



An Introduction to Ethereum and the ETHetc - ETC Group Physical Ethereum (ZETH)

Written by ETC Group



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Introduction

In the world of cryptocurrencies, bitcoin and Ethereum do not need much of an introduction. While institutional investors around the globe have increasingly allocated funds to certain cryptocurrencies such as bitcoin or Ethereum throughout 2020, the world-renowned digital payment service PayPal (PYPL) launched a new service that allows users to buy, hold and sell cryptocurrencies within its digital wallet. This is proof of a faster than ever developing and increasing maturity of the cryptocurrency market as a whole.

Bitcoin, founded in 2009 by an unknown individual or group of people operating under the acronym of Satoshi Nakamoto, is currently the biggest cryptocurrency, standing at a market capitalization of nearly \$900 billion¹. It was the first successful such currency at the time of its launch, gaining significant traction and adoption. Following bitcoin's success, the foundation was laid to inspire development of additional cryptocurrency projects.

Enter Ethereum, with its cryptocurrency called Ether (more commonly known and herewith referred to as "Ethereum" or "ETH"), after bitcoin the most significant cryptocurrency project today, with Ethereum occupying the second place of all cryptocurrencies in terms of market capitalization, amounting to a total of over \$175 billion with the current supply of around 115,000,000 ETH in circulation.² The Ethereum project went live in 2015, and Ethereum took one of the key innovations behind bitcoin, the blockchain, and repurposed it to support a broader range of functions.

ETC Group (www.etc-group.com) is the issuer behind 2020's most successful Bitcoin exchange traded product launch in Europe³, namely the [Bitcoin Exchange Traded Crypto](#) ("BTCetc" or commonly known under its primary ticker "BTCE").

Through the recent launch of the [ETHetc - ETC Group Physical Ethereum](#) (Ticker symbol: ZETH) with primary listing on Deutsche Börse XETRA, ETC Group decided to provide investors now with the opportunity to gain exposure to increasingly important cryptocurrency Ethereum.

¹ Data as of 01.03.2021, source: <https://coinmarketcap.com/>

² Ibid

³ <https://www.hanetf.com/article/605/btcetc-exchange-traded-bitcoin-btce-passes-250-million-aum-after-record-trading-day-as-bitcoin-price-hits-23000>

Investors Guide to Ethereum

What is Ethereum?

Ethereum is a platform for creating decentralized applications based on the blockchain and smart contract technology. The so called Ethereum network consists of software running on a network of computers that ensures that data and smart contracts (which technically are small computer programs) are replicated and processed on all the computers on the network, without a central coordinator. It extends the blockchain concepts from Bitcoin which validates, stores, and replicates transaction data on many computers around the world (hence the term 'distributed ledger'). The official website is <https://www.ethereum.org>.

Blockchains are digital ledgers that keep permanent incorruptible records of information. These records are continually verified by a network of computer nodes similar to servers, which are not centrally controlled by anyone. Ether is just one of many cryptocurrencies that use some form of blockchain technology, which was invented by above mentioned "Satoshi Nakamoto" when the bitcoin blockchain was released over a decade ago.

While several cryptocurrencies may rely on similar core concepts of blockchain technology, their use cases are different. Bitcoin - the cryptocurrency investors usually discover first - is optimized for security and anti-seizure, which enhances its use case to serve as digital gold.

Ethereum on the other hand today is the largest blockchain optimized for programmability (or digital "contracts")⁴. Importantly, this may be one of the most exciting applications of blockchain technology.

How is Ethereum similar to Bitcoin?

While Ethereum is a network or platform, Ethereum's cryptocurrency fuelling the network is called Ether, shortened to ETH. It is cryptocurrency that can be traded for other cryptocurrencies or other sovereign currencies, just like bitcoin. Ownership is tracked on the Ethereum blockchain, just like BTC ownership is tracked on Bitcoin's blockchain.

Like Bitcoin, the main Ethereum network is a public, permissionless network – ie anyone can download or write some software to connect to the network and start creating transactions and smart contracts.

Like Bitcoin, mining participants create valid blocks by spending electricity to find solutions to a mathematical puzzle. Ethereum's challenge called Ethash works slightly differently to Bitcoin's, and this allows common hardware to be used for mining. This reduces the efficiency edge of task-specific hardware known as ASICs, which are common in Bitcoin mining. On Ethereum's roadmap there is a plan to move from electricity-expensive Proof-of-Work mining to a more energy-efficient Proof-of-Stake protocol, the first step already being achieved in December 2020 with the launch of Ethereum 2.0 ("Eth2"). Eth2 refers to a set of interconnected upgrades that will make Ethereum more scalable, more secure, and more sustainable.⁵

⁴ <https://ethereum.org/en/>

⁵ <https://ethereum.org/en/eth2/>

How is Ethereum different to Bitcoin?

In Ethereum the time between blocks is around 14 seconds, compared with Bitcoin's ~10 minutes. This means that on average if you made a Bitcoin transaction and an Ethereum transaction, the Ethereum transaction would be recorded into Ethereum's blockchain faster than the Bitcoin transaction getting into Bitcoin's blockchain. You could say Bitcoin writes to its database roughly every 10 minutes, whereas Ethereum writes to its database roughly every 14 seconds.

In Bitcoin, the maximum block size is specified in bytes (currently 1 MB) whereas Ethereum's block size is based on complexity of contracts being run – it's known as a Gas limit per block, and the maximum can vary slightly from block to block.

Currently the maximum block size in Ethereum is around 1,500,000 Gas. Basic transactions or payments of ETH from one account to another (ie not a smart contract) have a complexity of 21,000 Gas so you can fit around 70 transactions into a block (1,500,000 / 21,000). In Bitcoin you currently get around 1,500-2,000 transactions in a block.

Compared with Bitcoin's primitive scripting language, the code that can be deployed in Ethereum and run as smart contracts is more advanced and familiar to developers. Smart contract code is run by something called the Ethereum Virtual Machine, which runs on the computers of all participants on the network.

In many descriptions, Ethereum smart contracts are called "Turing complete". This means that they are fully functional and can perform any computation that you can do in any other programming language. It is worth mentioning that Ethereum even developed its own programming language, namely Solidity⁶ in order to implement smart contracts on the Ethereum platform through a statically typed, contract-oriented, high-level language.

What is a smart contract and why is it useful?

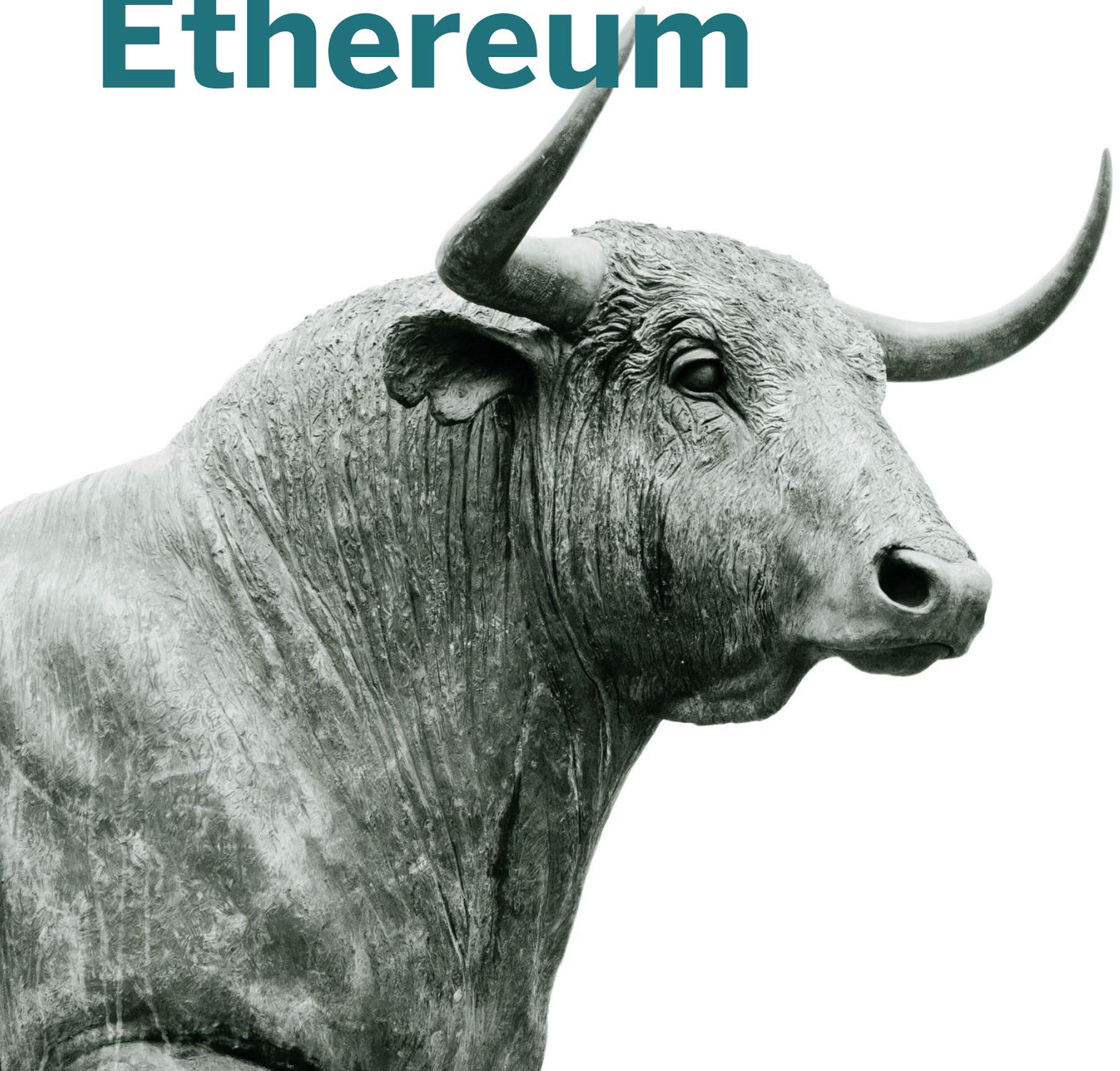
Smart contracts are self-executing contracts with the terms of the agreement between e.g. buyer and seller being directly written into lines of code. The code and the agreements contained therein exist across a distributed, decentralized blockchain network. The code controls the execution, and transactions are trackable and irreversible.

Smart contracts are useful as they permit trusted transactions and agreements to be carried out among disparate, anonymous parties without the need for a central authority, legal system, or external enforcement mechanism.⁷

⁶ <https://github.com/ethereum/solidity>

⁷ <https://www.investopedia.com/terms/s/smart-contracts.asp>

Investment Case for Ethereum



Recently, bitcoin has been praised and used by many investors as a hedge against a drop in the purchasing power of U.S. dollars. Ether on the other hand is considered the currency of the so-called “world computer” Ethereum, which aims to build a whole ecosystem of decentralized applications useful across many aspects of modern applications. Hence, while bitcoin is mentioned as store of value, Ether could eventually become the first digital asset to be a combination of store of value as well as a capital asset.

While many other cryptocurrencies can, as an analogy, be seen as a tank full of gas, that is worth – well the value of the gas in it, there is nothing to power with that gas. Ether is part of the Ethereum network, and it is the gas tank powering its blockchain. Ethereum is not the only network like this, but arguably the best known and best developed one.

As many businesses already see the value of using blockchain technology, some, like e.g. **DocuSign**, are already basing their development on the Ethereum blockchain. To execute a transaction on the blockchain, you're charged a fee in Ether.

As it is expected that more and more real-world applications are powered by the Ethereum blockchain, there could likely be an increasing demand for Ether, which could potentially keep increasing the value of the cryptocurrency.

Performance and Growth Potential

The performance of Ether has been strong against main indices over the past two year periods, providing a new source of potential returns. However, these impressive growth numbers come at a cost of high volatility meaning investors could lose a significant portion of their allocation if they bought in at the wrong time. Analysts expect the volatility of certain cryptocurrencies to reduce as the market becomes more regulated and further institutionalised.

	1 month	3 months	1 year	2 years
Ether	22.1%	107.2%	475.5%	468.3%
Bitcoin	49.6%	170.8%	305.1%	689.2%
S&P 500	3.7%	11.7%	16.3%	49.8%
US Bonds	0.5%	0.9%	5.9%	15.5%
Gold	5.7%	-1.0%	20.2%	41.8%
Oil	2.7%	5.3%	3.8%	13.8%
FTSE 100	3.1%	10.1%	-14.3%	-4.0%
Eurostoxx	1.7%	11.2%	-5.1%	18.4%

Source: Bloomberg. All data as of 01.03.2021

Past performance is not a guarantee of future returns.

Correlation and Diversification:

One argument for an Ether allocation is its low correlation to other widely held asset classes both in periods of market calm and turbulence.

	S&P 500	US Bonds	Ether	Gold	Oil	EM ccy	FTSE 100	Euro stoxx	EUR/USD	GBP/USD
S&P 500	-	0.78	0.34	0.74	0.83	0.83	-0.27	0.42	0.32	0.25
US Bonds	0.78	-	0.05	0.94	0.86	0.85	-0.64	0.00	-0.07	-0.23
Ether	0.34	0.05	-	0.22	0.07	0.22	0.01	0.23	0.78	0.58
Gold	0.74	0.94	0.22	-	0.79	0.78	-0.75	-0.13	0.12	-0.12
Oil	0.83	0.86	0.07	0.79	-	0.81	-0.47	0.17	0.08	-0.06
EM ccy	0.83	0.85	0.22	0.78	0.81	-	-0.32	0.34	0.11	0.11
FTSE 100	-0.27	-0.64	0.01	-0.75	-0.47	-0.32	-	0.71	-0.05	0.30
Eurostoxx	0.42	0.00	0.23	-0.13	0.17	0.34	0.71	-	0.11	0.45
EUR/USD	0.32	-0.07	0.78	0.12	0.08	0.11	-0.05	0.11	-	0.71
GBP/USD	0.25	-0.23	0.58	-0.12	-0.06	0.11	0.30	0.45	0.71	-

Source: Bloomberg. Data as of 01.03.2021

Summary

Benefits of Ethereum:

- High growth potential vs traditional asset classes;
- Low correlation to other asset classes and diversification;
- Potential for improved risk-adjusted returns in a multi-asset portfolio.

Risks of Ethereum

- Ether can be very volatile
- The price of Ether can go down as well as up and your capital is at risk
- Past performance is no guarantee of future performance

Introducing ETHetc: ETC Group Physical Ethereum

Primary Ticker: ZETH



ETHetc - ETC Group Physical Ethereum (ZETH)

is an exchange traded cryptocurrency (ETC) that tracks the price of Ethereum. The ETC is 100% physically backed by Ethereum and its primary listing is on Deutsche Börse's electronic trading system XETRA. The product is central counterparty cleared (CCP), providing investors with a transparent, safe, and liquid way to gain exposure to the price of Ethereum. Each unit of ZETH gives the holder a claim on a predefined amount of Ethereum.

An Easier Way to Invest in Ethereum

Investing in ETHetc - ETC Group Physical Ethereum (ZETH) is as simple as buying shares through your broker or bank. Unlike investing directly in Ethereum, there is no need to engage with the technical challenges of setting up a cryptocurrency wallet to store Ethereum. Your units of ZETH are safely held with your broker or bank, thus removing the risk of losing your investment due to a lack of knowledge of e.g. how cryptographic keys work.

Central Counterparty Cleared on Deutsche Börse XETRA

Clearing through the Deutsche Börse CCP system reduces the counterparty risk market participants are exposed to and provides anonymity. Using a CCP also reduces risks related to late settlement or legal disputes if one party breaches the contract.

Invest in Ethereum on a Regulated Exchange

ZETH is traded on XETRA, one of the largest exchanges in Europe. As Deutsche Börse is a regulated exchange, this means that investors can trade with confidence knowing that all market participants are strictly vetted and carefully monitored to prevent market abuse. The alternative is to buy bitcoin on cryptocurrency exchanges, most of which are unregulated or do not have as strict security and compliance standards.

Ample Liquidity

The issuer has partnered with world-class liquidity providers and authorised participants (APs) to ensure ample liquidity, resulting in tight spreads on-exchange and the ability to create or redeem units of ZETH on the primary market. ETC Group's preceding product, the BTCetc (Ticker: BTCE) has strongly benefitted from the solid network of liquidity providers set up by the issuer for its products, making it one of the most liquid products on the Deutsche Börse XETRA exchange in recent months⁸.

Physical Redemption

Investors have the option to redeem their units of ZETH directly for Ethereum. As an additional layer of protection for investors, every transaction must be confirmed by the issuer and a reputable third-party administrator to ensure that no Ethereum can be misappropriated due to misconduct or negligence on behalf of the issuer.

Safe Custody

The issuer stores the Ethereum backing all units of ZETH in circulation with BitGo Trust Company, a secure, regulated custodian, purpose-built for holding digital assets. Strict KYC and AML standards ensure that the provenance of all cryptocurrency in custody has been vetted.

⁸ <https://www.ft.com/content/fb8ac343-6574-4aa0-8f47-c2c9e9d57541?shareType=nongift>

Advantages of the ETHetc (ZETH):

- Ethereum exposure simplified: exchange-listed, regulated and secure;
- Buying and selling ZETH is as simple as trading any normal share;
- You can trade through your regulated broker, on regulated exchanges with a central clearing mechanism;
- You don't need to manage a crypto wallet or trade on unregulated crypto exchanges;
- You don't need to manage cryptographic keys or blockchain technology.

Risks of Trading ETHetc - ETC Group Physical Ethereum

- Cryptocurrencies like Ethereum can be highly volatile.
- Like equities, an investor's capital is fully at risk and you may not get back the amount originally invested
- Exchange rate fluctuations can also have both a positive and negative effect on returns
- Past performance of a product is no guarantee of future performance
- The product may not be a suitable investment for all investors and each investor should determine the suitability of its investment in light of their own circumstances
- For a full, list of risks associated with the ZETH product, please consult the prospectus.

Ethereum Trading vs ETHetc - ETC Group Physical Ethereum

Here's how ZETH provides a safer, easier and more familiar experience for investors:

Feature	Ethereum trading on a crypto exchange	ETHetc (ZETH) on XETRA
Accessibility	<p>Buying Ethereum may require the investor to set up an account with a so-called 'cryptocurrency exchange', which can be a lengthy and time-consuming process.</p> <p>Such 'exchanges' are mostly unregulated entities and investors face increased risk of money laundering and market manipulation. Money laundering is not really a risk to the investor, market manipulation definitely can be.</p>	<p>ZETH can be purchased on Deutsche Börse (XETRA), one of the largest stock exchanges in Europe in terms of both market capitalization and monthly trading volume. Virtually every broker in the world should have the ability to buy products traded on XETRA for its clients.</p>
Technical and Complex	<p>Setting up a cryptocurrency wallet isn't easy and preventing theft or loss of value due to other reasons (e.g. losing the keys) even harder. Blockchain wallets are not like credit cards or bank accounts, users of Ethereum can't chargeback fraudulent transactions or show up with their ID at the bank desk to recover access – what is lost is usually lost forever.</p>	<p>ZETH keeps Ethereum backing the product at a reputable, safe, regulated and insured depositary called BitGo Trust Company. Deposits are insured by Lloyds of London against hacking and white-collar crime up to the value of \$100 million. BitGo is a regulated trust and all cryptocurrency is stored air-gapped in cold storage in their vaults.</p>
Liquidity Concerns	<p>Investors interested in purchasing big volumes of Ethereum face access problems described above multiplied by the number of 'cryptocurrency exchanges' they need to connect to in order to tap into an acceptably big pool of liquidity.</p>	<p>ZETH shares many benefits with traditional ETFs/ETPs – as it is exchange listed and supported by an ecosystem of market makers and Aps, there is guaranteed two-way pricing available throughout the trading day. The product team behind</p>

	<p>Secondly, IT systems of many 'cryptocurrency exchanges' are technologically inferior to the systems operated by established stock exchanges, and this fact makes top-notch liquidity provision very difficult or even impossible.</p> <p>Finally, not every professional market-maker is participating on 'cryptocurrency exchanges'. Market-makers face the same technical, access, legal and regulatory challenges and issues alongside with investors. For that reason, some market-makers are willing to provide liquidity only on regulated stock exchanges.</p>	<p>ZETH have contracted multiple professional market-makers to translate fragmented bitcoin liquidity into concentrated on-Exchange ZETH liquidity. Through direct connection to the underlying asset via the create /redeem mechanism, ZETH can provide liquidity for both very large and very small trades, levelling the playing field between investors.</p>
Legal Restrictions	<p>Some investors might not be allowed to buy or hold Ethereum, due to restrictions imposed by the regulator or investment mandate.</p>	<p>ZETH was approved for trading on the regulated market. but there are countries and jurisdictions where ZETH is not available and where regulation may differ. It is advised to check with your broker or bank on these questions.</p>
Regulatory Capital Restrictions	<p>Ethereum holdings might not qualify to be accepted as part of capital required by the regulator for various reasons.</p>	<p>ZETH is a security and is traded on Deutsche Börse (XETRA). It is much easier to qualify holdings of ZETH as regulatory capital than holdings of Ethereum.</p>
Money Laundering Concerns	<p>Ethereum is a relatively new asset class, and it is difficult (but not impossible) to conduct due diligence and establish sources of funds. It is challenging for investors willing to invest in Ethereum to establish with the necessary certainty that the Ethereum they are buying is not proceeds of crime.</p>	<p>Only Ethereum screened with market leading chain analysis too makes it into custody backing the issued instruments. ZETH is a fully fungible product (which ensures superior liquidity), but investors wishing to create units of ZETH in exchange for Ethereum (instead of purchasing it on regulated exchange) have either to be a regulated Authorised Participant ("AP") themselves or have such AP represent them as an agent. APs are licensed and regulated financial intermediaries, and as such are under very strict anti-money-laundering obligations. This means that investors buying ZETH securities can be sure that any Ethereum they are getting exposure to (and which they can receive should they want to do so due to fungibility of the product) is clean.</p>
Settlement & Post Trade Risk	<p>Parties buying Ethereum are exposed to counterparty (settlement) and post-trade price risks. Your counterparty can go insolvent after receiving the investor's part of the settlement (e.g. A 'cryptocurrency exchange' going out of business while the investor has cash of bitcoin deposit with it) or it may not honour the favourable price of a trade.</p>	<p>ZETH is a security, which is eligible for central counterparty clearing by Eurex Clearing. You can settle trades in ZETH using the Delivery-versus-Payment mechanism of Clearstream system, which effectively eliminates any counterparty risk. Investors can also use well-established business-processes for securities lending or using ZETH as collateral in order to facilitate, streamline and considerably de-risk any lending operations involving bitcoin.</p>

Trading Information

Exchange	BBG Code	RIC	ISIN	SEDOL	Currency	TER
Deutsche Boerse Xetra	ZETH GY	ZETH.DE	DE000A3GMKD7	BMV2RQ3	EUR	1.49%

About HANetf



ETC Group has partnered with HANetf to market and distribute BTCE in Europe.

HANetf is an independent ETF specialist working with third-party asset managers to bring differentiated, modern and innovative ETF exposures to European investors.

Founded by two of Europe's leading ETF entrepreneurs, Hector McNeil and Nik Bienkowski, HANetf provides a complete operational, regulatory, distribution and marketing solution for asset managers who want to successfully launch and manage UCITS ETFs.

About ETC Group



ETC Group brings together financial services professionals, with experience spanning both the worlds of digital assets and regulated markets with a single goal: to make investing in cryptocurrencies easy, transparent and safe.

United within ETC Group is one of the world's largest electronic market makers, two London-based FCA-regulated brokers and a team of experienced financial services professionals all bringing network and know-how to the venture.

The company's vision is to create the most liquid cryptocurrency-backed exchange traded products, enabling regulated exchanges where its ETCs are traded to become the source of price discovery for Bitcoin and other cryptocurrencies alike.

For additional information please visit www.etc-group.com.

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The decision and amount to invest should take into consideration your specific circumstances after seeking independent investment, tax and legal advice.