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DIGITAL ASSETS

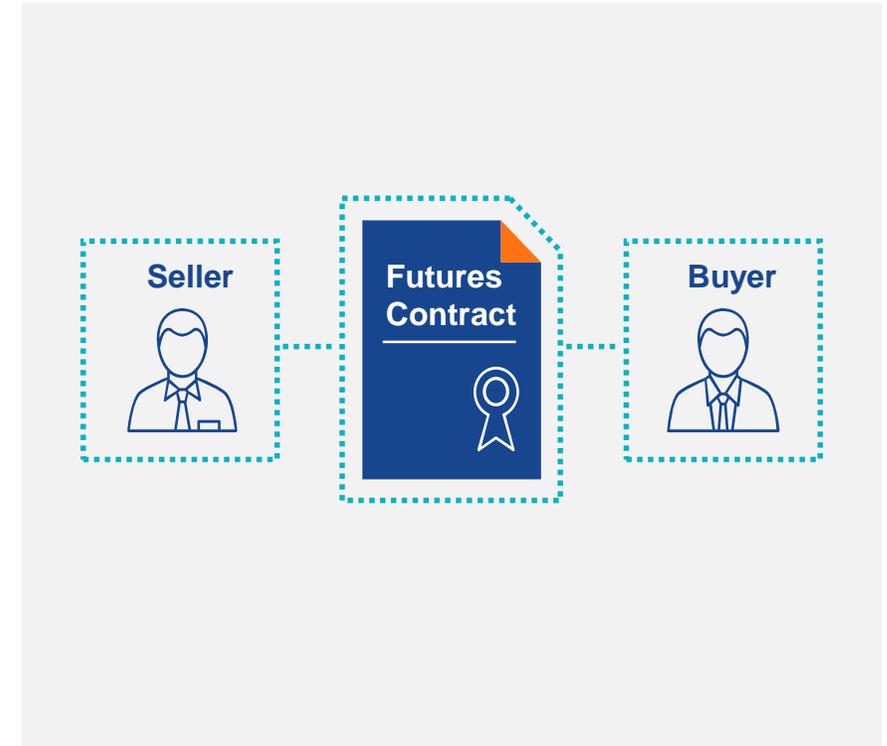
# Primer on Bitcoin Futures



# A Primer on Futures Contracts

**Futures Contracts are financial instruments whereby two parties agree to buy and sell an asset of specific quantity at a predetermined price, and at a specified date in future**

- All futures contracts have a specified time at which they expire (expiry date). Prior to this date, traders have a number of options to either close out or extend their open positions without holding the trade to expiration, but some traders will choose to hold the contract and go to settlement
- Futures contracts allow investors to speculate on the direction of a security, commodity or other financial instrument. Futures can also be used to hedge the price movements of underlying assets to help prevent losses from unfavorable price changes
- The total return of futures contracts are made up of three components:
  - Spot Return: Measures the price movement of the underlying physical commodities
  - Roll Yield: The positive or negative contribution caused by rolling the contracts from one futures contract to a longer-dated contract
  - Cash Yield: Interest earned on assets held in cash, as collateral for futures contracts

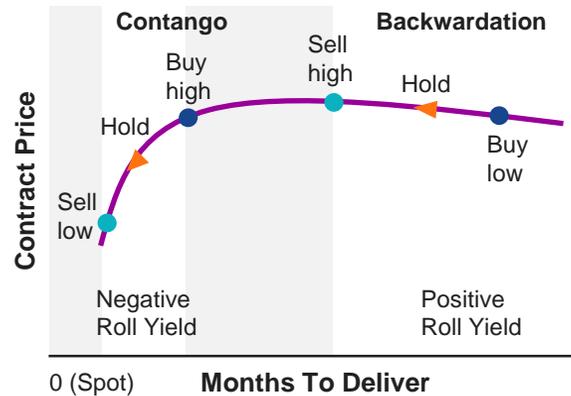


# Effects of the Futures Curve

## Unique Effects to Futures Contracts

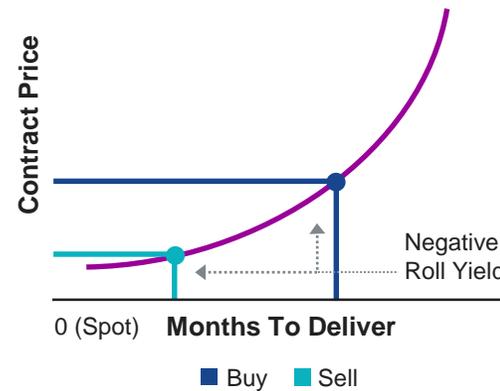
- Trading short-dated futures contracts – or “the front” of the futures curve –can significantly impact returns under certain circumstances
- When markets are in “contango”, managers are forced to buy higher priced contracts expiring farther out while selling their current expiring contracts at lower prices—this leads to negative roll yield

### Roll Yield



The amount of return generated in a backwardated futures market, and the amount of return lost in a contango market (a significant portion of commodity returns comes from “roll yield”)

### Contango



Occurs when the price of a futures contract is above the expected future spot price at the time the contract expires (i.e. futures prices are falling, seller benefits)

### Backwardation



Occurs when the price of a futures contract is below the expected future spot price at the time the contract expires (i.e. futures prices are rising, buyer benefits)

# The Long-Term Impact of Roll Yield

## Commodity Index Returns (% Annualized)

	1970s		1980s		1990s		2000s		2010s	
	GSCI	BCOM	GSCI	BCOM	GSCI	BCOM*	GSCI	BCOM	GSCI	BCOM
<b>Total Return</b>	21.21	--	10.66	--	3.88	3.44	5.05	7.13	-5.44	-4.73
<b>Excess Return</b>	13.65	--	1.04	--	-1.16	-0.80	2.17	4.20	-5.99	-5.28
<b>Spot Return</b>	8.88	--	-1.37	--	-0.63	0.93	10.42	12.75	-1.83	-0.26
<b>Roll Yield</b>	4.77	--	2.41	--	-0.53	-1.71	-8.25	-7.59	-4.24	-5.04
<b>Cash Yield</b>	7.56	--	9.62	--	5.04	4.24	2.88	2.93	0.55	0.55

## Roll Yield's Drag on Commodity Futures Returns

- Roll yield can materially impact the total return performance of futures
- Over the past 3 decades, some commodity indices have lost, on average, around -4.5% (annualized) due to negative roll yield

Source: Bloomberg, VanEck. "GSCI" refers to the S&P GSCI Index. "BCOM" refers to the Bloomberg Commodity Index. \*BCOM's index start = January 1991. Total Return = Spot Return + Roll Yield + Cash Yield  
 . Excess Return = Spot Return + Roll Yield. Past performance is not indicative of future results. Spot Return measures the price movement of the underlying physical commodities.  
 Please see important disclosures and index descriptions at the end of this presentation.

# Facts Regarding Bitcoin Futures

## Chicago Mercantile Exchange (CME) Bitcoin Futures

- CME Bitcoin futures provide investors exposure to the price of Bitcoin without the need to hold the underlying asset
- CME's Bitcoin futures contracts are cash-settled and thus do not require investors to receive delivery of bitcoin were contracts to expire without being rolled
- CME utilizes the CME CF Bitcoin Reference Rate (BRR) as its bitcoin pricing source
  - BRR serves as a once-a-day reference rate of the U.S. dollar price of bitcoin
  - Aggregates bitcoin trading activity across major bitcoin spot exchanges between 3-4p.m. London time
  - Spot exchanges are determined by the CME CF Cryptocurrency Pricing Products Oversight Committee and must fulfil certain criteria including data availability and integrity, volumes and instituted KYC/AML policies

## Key features

- A single CME Bitcoin Futures contract has a value of five times the value of the BRR Index and is quoted in USD per one bitcoin
- The tick increments, or minimum price fluctuation, are quoted in multiples of \$5 per bitcoin, meaning a one-tick move of the BTC future is equal to \$25
- Contracts expire the last Friday of the month, and are listed on the nearest six consecutive monthly contracts, inclusive of the nearest two December contracts

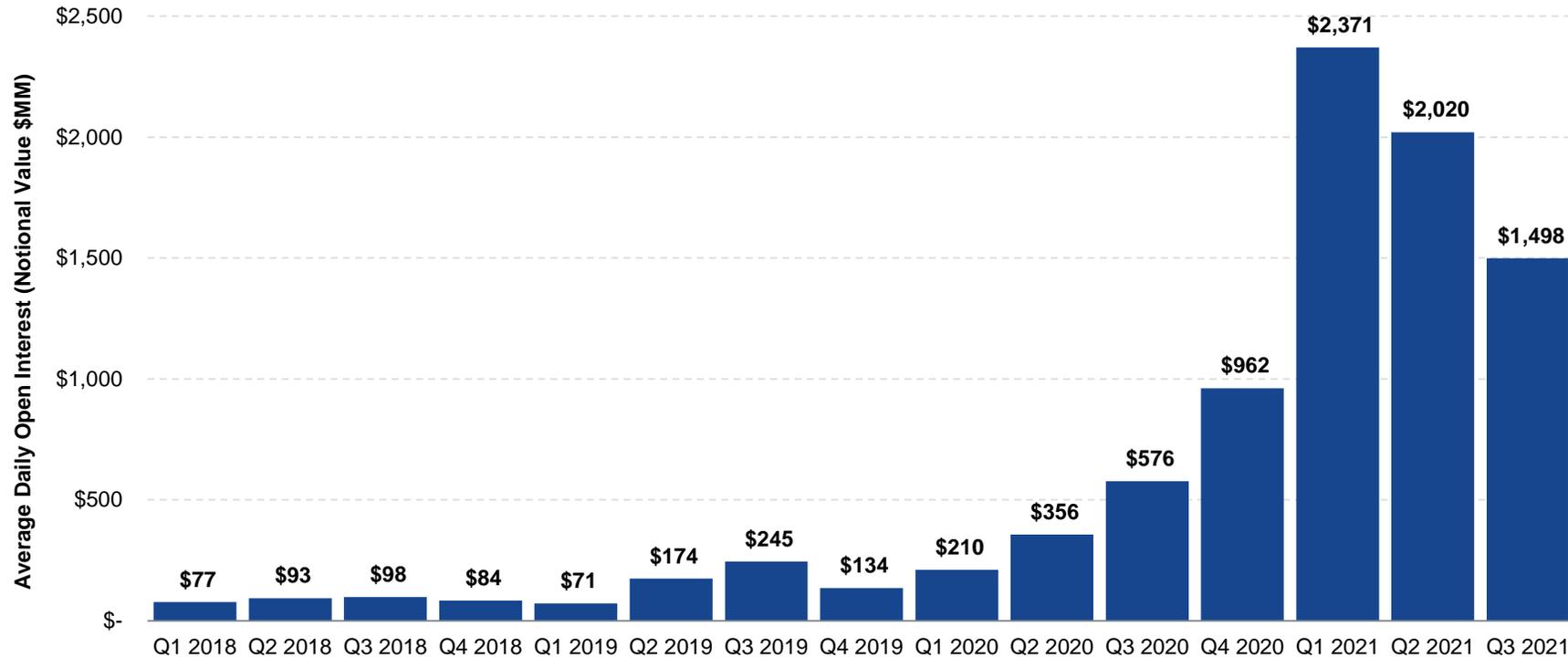


# CME Bitcoin Futures Value Approaches \$1.5 Billion a Day



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## CME Bitcoin Futures Average Daily Open Interest



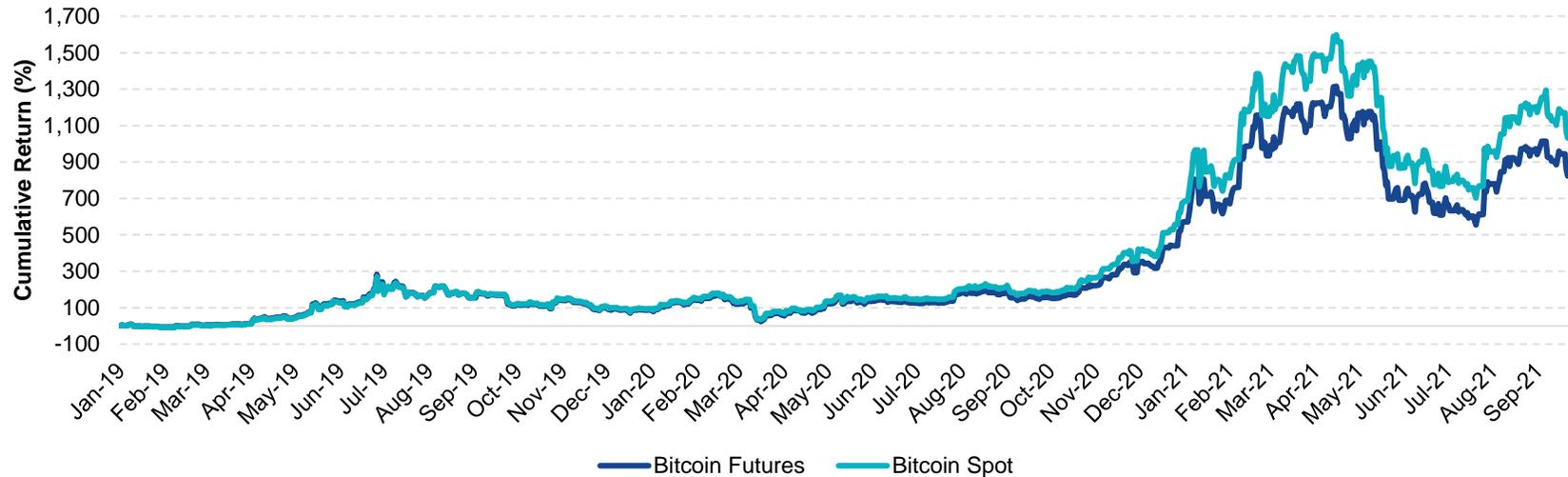
## CME Bitcoin Future Details

- CME Bitcoin Futures contracts have seen substantial growth in daily open interest

Source: CME Group. Data as of 9/30/2021. Futures carry additional risks and are not suitable for all investors. Please see important disclosures and index descriptions at the end of this presentation

# Bitcoin Futures vs. Spot Risk/Return

## Bitcoin Futures vs. Spot Bitcoin Cumulative Return



## Bitcoin futures vs. spot

- While the returns of bitcoin futures lag the returns of spot, they can offer several advantages including transparency, price discovery and risk management capabilities

	Cumulative Return	Std Dev	Max Drawdown	Up Capture Ratio	Down Capture Ratio	Batting Average
Bitcoin Futures	127.54	91.62	-67.51	96.31	97.61	62.31
Bitcoin Spot	145.54	86.90	-63.38	100.00	100.00	100.00

Source: Bloomberg, Morningstar. Data as of 9/30/2021.

Bitcoin Futures is measured by the Horizons Bitcoin Front Month Rolling Futures Index; Bitcoin Spot is measured by the CF Bitcoin-Dollar US Settlement Price Index.

Up Capture Ratio is defined as a statistical measure of a investment manager’s overall performance in up-markets. Down Capture Ratio is defined as a statistical measure of a investment manager’s overall performance in down-markets. Batting average is defined as a statistical technique used to measure a manager’s ability to meet or beat an index.

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# Negative Roll Yield Means Bitcoin Futures Have Under Performed Spot



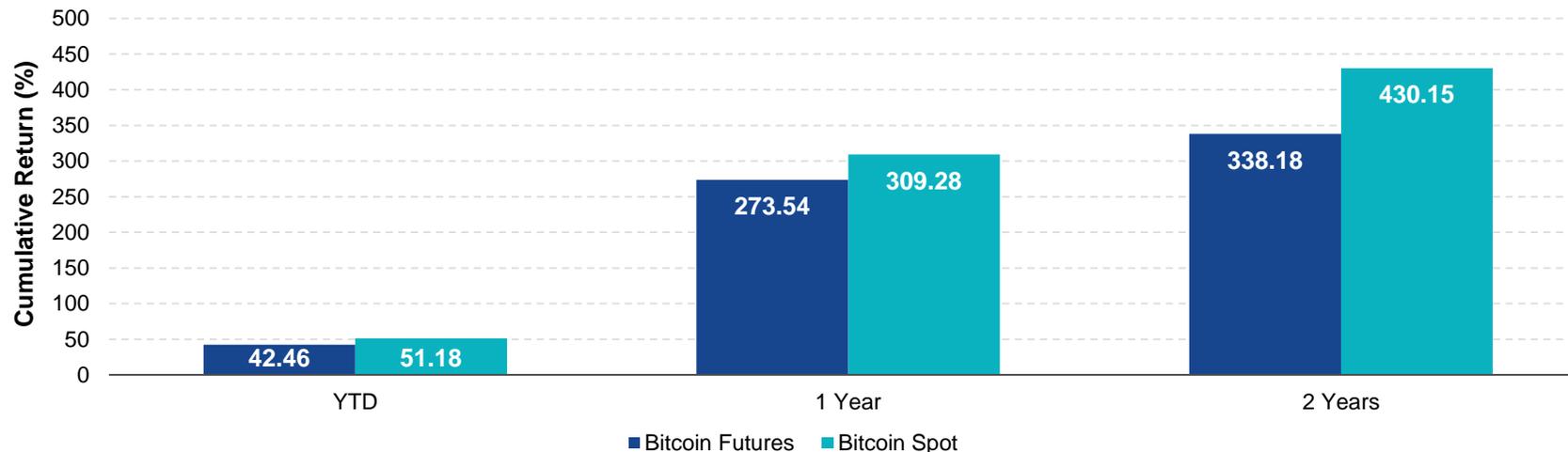
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## Over the past few years, CME Bitcoin Futures Markets Have been in Contango Leading to Negative Roll Yield

- The chart below compares the performance of a bitcoin futures index to the returns of a bitcoin spot index
  - The futures index deploys 100% of its assets into the front month contract and then buys the next contract shortly before expiration in the following manner: it rolls exposure 20% each day starting six days prior to active month expiry
  - Negative roll costs have detracted ~10% annualized from bitcoin futures

## Bitcoin futures vs. spot

- As shown in the chart to the left, over one year, instead of returning 309%, Bitcoin Futures returned 274%
- Over two years, instead of returning 430%, Bitcoin Futures only returned 338%



Source: Bloomberg, Morningstar. Data as of 9/30/2021

Bitcoin Futures is measured by the Horizons Bitcoin Front Month Rolling Futures Index; Bitcoin Spot is measured by the CF Bitcoin-Dollar US Settlement Price Index. Please see important disclosures and index descriptions at the end of this presentation. Futures carry additional risks and are not suitable for all investors.

# Index Definitions

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All indices are unmanaged and include the reinvestment of all dividends but do not reflect the payment of transactions costs, advisory fees or expenses that are typically associated with managed accounts or investment funds. Indices were selected for illustrative purposes only and are not securities in which investments can be made. The returns of actual accounts investing in natural resource equities, energy equities, diversified mining equities, gold equities, commodities, oil, industrial metals, gold, U.S. equities and U.S. bonds strategies are likely to differ from the performance of each corresponding index. In addition, the returns of accounts will vary from the performance of the indices for a variety of reasons, including timing and individual account objectives and restrictions. Accordingly, there can be no assurance that the benefits and risk/return profile of the indices shown would be similar to those of actual accounts managed. Performance is shown for the stated time period only.

The **Horizons Bitcoin Front Month Rolling Futures Index** is designed to measure the performance of the CME front month Bitcoin future (BTC) and rolls the exposure over five days from the Active Contract into the Next Active Contract; The **CF Bitcoin-Dollar US Settlement Price Index** is a once a day benchmark index price for Bitcoin that aggregates trade data from multiple Bitcoin-USD markets operated by major cryptocurrency exchanges that conform to the CF Constituent Exchange Criteria.

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**Futures carry additional risks and are not suitable for all investors. Before Investing in Bitcoin Futures Contracts, make sure you carefully weigh the potential risks and benefits.**

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Investors should conduct extensive research into the legitimacy of each individual cryptocurrency, including its platform, before investing. The features, functions, characteristics, operation, use and other properties of the specific cryptocurrency may be complex, technical, or difficult to understand or evaluate. The cryptocurrency may be vulnerable to attacks on the security, integrity or operation, including attacks using computing power sufficient to overwhelm the normal operation of the cryptocurrency's blockchain or other underlying technology. Some cryptocurrency transactions will be deemed to be made when recorded on a public ledger, which is not necessarily the date or time that a transaction may have been initiated.

- Investors must have the financial ability, sophistication and willingness to bear the risks of an investment and a potential total loss of their entire investment in cryptocurrency.
- An investment in cryptocurrency is not suitable or desirable for all investors.
- Cryptocurrency has limited operating history or performance.
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**There may be risks posed by the lack of regulation for cryptocurrencies and any future regulatory developments could affect the viability and expansion of the use of cryptocurrencies. Investors should conduct extensive research before investing in cryptocurrencies.**

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