



Ethereum investor guide

- Structurally, we 'value' Ethereum at USD 26,000-35,000
- But for ETH to get there, BTC would need to trade at the top of our valuation range (USD 175,000)
- We see the Ethereum-Bitcoin cross doubling to 0.161, a level at which ETH's market cap would catch up to BTC's

Everything else

Ethereum (ETH), the second-most traded crypto asset after Bitcoin, is a decentralised, open-source blockchain that enables decentralised applications. As such, rather than being akin to a currency like Bitcoin (BTC), it is more akin to a financial market in which non-linear financial transactions such as lending, insurance and exchanges can operate.

This logic underpins both our absolute valuation estimates for ETH versus the USD, and our relative-value estimates for ETH versus BTC. To estimate ETH's valuation against the USD, we use two different approaches, both of which are based on the BTC valuations outlined in our [Bitcoin investor guide](#):

1. **The 'financial market' versus 'currency' analogy:** For BTC, we compare credit-card market cap against potential transactions in the unbanked sector to arrive at a valuation. For ETH, we compare the value of global banks against the value of global credit-card companies to establish ETH's value relative to BTC. Based on this, we estimate a potential value for ETH of USD 35,000 (10x the current level).
2. **A portfolio optimisation approach:** Starting the optimisation from the previous BTC peak (late 2017) gives an optimal allocation to crypto of around 2% of global portfolios. Given the broader value case for ETH compared to BTC, we believe that ETH's total market cap will catch up to BTC's over time. Based on this, we value ETH at USD 26,000.

A range of USD 26,000-35,000 may appear high compared to the current ETH price (just below USD 4,000), but we think the current price reflects both the relative complexity of ETH (versus BTC) and the uncertainty around ETH's development. In other words, while potential returns may be greater for ETH than for BTC, risks are also higher. For this ETH valuation range to be attainable, we assume that BTC would also need to trade towards the upper end of its valuation range (which we estimate at USD 175,000). If the dominant crypto asset (BTC) trades well, we think this will benefit investor perceptions of other crypto assets.

The current transition to ETH 2.0 could transform ETH by increasing its functionality and scalability and reducing environmental concerns (due to no more 'mining'), although it could raise more complex security issues. Timelines for ETH 2.0 rollout could slip, but in the near term, decreasing net supply – as ETH is staked for ETH 2.0 – should provide a price cushion.

Given these factors, we think ETH is a better buy over the medium term than BTC. We expect the cross rate between the Ethereum and Bitcoin currency units (XET-XBT) to roughly double from current levels to 0.161, bringing ETH's total market cap in line with BTC's. Where XET-USD trades will be partly determined by where XBT-USD trades.

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Structural considerations

The economic case for Ethereum?

Ethereum's value is as a platform for decentralised applications

Ethereum is the decentralised blockchain platform on which the native currency Ether (ETH) runs. Originally proposed by Vitalik Buterin in 2013, it was initially released in July 2015 following successful crowdfunding (during which initial investors paid in BTC and received ETH at a ratio of 1:2,000).

Ethereum's use case derives more from the platform itself than from the native currency. In contrast, Bitcoin's primary use case is as a store of value and medium of exchange. Bitcoin is commonly referred to as 'digital gold', while ETH has been likened to 'digital oil', in the sense that it powers the functionality of the Ethereum platform through decentralised applications governed by smart contracts. Our analysis focuses primarily on the Ethereum platform and its wider capabilities, with the aim of assessing how they impact the value of ETH.

Literally speaking, Ethereum is an infrastructure platform for running decentralised applications (dApps) worldwide. It is a network of computers that combine into one powerful decentralised supercomputer. As such, it is more aptly described as a decentralised platform than a decentralised peer-to-peer payments system (as in the case of BTC). Ethereum's coding language, 'Solidity,' is used to write 'smart contracts', which are the logic that runs dApps.

ETH 1.0 vs BTC

ETH builds on the basic framework (blockchain) of BTC

ETH and BTC share many characteristics: they are both decentralised, rely on distributed ledgers using blockchain technology and cryptography, have fixed issuance schedules, can be traded via online exchanges, are used for peer-to-peer payments and are held in digital wallets. Moreover, both were initially set up to use the proof-of-work (PoW) concept to validate transactions.

There are various technical differences between the two, including block creation time, transactions per second (30 for ETH versus 4.5 for BTC), and the number of coins in circulation (currently c.117mn for ETH, versus 18.8mn for BTC). However, the fundamental difference between the native currencies is in their use cases. BTC serves as a store of value or a hedge against inflation for many investors (given its finite supply), and as a nascent payments system for others (as the supporting financial infrastructure is developed). ETH serves more as a facilitator of a larger software platform hosting a variety of decentralised applications (dApps) and contracts, which together constitute the Ethereum network. This gives rise to a much wider set of use cases:

1. **Smart contracts:** These are programmes that self-execute and verify transactions based on pre-written code, and that do not require intermediaries to facilitate.
2. **DAOs (decentralised autonomous organisations):** Still a work in progress. These organisations will exist autonomously without a central authority, although they will be marginally managed by a community. DAO functions are governed by software code.
3. **NFTs (non-fungible tokens):** Digital assets that are by definition unique and scarce.
4. **Stablecoins:** Tokens with values pegged to other assets, such as currencies or commodities, either through algorithms or collateral; intended to ensure store of value and minimal volatility, while facilitating ease of transactions.
5. **DeFi (decentralised finance):** Financial applications intended to replicate (and disrupt) various functions of the traditional financial industry (borrowing, insurance, derivatives), as well as new functions such as 'yield farming' (see appendix).
6. **ICOs (initial coin offerings):** The creation of new tokens to facilitate the



Another fundamental difference between ETH and BTC is that Ethereum has seen a more rapid evolution of its blockchain platform and its native currency. While it has been around for less than half of Bitcoin’s lifespan, the Ethereum network has evolved far more quickly. In addition, Ethereum’s base layer is currently transitioning from ETH 1.0 to ETH 2.0, whereas Bitcoin’s base layer has been relatively constant.

Ethereum may have seen a more rapid pace of evolution because, unlike BTC, it has an identified creator (Vitalik Buterin) who has significant influence over the broader community (changes are validated, or not, by a majority). While it is not yet clear whether this will benefit Ethereum’s long-term development, it has made ETH more flexible and adaptable to change so far.

ETH 2.0

ETH’s adaptability to change has led to ETH 2.0

The transition from ETH 1.0 to ETH 2.0 began in December 2020; however, given the time required for testing and further development, it is unlikely to be completed before early 2022. ETH 1.0 will continue to run alongside ETH 2.0 during this period, and ETH 2.0’s functionality will be gradually phased in. However, any ETH transferred from ETH 1.0 to ETH 2.0 cannot be returned to the original platform. The transition will incorporate many upgrades to the existing system; we examine the most important ones below.

Moving away from ‘mining’

Shift from proof-of-work (PoW) to proof-of-stake (PoS) protocol

The existing PoW protocol is used to confirm transactions on the network, whereby ‘miners’ compete to solve computationally difficult problems. This enables them to win the right to create the next block of transactions, in return for which they receive a portion of the native currency (BTC or ETH) alongside any transaction fees. PoS attempts to achieve the same goal (i.e., confirmation of transactions), but there is no mining involved. Instead, individuals or nodes seeking to be ‘validators’ on the system must ‘stake’ a minimum quantity of the native currency (for ETH 2.0, this is 32 ETH). An algorithm with a randomised element – and also determined by the size of stake and length of time held – then determines which validator gets to propose the next block and confirm transactions.

The system is secured under both types of protocols, but in the case of PoW (i.e., ETH 1.0 and Bitcoin), this is done by work – the ‘hash rate’ or computational power on the network – whereas under PoS (i.e., ETH 2.0) it is done by stake. If the

Figure 1: ETH deposited for ETH 2.0

ETH mn

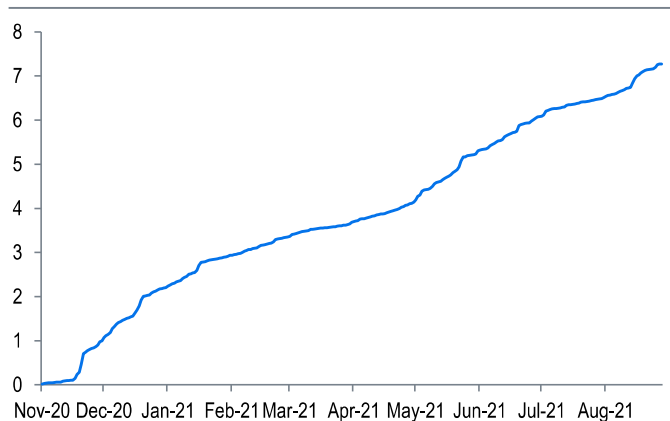
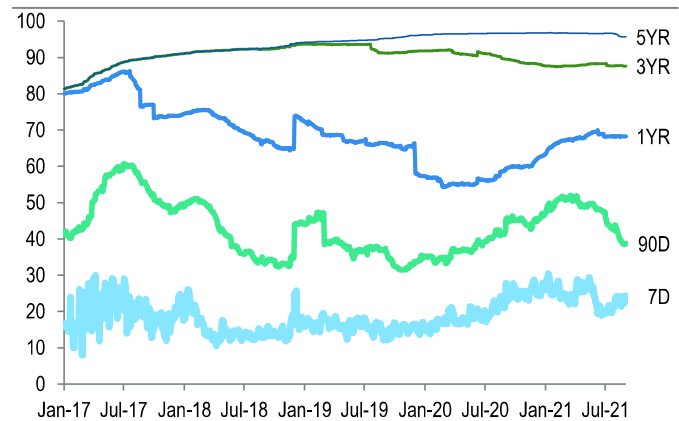


Figure 2: Active supply by age distribution

%





validator does not perform their job accurately, breaks the rules or is offline for a period, they can be penalised and lose some or all of their stake via 'slashing'. If they complete their validation tasks accurately, they will receive rewards through newly minted ETH. Blocks can be added to the blockchain once they have achieved consensus by receiving enough attestations from validators on the system.

Advocates of PoW have criticised the shift to PoS, citing its potential to concentrate power among a few large stakers; they argue that rewards to these stakers in the form of newly minted ETH will perpetuate ownership inequalities, creating larger barriers to entry. However, this can be partially overcome in the future if one validator can be formed from multiple users combining ETH (i.e., a single individual is not required to stake the full 32 ETH required). Also, PoW also creates barriers to entry in the form of the significant computer hardware costs to compete as a miner.

This shift has obvious environmental advantages, as it removes the need for excessive computer power to be used in 'mining' (we discuss this in more detail below). The switch from PoW to PoS is expected to be gradually phased in during H1-2022.

Addition of sharding

Adding scalability

The 'beacon chain' is the first component of the ETH 2.0 network to have been developed – referred to as 'Phase 0' – and went live in December 2020. This chain is the primary coordination layer that handles the PoS protocol, oversees the designation of new validators, creates committees for voting on blocks, and enforces the rules of the system. However, ETH 2.0 will also introduce the concept of 'sharding'. The aim is that 64 shard chains will be added alongside the beacon chain; more could theoretically be added in the future. These shards are essentially mini-blockchains, with their own transactions processed by validators in parallel with each other; this provides scalability to the system that is not present with ETH 1.0. The shard chains will come into existence with Phase 1 later this year, but they will not execute transactions at that point (Phase 1 is designed to test the inclusion of shards). Once shard chains are fully active, they will need to be attested to before they can be 'cross-linked' to the beacon chain and ultimately considered finalised.

From EVM to eWASM

Upgrading coding functionality

In Phase 2 (likely in late 2021 and 2022), shard functionality will expand and the entire system will eventually go live. This is when the shards will start using Ethereum WebAssembly (eWASM) rather than the existing Ethereum Virtual Machine (EVM) to process ETH operations (although EVM might be allowed to continue to operate within the system). EVM has been the backbone of ETH 1.0, facilitating all transactions and smart contract executions on the system. However, it has become slower as ETH 1.0's functionality has expanded, and it does not give programmers sufficient flexibility in terms of coding language. eWASM, on the other hand, is designed to be faster, more efficient and more flexible in terms of coding. This is seen as a fundamental requirement for the shift to shard chains, given the increased complexity and 'throughput' of transactions, and the need for communication between shard chains (as well as between shard chains and the beacon chain).

Supply of ETH

Decreasing supply, at least temporarily

Under ETH 1.0, the monetary policy and inflation rate associated with ETH have functioned similarly to those for BTC – block rewards have been cut to control supply, similar to the periodic halvings of new BTC supply. Specifically, around 72mn ETH were created for the 'crowdsale' in July-August 2014. Thereafter, it was decided that



Crypto Assets

a maximum of 18mn ETH could be mined each year. Originally, each block mined created 5 fresh ETH; this was lowered to 3 ETH in October 2017. For blocks that do not make it onto the main blockchain, called ‘uncles’, this reward is 0.625-2.625 ETH (down from 4.375 ETH before October 2017).

Importantly, this means that there is no cap on total ETH supply (unlike BTC, whose total supply is capped at 21mn). Instead, there is a cap on annual ETH issuance, which will lead to a decreasing inflation rate over time. While this can be changed if the majority of the Ethereum network agrees, it is in sharp contrast to the maximum limit of 21mn BTC ever. For ETH 2.0, the Ethereum community has yet to agree on the rate of new ETH creation, but it is likely to be lowered. Also, as with BTC, many ETH are lost from the system due to forgotten passwords, while some are held for long periods (tantamount to reduced supply).

Moreover, a significant chunk of ETH will be held as stakes for ETH 2.0; the total amount staked currently stands at 7.2mn (Figure 1), but Phase 1 theoretically requires a minimum of 262,144 validators to stake 32 ETH each. This means that total ETH staked will need to rise to about 8.4mn before Phase 1 is fully active, further reducing outstanding available (net) supply. An additional Ethereum Improvement Proposal (EIP 1559), which went live in early August as part of the ‘London hard fork’, aims to correct problems with the auction model whereby individuals attempt to get their transactions processed more quickly. Instead of a single fee, a base fee and an inclusion fee will be charged; the base fee will be ‘burned’, or destroyed, once the transaction is complete. As it stands, roughly 3.4 ETH are being burned per minute (around 1.8mn per year) on the back of this development.

As a result of the changes announced and implemented so far, the y/y inflation rate for net ETH supply (net of ETH staked for ETH 2.0) has fallen to around -2.2% from +2.5% at the start of 2021 (Figure 3). It can be expected to remain low over the long run. Indeed, in net terms, the total number of ETH available has fallen by around 3.5mn since staking began. Inflation will rise and fall in line with the total amount of ETH staked – i.e., the higher the total amount of staked ETH, the greater the annual network issuance and the lower the rate of inflation. However, this will also reduce the annual return for individual validators, so the system should end up self-correcting, with changing incentives for validators bringing it back into equilibrium.

Figure 3: ETH supply and inflation rate

ETH mn (LHS), % y/y (RHS)

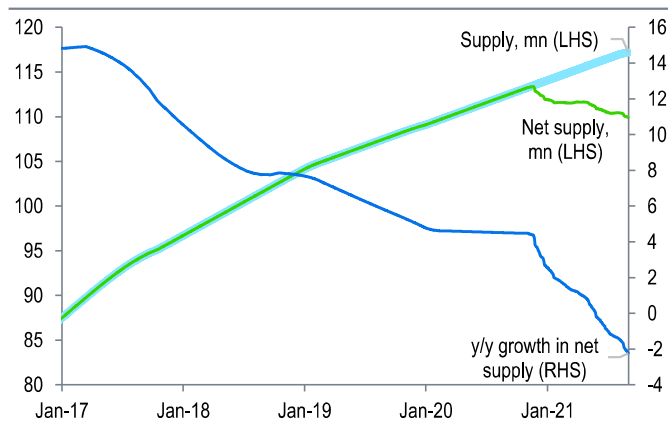
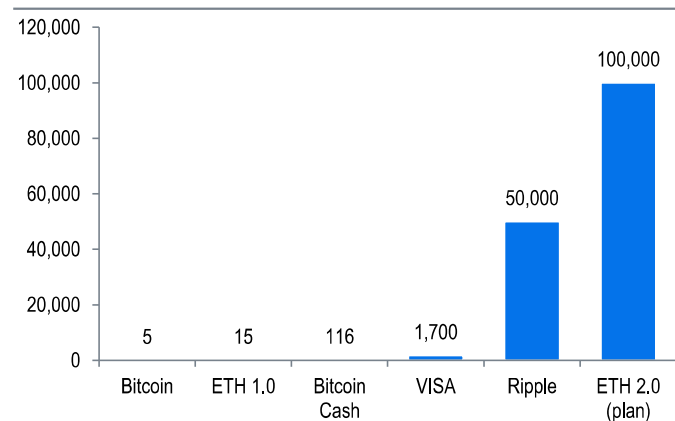


Figure 4: Average transactions per second

Number





A timely move to a greener confirmation system

Environmental considerations

The existing PoW protocol provides considerable network security, but it is also highly energy-intensive (as the difficulty of computations increases over time), and it limits the number of transactions that can be carried out per second. The new PoS protocol does not create the same incentives for miners to improve their 'hash rate' through energy-intensive computer hardware; instead, it simply incentivises validators to stake more ETH. Securing the blockchain this way will require considerably less computing power (and energy), although there are valid questions about whether it offers the same degree of security (see below). Not only does this produce a more sustainable system, but it also mitigates the risk that governments could take ETH's carbon footprint into account when considering future regulatory or tax changes. This is particularly timely under the Biden administration, given its focus on environmentally friendly policies.

If achieved, ETH will be able to handle more transactions per second than others

Scalability

The shift to PoS and the introduction of shard chains is expected to significantly improve the scalability of the Ethereum network. The potential number of transactions that can be carried out per second is due to rise to 100,000 under ETH 2.0 from around 30 under ETH 1.0 (Figure 4). A faster transaction rate is arguably more important for the Ethereum network than for BTC, as Ethereum derives less of its perceived value from being a store of value and more from its ability to facilitate a rapidly expanding number of dApps (including various DeFi protocols). There are concerns among crypto developers that this scalability will be difficult to achieve given the nature of sharding, and the complexity involved in ensuring efficient communications between shards and with the beacon chain. Separately, there is a concern that rapid growth in users of dApps and DeFi protocols could still put pressure on ETH 2.0 despite its increased scale. That said, additional shard chains could be added in the future if the current transition proves successful.

Managing security risks

Security

ETH 2.0 is an effort to overcome the scalability trilemma (a phrase coined by Buterin), which posits that security, scalability and decentralisation cannot all be maximised in parallel; only two can be achieved, at the expense of the third. For instance, the more decentralised the network and the higher the number of transactions it carries, the greater the potential delays and associated security risks. In general, higher energy costs and lower scalability have led many to view PoW as delivering greater security than PoS; the fact that PoW is comparatively well tested reinforces this argument.

Ethereum advocates contend that the PoS protocol does heavily disincentivise attacks from validators on the platform given the potential loss of their stakes (a penalty that does not exist under PoW). However, crypto developers have raised concerns about the introduction of shard chains to improve scalability – in particular the increased risk of a single shard being taken over, which could have knock-on effects on other shard chains and the beacon chain.

Ethereum architects have acknowledged that the security model also needs to change because of this, but have said that there are ways to ensure security remains strong. The multitude of changes and upgrades during the transition period are designed to ensure this. But the fact that the community is divided on the security comparison between PoW and PoS suggests that this will remain a significant source of uncertainty for some investors until ETH 2.0 has been up and running, without any security issues, for a sustained period. Moreover, isolated security breaches – even if dealt with via future upgrades – could significantly erode confidence in the platform.



Crypto Assets

Valuation

Scale of market

Successful implementation of ETH 2.0 would point to significant upside for XET

In our *Bitcoin investor guide*, we use credit card companies as a reference point to arrive at a potential market capitalisation for XBT, comparing transaction values in the global unbanked sector to transaction values for credit card companies. That simple analysis suggests a total XBT market cap of around USD 1tn, or a price of USD 50,000 for XBT (which happens to be close to the current price).

This assumes that Bitcoin eventually becomes to crypto what cash is to global finance, i.e., a means of exchange. Extending this analogy to Ethereum, ETH is the global banking system for crypto – i.e., it is the infrastructure that enables dApps/DeFi, in the same way that the banking system enables non-linear finance involving complex transactions.

In simple terms, the market cap of banks globally is 4x the market cap of credit card companies globally. Using this analogy, XET has a potential market cap of USD 4tn. Total ETH currently outstanding is 117mn, equating to a price of USD 35,000 for XET. This is 10x the current price.

We note that these values – USD 50,000 for XBT and USD 35,000 for XET – are proxies for the net present value of a terminal value estimate. Transactions (credit cards in the ‘real world’ and XBT for crypto) are simple, whereas non-linear finance (banks in the real world and XET for crypto) is complex. Typically, simple things can be achieved earlier and more quickly than complex ones.

Given that financial markets tend to price in ‘end games’ before they occur, along with the relative simplicity of XBT versus that of XET, this analogy suggests upside potential for XET-XBT going forward. The obvious caveat here is competition for XET from new entrants (more on this below). While both XBT and XET have first-mover advantages, XBT’s is more established. Successful implementation of ETH 2.0 would help XET in this regard.

Flow argument

We think XET market cap can catch up to (future) XBT market cap

In our *Bitcoin investor guide*, we calculate an optimal portfolio to include crypto assets, starting from the late 2017 prior peak in Bitcoin. Using that starting point, the optimal weights are 82% bonds, 15% equities, 1% commodities and 2% (2.27%) crypto. Given that the total global AUM of financial assets is around USD 400tn, a 2.27% share would put crypto AUM at USD 9tn – a 5x increase from crypto’s current market cap.

Figure 5: Number of transactions
USD (LHS), mn (RHS)

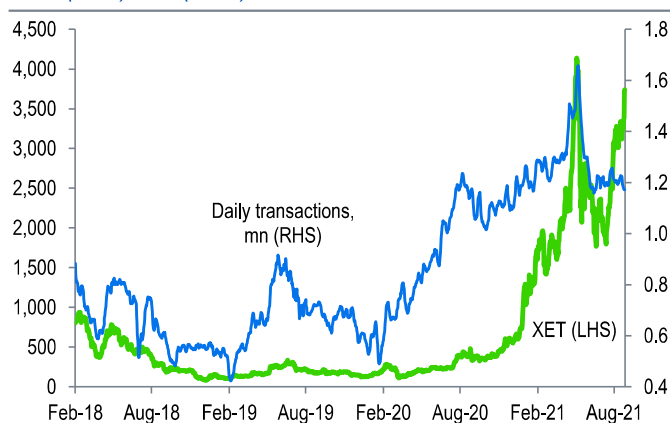
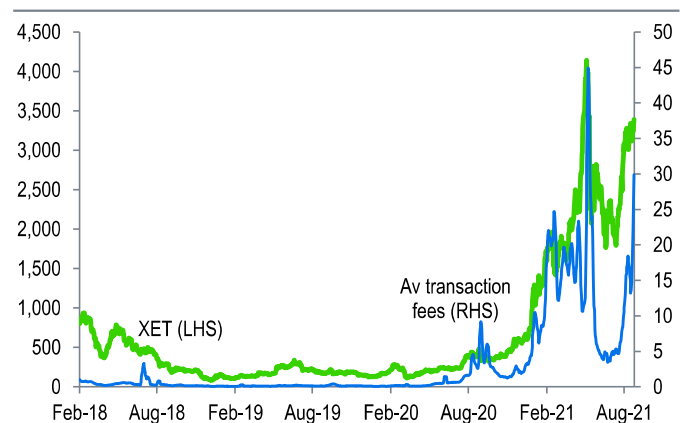


Figure 6: Average transaction fee
USD





Crypto Assets

The current market cap of XET is around USD 380bn, or 18% of total crypto assets. We think there is a good case to be made that XET will increase its share of the crypto market over time, possibly to one-third (equalling XBT's expected future crypto market share – see the [XET-XBT considerations section](#)). This would give XET a market cap of USD 3tn, or USD 26,000 per XET when divided by the current 117mn ETH outstanding.

Demand indicators

Transaction fees suggest strong demand

As with XBT, there are a number of measures to gauge demand on the Ethereum network and, by extension, for XET. The number of transactions increased sharply earlier in the year (Figure 5), indicating greater demand, but has been steady more recently. Perhaps more importantly, the average transaction fee has increased sharply again (Figure 6).

For ETH, the miner receives both new ETH (3 ETH for new blocks that make it onto the chain, or 0.625-2.625 ETH for 'uncles'), as well as a transaction fee. However, the calculation of transaction fees is more complicated for ETH than for BTC because the tasks are more varied – for example, it should cost more to upload a smart contract than to record a simple ETH payment. ETH transaction fees are based on so-called 'gas fees', which are set depending on the degree of complexity. Each type of transaction has a basic price list, but users then say how much they are willing to pay up in order to have their transactions done first. When the network is busy, users pay more.

As a result, a higher transaction fee (Figure 6) tells us either that the average complexity of transactions is increasing, or that users are paying more to get their transactions done. In any event, this means that rising average transaction prices (as we are seeing again now) should put upward pressure on XET prices.

Google and Twitter 'eyeball' measures are also a gauge of XET demand (similar to XBT). These tend to be self-fulfilling – when prices rise, more people Google 'What is Ethereum?' or mention on Twitter how much money they've made trading Ethereum. This then encourages other investors, whether they are genuine or driven by fear of missing out (FOMO), and so prices rise further. Unsurprisingly, given XET's run so far in 2021, Google searches and Twitter mentions have hit all-time highs this year (Figures 7 and 8).

Figure 7: Google searches vs XET
USD (LHS), index to 100 as maximum (RHS)

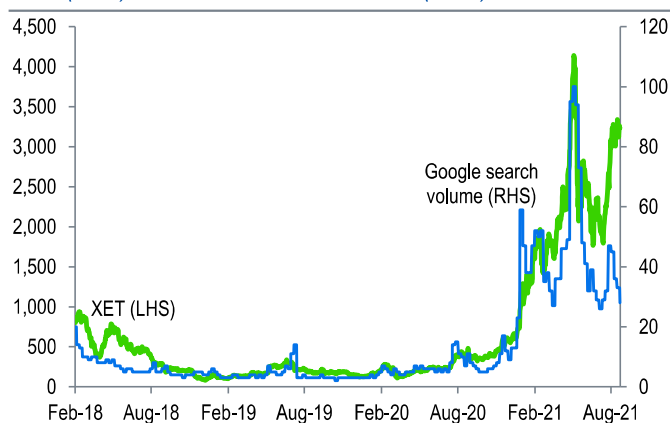
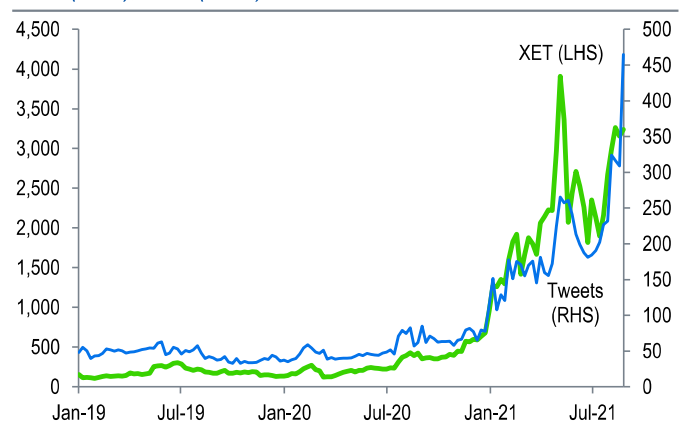


Figure 8: Twitter mentions vs XET
USD (LHS), '000 (RHS)





Crypto Assets

XET-XBT considerations

We think XET-XBT can double

It's fair to say that there could be no ETH without BTC, but not the other way around. ETH builds on the blockchain concept popularised by BTC, and both enjoy first-mover advantages in their respective spaces. But the similarities end there. BTC is a peer-to-peer payments system, deriving its 'value' from its function as a store of value and a medium of exchange. ETH is a platform that enables other things, like DeFi.

From the perspective of the investing public, however, the two are similar. Both are classified as cryptocurrencies or crypto assets, as opposed to equities, bonds, commodities, real estate or (fiat) currencies. As a result, the 'no ETH without BTC' point can likely be extended to 'no ETH investors without BTC investors'.

Bitcoin is a term most people have heard; as such, it can be seen as a gateway investment to the crypto world, which introduces the investing public to other crypto assets. Furthermore, a broader crypto network effect (initially driven by XBT) may be at work. For example, XBT has the highest public awareness within the crypto world, so as XBT prices increase, this may prompt investors to start considering other crypto assets. This is similar to golf, where the mere existence of Tiger Woods increases the total number of eyeballs watching golf, given his status as a global star whose fame transcends the game itself. Because of Tiger Woods' presence, all golfers earn more (Michael Jordan had a similar effect on basketball players). XET, as the second-largest crypto asset, may be a particular beneficiary of this.

In addition to potentially benefiting from XBT's fame, we think XET has a unique value proposition, as detailed in the sections above. Indeed, we think XET's market cap is poised to catch up to XBT's. If so, that would put XET-XBT at 0.161 (based on current cumulative supply of 117mn ETH and 18.8mn BTC). This would be roughly 2x the current price ratio and the all-time high (according to Bloomberg data, Figure 9), and compares to the 2014 crowdfunding price of 0.0005. That's a 320x return for crowdfunders on the relative-value trade or 32,000x in USD terms (as XBT has also multiplied by 100 since then).

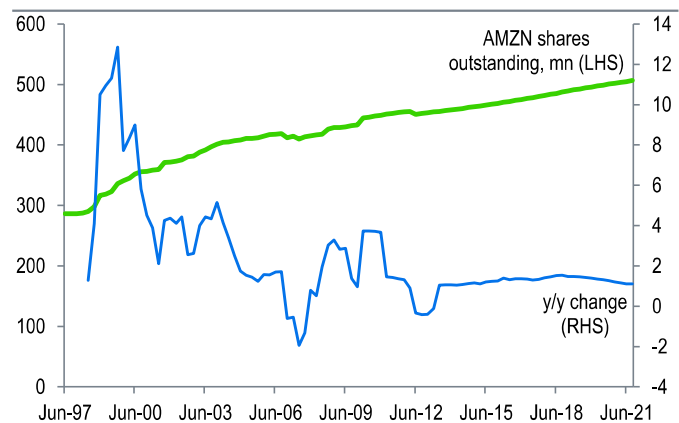
Figure 9: XET-XBT

Price ratio



Figure 10: Outstanding Amazon shares

Mn





Relative supply is a valid argument against this XET-XBT topside view over the longer term. While BTC is subject to a supply cap of 21mn bitcoins ever in existence, ETH is (currently) only subject to a limit of 18mn new ETH each year. We acknowledge the merits of this argument, and as a result, we do not view ETH as a store of value (unlike Bitcoin).

However, we think this is the wrong way to look at XET. Ethereum is more akin to equities than currencies or gold, as its value lies in the infrastructure it provides to other applications. As a result, we think tech stocks are a better comparison to XET in terms of supply; we show outstanding Amazon shares in Figure 10. The 'inflation' rate of Amazon stock is currently 1.1% y/y and has averaged 1.4% over the past five years. In gross terms, the current inflation rate for XET is 4.2% y/y. In net terms (excluding ETH locked up for ETH 2.0), it is -2.2% y/y.

We think XET-XBT can double in price, and that as crypto markets develop further, relative value trades like this will become increasingly attractive.

Other considerations

Timeframe for ETH 2.0 rollout

ETH 2.0 rollout creates opportunities, but also risks

ETH 2.0 is a complex and comprehensive upgrade to an already complex platform. The complexity is compounded by the fact that both ETH 1.0 and ETH 2.0 are running in parallel for a protracted period, as the Ethereum network must remain fully operational throughout the transition. It is uncertain when all phases of the transition will be completed, particularly as the rollout has already faced delays. The aim is for the transition to take around two years, having begun in December 2020. However, it could take longer if software engineers and developers find that changes or upgrades do not function the way they are expected to, or if not enough validators of the network come forward on schedule. The uncertain timeframe, combined with the complexity of the new platform, could potentially lead to disappointment for some investors and users, raising the risk that competitors offering comparable platforms could gain market share in some areas.

Competitive landscape

Competition has been offset so far by ETH's first-mover advantages

Like Bitcoin, Ethereum faces competition from other crypto platforms, and these competitors do not face significant barriers to entry if they are offering niche services. However, like Bitcoin, Ethereum also enjoys increasing network effects; as more users join Ethereum, more dApps and DeFi protocol developers want to set up on the Ethereum platform rather than a competing one, which in turn leads to greater demand from users. The rapid rise in traffic and transaction throughput on the Ethereum network is a primary reason for the transition to ETH 2.0.

Separate ecosystems already exist and may continue to challenge Ethereum in niche areas, particularly if compatibility between different platforms allows the relatively seamless transfer of funds in the future. Competitors could also challenge Ethereum's market dominance if the timeframe for the transition to ETH 2.0 is extended further; in case of a major breach or fault with the system in the future (the result of a hack or failure of code); or if the regulatory or tax environment for Ethereum changes.



*Regulatory risks are largely
unknown*

Regulatory landscape

While the regulatory concerns related to the Ethereum blockchain will be very different to those for Bitcoin, regulators are likely to pursue the same three broad objectives: countering illicit activities, ensuring financial stability, and, protecting the investing public. A big unknown is whether ETH 2.0 will continue to be classed as a commodity (like ETH 1.0) or will be classed as a security; the Securities and Exchange Commission (SEC) initially noted that the Ethereum platform was “sufficiently decentralised” to allow classification as a commodity, but the transition to PoS could challenge this view. Were the SEC to determine that ETH 2.0 was a security, it would need to comply with all of the accompanying regulations, and could face retrospective financial penalties. This is a grey area and there are arguments on both sides, but it is a risk. Aside from this specific risk, the fact that the Ethereum network facilitates a large range of services (dApps, DeFi, ICOs) could create a more complex regulatory environment in the future.



Appendix: ETH in DeFi

Decentralised finance (DeFi)

Enabling DeFi is the real value of ETH

Decentralised finance (DeFi) – the newest frontier in the cryptocurrency industry – uses blockchain technology to remove intermediaries between parties in a financial transaction (such as lending, borrowing, derivatives and exchange).

Ethereum underpins the vast majority of decentralised applications (dApps) and decentralised finance projects. Unlike the Bitcoin blockchain, which has limited functionality (since it was designed primarily for peer-to-peer transactions), the Ethereum blockchain enables developers to flexibly deploy dApps in a permissionless way. In addition, applications on the Ethereum blockchain can interoperate, allowing new applications to be built and designed with interdependence to other applications. These characteristics facilitate the smart contract application on the Ethereum blockchain, which in turn governs the loan, repayment, and liquidation processes of transactions digitally and autonomously.

Currently, around 23mn ETH tokens are locked up in DeFi applications (a net USD 82bn), up from fewer than 3mn in January 2020 (Figure 11). 50% of these tokens are committed on lending platforms and 40% are committed on decentralised exchanges (Figure 12).

ETH transaction costs

Every transaction on the Ethereum network involves a transaction cost, also referred to as ‘gas fees’. Gas fees reflect the amount of computational resources required to execute specific transactions on the network. Ethereum gas fees are ultimately paid to Ethereum miners, who earn their revenue through a combination of transaction fees and block rewards (i.e., newly issued ETH).

Gas fees fluctuate depending on network demand. A transaction can be delayed or rejected if it does not meet the miners’ threshold. The miners’ threshold depends on network usage and congestion. The boom in DeFi applications has driven Ethereum gas fees to all-time highs. This increase in transaction costs is a double-edged sword – while it enhances the appeal of ETH as a cash-flow-generating asset, high transaction fees could become a deterrent to further developments on the Ethereum blockchain, impeding its growth. However, the transition to a PoS consensus algorithm with the Ethereum 2.0 upgrade should address some of these issues related to speed, efficiency and scalability.

Figure 11: Value locked in ETH DeFi

USD bn

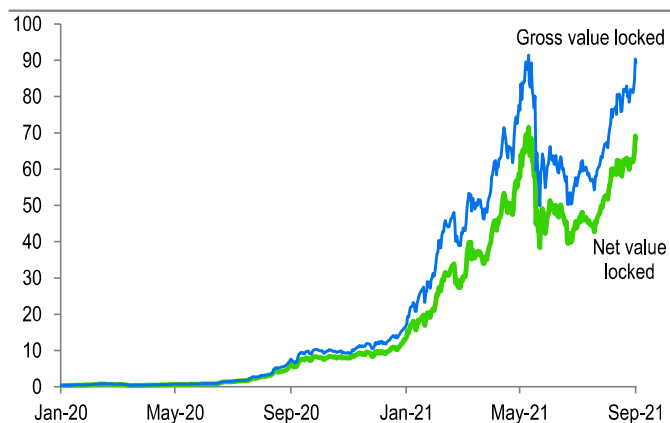
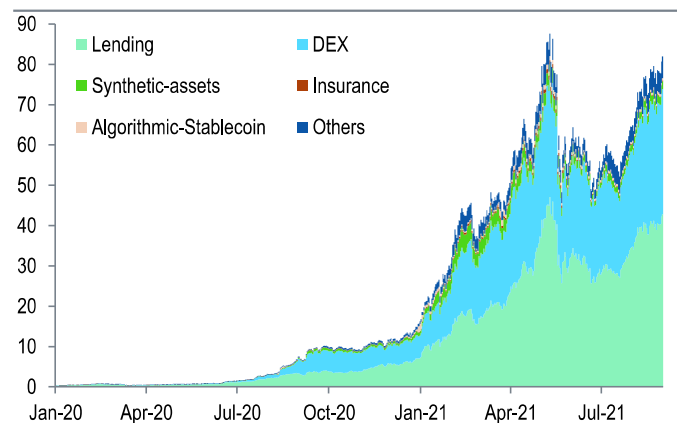


Figure 12: Value locked in by category (net)

USD bn





Earning a yield with ETH

The advent of DeFi platforms has allowed crypto owners to earn a yield on their crypto assets. The three common ways to earn interest on Ethereum are through staking, lending or liquidity provision.

Staking is a mechanism derived from the PoS consensus model. Networks are run by nodes that hold full copies of the blockchain. These nodes mathematically verify transactions before appending them to the chain. Stakers lock up their assets to act as nodes and confirm blocks; in exchange, they earn a yield on their staked assets. However, stakers must balance this with the risk that staked ETH will be illiquid for an unknown period of time. Currently, all deposits and rewards can be withdrawn only when Phase 1.5 of ETH 2.0 goes live. This means validators need to be in it for the long haul, and commit to maintaining their servers for up to two years. The rewards from staking are also highly variable, by design. In general, as the number of ETH staked on the network increases, the return declines. In addition, stakers risk being 'slashed' if they fail to perform their duties properly.

The concepts of lending and liquidity provision are closely related to each other. By lending out crypto assets via lending pools on DeFi platforms, the owner can earn fees in the form of crypto. DeFi lending and borrowing platforms allow lenders to supply and lock their funds into smart contracts; other users can borrow from these and pay interest on them. Each loan is collateralised by crypto. Alternatively, crypto owners may choose to lend their tokens on decentralised exchanges that facilitate peer-to-peer trading in the DeFi market. In return, the lender earns a portion of the platform's fees, which are paid for by borrowers who access the liquidity.

Crypto owners may choose to enhance returns by moving their crypto assets between different DeFi lending marketplaces; this is also known as yield farming. Some DeFi platforms further incentivise lending and borrowing on their platforms by allowing both lenders and borrowers to accrue the liquidity provider's tokens.

It is important to distinguish between staking and lending. The main goal of staking is to secure the blockchain network by improving its safety. Simply put, the more users that take part in staking, the more decentralised the blockchain is and the less susceptible it is to an attack. In contrast, lending aims to earn a return by providing liquidity to a DeFi platform (lending platforms or decentralised exchanges). Yield farming typically generates higher returns for investors than staking or lending.

Risks of yield farming

Yield farming is popular, but it involves risks

Yield farming has soared in popularity due to its profitability, at times earning returns upwards of 50% per annum for crypto owners. However, it is also inherently riskier since it is highly technical and requires a deep understanding of DeFi procedures.

Security is the first risk. Smart contracts tend to be poorly coded by inexperienced teams, resulting in security vulnerabilities that may be exploited by hackers. In such a scenario, the liquidity provider risks losing all the funds committed on the DeFi platform. Participants can choose to protect themselves from such risks by insuring their assets, but this requires a good portion of their capital. The risk of fraud may also result in a complete loss of capital. Newer projects tend to have higher fraud risk. A project's creator may shut down the project and disappear with the funds after allowing users to deposit funds into liquidity pools; these are known as 'rug pull' scams.



The third risk is impermanent loss. This refers to the realised or unrealised loss and opportunity cost incurred while the crypto asset is deposited in a liquidity pool. In other words, it refers to how much more money the crypto owner would potentially have made (or saved) if they simply held onto their assets instead of providing liquidity. If crypto asset price volatility spikes, the rate of profitability will drop due to impermanent loss. Finally, Ethereum's gas fees – particularly during peak network congestion periods – may also materially erode gains from yield farming.

Implications for ETH

The DeFi industry remains heavily reliant on the Ethereum blockchain, cementing ETH's status as a digital asset that is required to power transactions on its network. As the number of applications build on top of the Ethereum network continues to grow, so do the number of transactions that take place on the network and the amount of capital flowing through that ecosystem. The price of ETH is likely to continue to derive support from its role in processing these transactions.

Moreover, the transition of Ethereum to ETH 2.0 using the proof-of-stake (PoS) consensus mechanism should lower transaction costs and improve the speed of transactions, ushering in the next wave of crypto adoption.



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