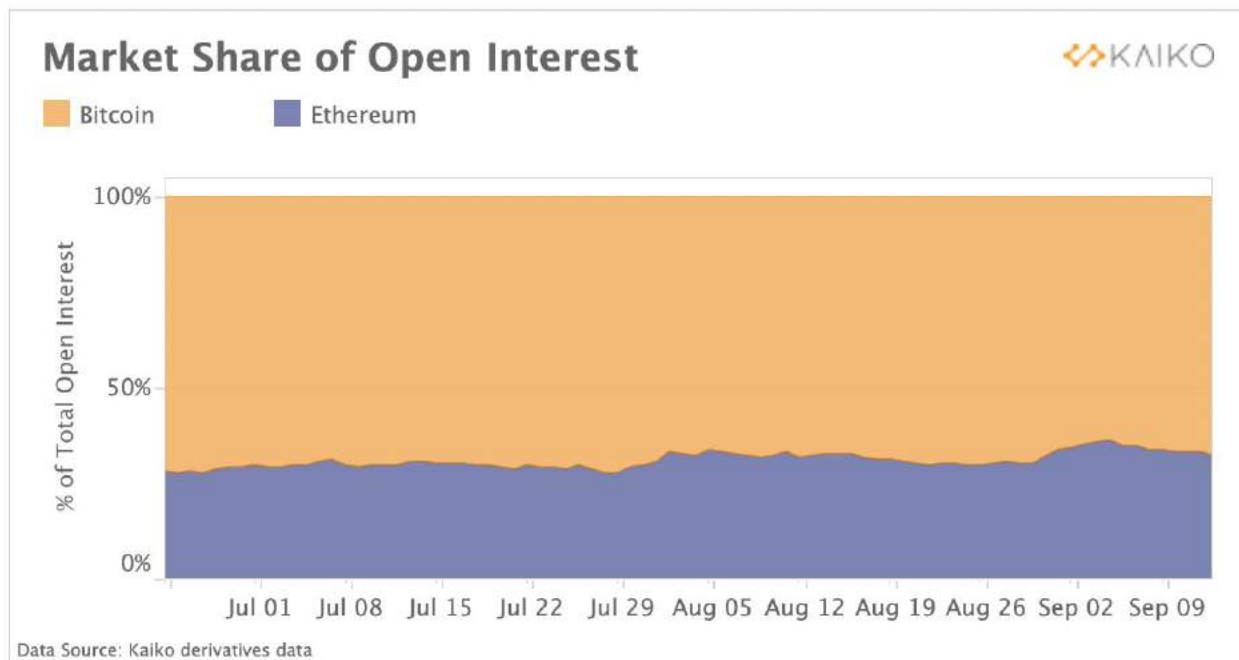
BTC vs. Altcoins

Derivatives are offered on 150+ altcoins, creating a highly varied trading environment. Bitcoin still dominates derivatives trading volume, but the ever-increasing range of altcoin derivatives contracts suggests growing trader interest. Bitcoin's market share of futures volume vs.

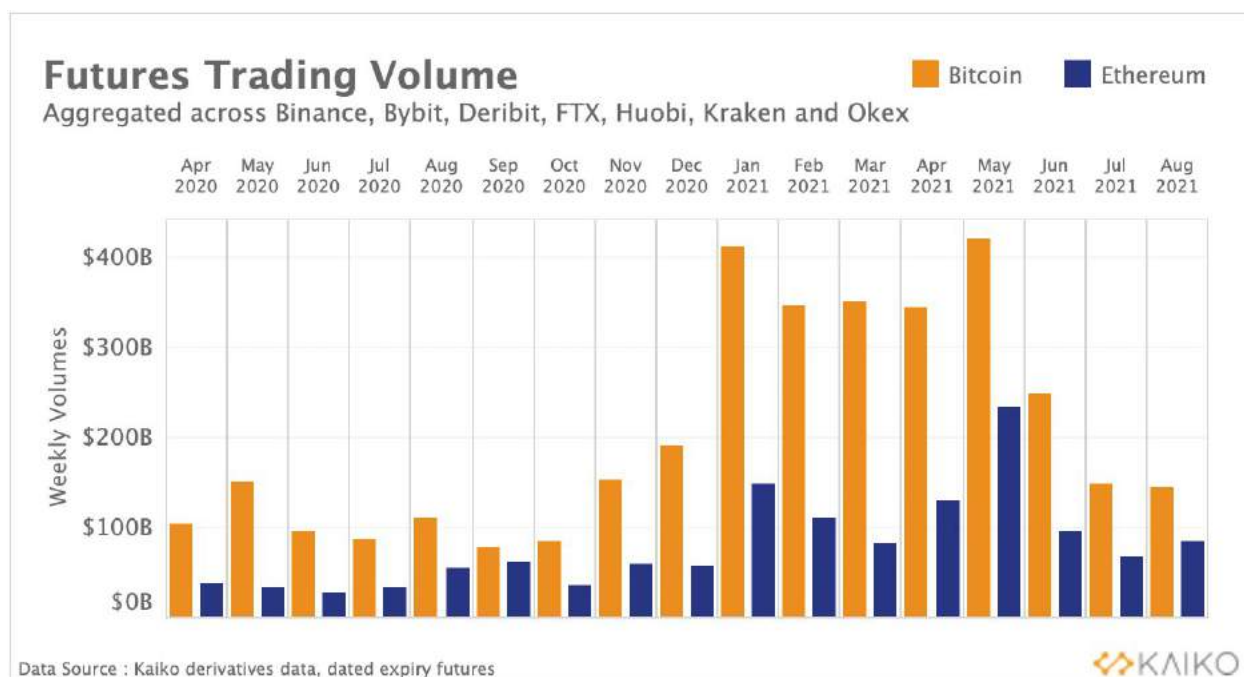
Ethereum is charted below and shows that Ethereum derivatives volume accounts for approximately 40% of total. This share has increased since March of 2021 and suggests altcoin bull runs have a direct effect on the breakdown of derivatives volumes.



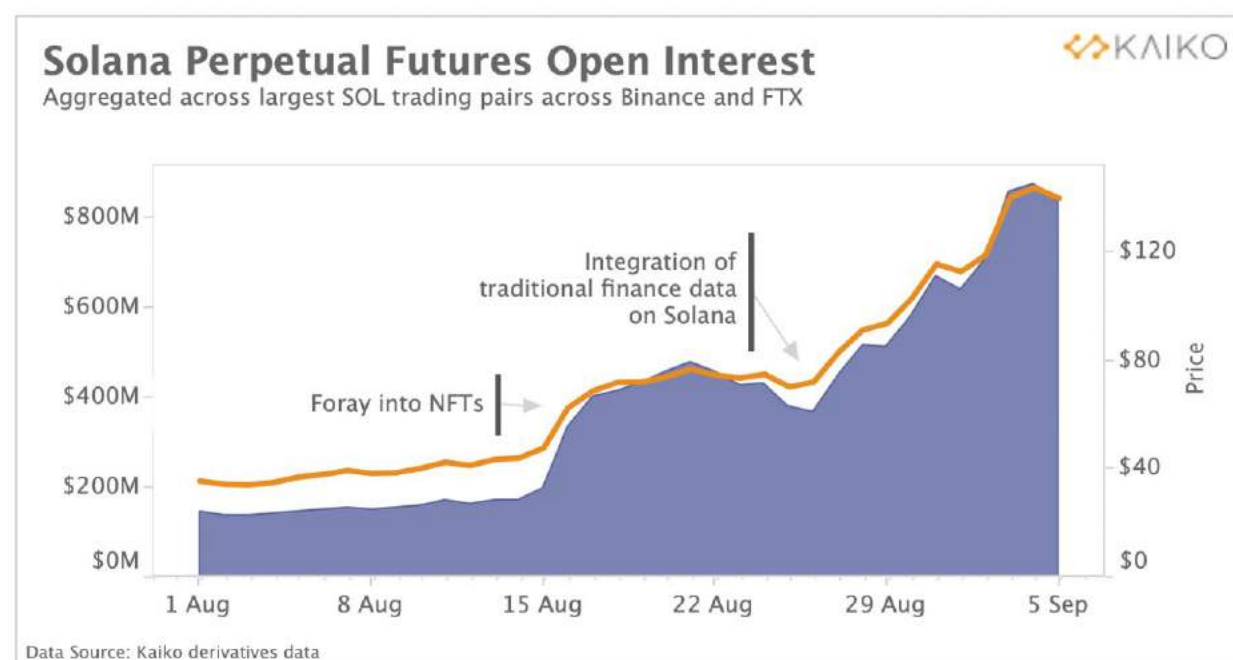
The market share of open interest for perpetual futures between Bitcoin and Ethereum shows that Ethereum today accounts for only 35% of total open interest.



Bitcoin is still the most popular crypto asset to trade derivatives on, but both Bitcoin and Ethereum volumes have soared over the past year. In April 2020, monthly Bitcoin volumes were approximately \$100b aggregated across the top derivatives exchanges. Volumes peaked from January-May, at nearly \$400b. Ethereum volumes underwent a similar trend, and today are nearly double what they were one year ago.



Altcoin derivatives beyond Ethereum have also seen surging interest among traders. For example, open interest for Solana recently broke all-time highs at more than \$800 million, compared with just \$200 million at the start of August 2021.



Overall, exchanges are offering an increasingly varied range of altcoin derivatives in response to evolving trader activity, and we can expect to see altcoin derivatives markets become more liquid. It is likely that this product area will significantly expand and diversify to adapt to the needs of the users. The regulated market is at its infancy, with just a few traditional regulated

exchanges offering products on digital assets. Those products are mostly on single tokens, but the index industry is developing tools that will offer a better representation of the overall digital asset offering. Then, as the trading activity and exposure of the actual underlying assets grow and diversify, one can expect innovation from a product standpoint. 2021 seems to be a milestone year for the entry of institutional investors in this asset class and further development will most certainly bring new needs and consequently new products to the market.

Opportunities and Development Potential

State of the market

The derivatives market is said to be over \$1 quadrillion dollars on the high end, but some analysts say the market is grossly overestimated. The higher end of the estimates includes the notional value of derivative contracts. There is a large difference in the notional value and actual value of derivatives —\$640 trillion versus \$12 trillion — as of the first half of 2019.²³

Development of DeFi

DeFi is the acronym for decentralized finance, which is an ecosystem of financial applications located on a blockchain system. DeFi uses decentralized networks and open-source software to develop various types of financial services and products.

There are three main functions of DeFi:

- Development of monetary financial services.
- Providing lending platforms and peer to peer or pool lending.
- Enabling advanced financial instruments, tokenization platforms, derivatives and forecasting markets.

Currently regulation and oversight are minimal or absent, allowing DeFi to thrive — albeit with growing pains in the form of exploits, rug pulls, and more — in no time. In DeFi, it is not necessary to know an individual's identity; it is all about mutual trust and privacy protection. DeFi is a nascent industry that is constantly evolving.

Complexities and Challenges

Key Points:

- *Normalization and Standardization*
- *Growth of complex products and markets evolution*
- *More regulation and attention to the guidelines of regulators*

- *Greater financial education on crypto products (starting from university)*
- *Try to avoid speculative bubbles deriving from the misuse of derivatives*

Normalization and Standardization

Today, there are only about ten derivatives exchanges in the cryptocurrency industry with significant volumes, out of more than 80 that exist worldwide. Across these ten exchanges, the vast majority of volume is executed on the top five. Despite the small number of exchanges accounting for total market share, the differences between each exchange are monumental when it comes to standardization and taxonomy. Below are descriptions of some of the biggest normalization issues faced today.

Contract Sizes

- Each exchange offers a range of contract types, each with a different unit size and denominated in different currencies.
- For example, on FTX one perpetual futures contract is equal to 1 Bitcoin while on Okex, 1 contract is equal to \$100.
- This makes normalization into a single unit an extremely time-consuming process for data providers, traders, and any market participant trading on more than 1 exchange.
- Each exchange and contract type requires a secondary normalization step that can only be done by manually documenting each contract's denominating unit and quantity.
- **Solution:** build a global database mapping every normalization across exchanges/contracts and issue formatting recommendations to exchanges and service providers.

Base Currency		BTC		ETH	
Quote Currency	Open Interest	Current	Standardization Steps	Current	Standardization Steps
USD	Bitmex	USD	None	Contracts	Quanto - multiply by 100 to get USD equivalent
	Bybit	USD	None	USD	None
	Deribit	USD	None	USD	None
	FTX	BTC	Multiply with index price to get USD	ETH	Multiply with Index Price to get USD
	OKex	Contract (1 Contract = 100 USD)	Multiply by 100 to get USD equivalent	Contract (1 Contract = 10 USD)	Multiply by 10 to get USD equivalent
	Binance futures	Contract (1 Contract = 100 USD)	Multiply by 100 to get USD equivalent	Contract (1 Contract = 10 USD)	Multiply by 10 to get USD equivalent
	Kraken (cryptofacilities)	USD	None	USD	None
USDT/BUSD	Binance Futures	Contract (1 Contract = 1 BTC)	BTC - Multiply by Index Price to get value in USDT (USD)	Contract (1 Contract = 1 ETH)	Multiply by Index Price to get value in USDT (USD)
	Okex	Contract	Divide by 100 to get USD	Contract	Divide by 10 to get USD equivalent
	Bybit	Contract (1 Contract = 1 BTC)	BTC - Multiply by Index Price to get value in USDT (USD)	Contract (1 Contract = 1 ETH)	Multiply by Index Price to get value in USDT (USD)

An example of the normalization steps required to standardize perpetual futures data.

Contract Types

- Exchanges offer a variety of contracts that can complicate normalization.
- The differences lie in the margin requirements for the contract:
 - Inverse: margined with Bitcoin
 - Linear: margined with USD/stablecoin
 - Quanto: cross-margined with different assets. For example, an ETH contract can be margined with BTC.
- This provides labeling/normalization issues across exchanges and makes it complicated to compare market trends across various contracts. For example, funding rates for quanto and inverse perpetual futures are often mixed when data providers do not understand the critical differences between these two contracts, which can affect market analysis.
- **Solution:** standardization of contract type terminology.

Contract Labeling

- Each exchange has different labeling standards for their contracts
- For example, Okex puts the expiry date when labelling their futures contracts, while Bybit only labels the expiry time frame (for example month vs. quarter). On Okex, a new label is created every time a contract comes to expiry, while on Bybit the label always stays the same.
- This makes collecting and labeling contracts complicated; traders often require just the front contract, so data providers must manually recategorize contracts to ensure simple filtering by end users.
- **Solution:** build a global normalization format for instrument labeling and issue recommendations to exchanges.

API Formatting

- Some exchanges provide derivatives data through a couple of endpoints, others disperse it across ten or more endpoints.
- To get comprehensive derivatives data (such as open interest, funding rates, index price, etc.), there are major infrastructural challenges to formatting and monitoring dozens/hundreds of connections across 10+ exchanges.
- For example, Binance offers funding rates, mark price, open interest, index price, and volume through individual REST API endpoints. To collect this data, providers need to form individual connections to each API endpoint and process the data into a single format across exchanges.

Ultimately, data formatting presents a significant obstacle for the derivatives ecosystem. There are entire companies that exist today whose sole job is normalization and providing derivatives

market data. In the future, more standards will make it easy and more accessible to work with this data.

Crypto-Derivatives – Infrastructure Perspectives

In this last section, we provide for an alternative view of derivatives infrastructure evolution path from a crypto derivatives platform angle. We highlight key questions and opportunities crypto derivatives users see for the derivatives industry. Although one may or may not agree with these points, we believe they provide an interesting base for future work on the subject.²⁴

Increasingly, institutional investors and their clients want exposure to cryptocurrencies - BTC and ETH particularly. The challenge: spot is a no-go for most regulated 'Systemically Important Financial Institution' (SIFI) for the time being.

Nevertheless, exposure to cryptocurrencies can be engineered in different ways (i.e., via TRADFI, DEFI/ DEX and through various synthetic ways). These options are available through different combinations of capital requirements (i.e., margin, balance sheet, regulatory capital), technology, governance, and regulatory constellations.

Can the emerging pressure on large Financial Institutions to provide digital asset exposure to their clients create an opportunity to look at a novel model of Futures Exchanges and Clearing Houses?

The robustness of the Exchange and Clearing House model is generally undisputed in delivering its core principles of stability, an orderly market, and protecting investors. It operates as a well-oiled machine across global Exchanges, Central Counterparty Clearing Houses (CCPs) and Futures Commission Merchants (FCMs). Automation of execution to clearing flows is broadly standardized because of industry adoption of API connectivity and FIX protocols, while being propped up by various software solutions for downstream bookings, reconciliations, regulatory reporting, margining process, expiry, and overall risk management. This robustness does, however, come with a cost.

Research suggests that for institutional investors, familiarity of systems, ability to meet strict regulatory requirements and reliability of technology forms the core pillars of adoption decisions, but latency, depth of liquidity, tight spreads, and low fees are also key determining factors. Whilst the traditional framework is clearly well positioned for those core pillars, arguably some of the new, already successful, digital asset marketplaces, can be attractive for those latter elements.

Below we evaluate five pillars across the existing Exchange and Clearing House model and compare these are being addressed in an alternative way by emerging digital asset venues

MARKET OBSERVATIONS - AN EMERGING PICTURE

	TRADITIONAL MODEL	EMERGING PARADIGM
Derivative Types	Fixed expiry Future	Perpetual Swap
Trading Venue	Central Order Book	Automated Market Maker
Post Trade	Sequential	A single operating model
Risk/ Margin	Post Trade	Continuous
Revenue Model	Fixed, per lot based	Flexible, incentive based

	FMI - CURRENT EXCHANGE/ CCP MODEL	DDP/ DMI - DIGITAL DERIVATIVES PLATFORM
1 - Derivative Types	Monthly/ quarterly futures contract Listed and settled in USD	Perpetual Swap Listed in USD or Euro, settled in either
2 - Trading Venue	Central Order Book	Automated Market Maker
3- Post Trade Processing	Siloed operating model between the Exchange, Clearing House, FCMs and Investors/ Buy Side firms	Single fully integrated execution, clearing and risk management model
4 - Risk/ Margin Management	Risk management based on time delayed processes	Continuous funding approach, impermanent loss
5 - Revenue Model	Traditional Trading and Clearing Fees	Targeted liquidity incentive-based models

1. Derivative Contract

Is a perpetual swap, without fixed expiry dates, a closer benchmark to track the spot market, removing price convergence and rollover yield aspects associated with the standard monthly or quarterly futures contract model? A fixed expiry contract can work well for investors who do not need fungibility and want to retain the exposure over time. However, managing price convergence and rollovers adds cost as well as risk, recognizing that this specifically may be part of the trading strategies of some investors. Perpetual swaps, on the other hand, play more closely to the needs of those who want to unwind in the near term.

2. Trading Venue

Ensuring liquidity is the core pillar of any organized trading venue. The current central order book model is premised on market makers, having evolved from the open outcry trading floors model we associate with colorful jackets and waving arms to 'make a market', to traders sitting in front of multiple trading screens to guarantee minimum bid/ask spreads throughout trading hours to the current set up of automated market making via algorithmic trading. Smart contract protocols could potentially replicate liquidity providers commitments in an automated market maker (AMM) model. Liquidity, spreads, and fee levels can all be successfully controlled by the AMM protocol and represent some interesting evolution of liquidity management for trading venues.

3. Post Trade Processing

Despite significant process automation, today's clearing model is sequential between the Exchange, Clearing House, Exchange Members, and end Investors. Trade allocations, matching, booking, reporting and so on is a sequence of multiple data records across fragmented and siloed infrastructure that is reconciled through the integration of file and pdf reports continuously across the parties, with real time data status limited to a few parts of the process. The net result is a technology and headcount intensive business model for all parties.

New market infrastructure providers for digital assets have seized the opportunity to create a single integrated execution and clearing model. This provides control and oversight integrity between trading and open exposures and removes inefficiencies in the booking and reconciliation between execution and clearing. DLT technology could further provide a foundation for a single version of the truth that could, over time, be rolled out as far as the end investors. These new marketplaces also operate 24/7, ensuring derivatives can always

be traded when the spot market is open. Furthermore, with no batch processes, positions can be netted, margined, and risk controlled far more frequently than what has historically been once a day between CCP, FCM and Investor.

4. Risk Management

A single front-to-back model, removal of manual processes and batch processing delays, coupled with smart contract technology, opens a whole new ability to manage risk exposures. New incumbents have shown that it is possible to continuously evaluate counterparty and market risk in real time, automatically restrict trading, and auto-liquidate existing exposures that are uncollateralized.

Different regulatory approaches between U.S. and EMEA on the methodology that determines the minimum margin levels that Clearing Houses must apply creates a different playing field when considering total investment cost over time. In the same vein, CFTC clarity on classification of some cryptocurrencies as “commodities” has given the U.S. a first mover advantage for derivatives.

Separately, the AMM model brings into play a new risk factor for liquidity providers. Liquidity is pledged to the pool in equal ratios of the instrument pair, granting the liquidity provider a percentage share of tokens in the total pool that can be withdrawn at any time. Pool percentage-based withdrawals crystallize an imbalance between the remaining token pairs in the pool, calculated between the price of the pair at investment and withdrawal of that liquidity. This “impermanent loss”, e.g., imbalance between tokens is borne by the remaining liquidity providers in the pool.

5. Revenue Model

The traditional Exchange and Clearing House fee model is based on a trading fee, clearing fee, and expiry fee per contract. Less explicit costs of doing business to investors include haircuts on non-cash collateral and spreads taken on cash deposited to meet margin requirements. Understandably, exchange members levy markups to their end clients to cover the service of market access, infrastructure, clearing, reporting, as well as the risk the member is assuming by ‘guaranteeing’ their clients with associated default fund contributions paid by the exchange members. While cost to members to be in the game has continued to rise with negative interest rates, capital charges, and increased regulatory oversight eroding profit margins, members continue to claw back the effects of fee compression from their clients over many years.

While an alternative post trade processing and risk management approach offered by nascent technology could strip out much of the cost overhead associated with these processes, there are new revenue stream opportunities that can be explored via the automated market maker model.

A. Variable Fee Structures: While the current exchange and CCP model offers different Proprietary, Client and Market maker fee models with, at best, alternative complex and manual rebate member schemes, the AMM model creates the foundation for far more creative fee models moving. Smart contracts protocols can program fee levels, commission sharing percentages, not just on volume or trading member category but on a trade-by-trade basis.

B. Incentive Based Models: With an AMM model trading fees are earned directly by the liquidity providers aligned to the amount of liquidity provided delivering a more balanced risk/return approach.

C. Centralized Member Liquidity Pools versus Individual/Permissioned Liquidity Pools: In addition to providing liquidity to the central liquidity pool there could also be the opportunity for banks to create a bank-specific liquidity pool available only to their own client base and to construct their own fee model protocols associated with such pools.

Opportunity to Evolve Derivatives / Futures Trading

Institutional adoption of cryptocurrency is underway. The futures market is playing a pivotal role in this advancement. There is a unique opportunity for market participants not to see this simply as new contract listing within an existing operating model, but to consider how technology can be leveraged to create a next generation futures trading and clearing model that retains its core pillars of market stability and investor protection in a more streamlined, cost-effective manner that enables participants to make returns in line with the liquidity and risk they invest.

Endnotes

- ¹ <https://medium.com/market-protocol/the-history-of-derivatives-trading-631e9ab64fed>
- ² Derivatives defined by [Investopedia](#).
- ³ <https://learn.eqonex.com/news/introduction-leverage-margin-and-liquidation>
- ⁴ <https://coinmetrics.io/the-Ethereum-gas-report/>
- ⁵ Example from [Investopedia](#).
- ⁶ <https://coinmarketcap.com/rankings/exchanges/derivatives/>
- ⁷ Example from [Investopedia](#).
- ⁸ Crypto Derivatives so defined by [Phemex](#).
- ⁹ <https://phemex.com/academy/crypto-derivatives-and-crypto-futures>
- ¹⁰ Liquidation in the cryptocurrency industry refers to the automatic unwinding of a position by the exchange when the trader does no longer meet the minimum margin requirements for their position.
- ¹¹ <https://learn.eqonex.com/news/perpetual-futures-trading-guide>
- ¹² <https://www.investopedia.com/terms/e/exchange-traded-products-etp.asp>
- ¹³ <https://www.fidelity.com/learning-center/investment-products/etf/what-are-etfs>
- ¹⁴ <https://www.proshares.com/funds/bitoin.html>
- ¹⁵ Hull 2009, p48
- ¹⁶ https://econpapers.repec.org/article/blajacrfn/v_3a21_3ay_3a2009_3ai_3a4_3ap_3a60-78.htm
- ¹⁷ Example from Options, Futures and other Derivatives, Ninth Edition, John Hull, page 17.
- ¹⁸ Regulated market so defined by <https://www.investopedia.com/terms/r/regulated-market.asp>.
- ¹⁹ [https://content.next.westlaw.com/3-502-8950?lrTS=20210704144120496&transitionType=Default&contextData=\(sc.Default\)&firstPage=true#a866753](https://content.next.westlaw.com/3-502-8950?lrTS=20210704144120496&transitionType=Default&contextData=(sc.Default)&firstPage=true#a866753)
- ²⁰ So defined by abstract https://link.springer.com/chapter/10.1057/9781137507563_8
- ²¹ OTC market so defined by [Investopedia](#).
- ²² <https://www.prnewswire.com/news-releases/ftx-us-finalizes-acquisition-of-ledgerx-301407488.html>
- ²³ https://www.bis.org/statistics/triennialrep/guidelines_cbanks.htm
- ²⁴ Contributions from Swiss Digital Exchange (SDX) derivatives team, August 2021

© Global Blockchain Business Council - Without permission, anyone may use, reproduce or distribute any material provided for noncommercial and educational use (i.e., other than for a fee or for commercial purposes) provided that the original source and the applicable copyright notice are cited. Systematic electronic or print reproduction, duplication or distribution of any material in this paper or modification of the content thereof are prohibited.