SOLANA'S ROLE IN THE MODERN PORTFOLIO

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GALAXY
FUND MANAGEMENT

WHAT IS SOLANA?

In 2017, developer Anatoly Yakovenko conceived Solana as an open-source blockchain solution to resolve long-standing scalability issues inherent to the Proof of Work (PoW) consensus mechanism used by Bitcoin and Ethereum. The Solana network then launched in 2020, boasting one of the fastest-growing crypto ecosystems and hosting over 500 decentralized finance (DeFi), non-fungible token (NFT), and Web3 projects.[1] The blockchain's native digital asset, Solana (SOL), is one of the largest cryptocurrencies with a market capitalization of roughly $28 billion.[2]

The Solana blockchain utilizes a Proof of Stake (PoS) consensus mechanism, operating similarly to other Layer 1 blockchains such as Ethereum. Solana also leverages a Proof of History (PoH) algorithm, a key innovation that solves one of the most challenging problems in distributed ledger systems: the consensus of event timestamping.

Using a Verifiable Delay Function (VDF), the Solana blockchain speeds up the consensus process by allowing validators to create a historical record proving an event occurred at a specific moment in time on the blockchain. A VDF encodes time itself into the block, considerably reducing the weight of consensus, thus significantly speeding up the time required for transaction processing.

A set of recorded verifiable unique outputs called a 'hash' and a 'count' serve as validation keys in the data blocks resulting from the VDF process. You may think of these hashes and the accompanying count as a verifiable cryptographic timestamp attached to each block of transactions on the blockchain.

Anyone who holds SOL can stake their tokens on Solana to help secure the network and earn rewards. The cost of transacting on the platform is low, especially in relation to increasing spikes in transaction fees for other Layer 1 blockchains. PoH improved upon PoS protocols to such a degree that SOL stakers can charge ultra-low fees of around $0.00025 per transaction.[3]

The competitive advantage of this blockchain benefits all parties operating on Solana's network with lower transaction costs and heightened security. Time will tell if other blockchains will follow Solana's PoH consensus approach. But as one of the first movers on the market solving the challenge of time required for simultaneous network consensus, Solana demonstrates that an ultrafast, scalable blockchain with negligible transaction costs is a reality and not a distant promise.

1) "Powerful for developers. Fast for everyone," Solana, last accessed 1/28/2022, Solana.com.
2) CoinMarketCap.com, as of 1/28/2022.
3) Coinbase.com, as of 1/28/2022.

THE RISE OF SOLANA

Solana's ability to deliver high-speed and low-cost transactions on a single-layer blockchain drew the attention of developers who were waiting on additional scaling solutions from other networks. The Solana blockchain allows users to adopt Web3 applications and participate in digital asset projects with ease of execution and lower costs unseen on other networks.

As mentioned, Solana's roster of decentralized apps now includes a diverse ecosystem of over 500 projects spanning DeFi, Web3, NFTs, and more.[1] These project categories include decentralized exchanges, lending protocols, staking platforms, online gaming, social media, storage solutions, and metaverse platforms. The technical sophistication of Solana attracts DeFi developers looking for faster and cheaper networks on which to build and operate their apps.

As more developers and users recognize the benefits of building and transacting upon the Solana blockchain, the market capitalization of Solana is expected to continue rising. Yakovenko views Solana as a crypto version of the NASDAQ and wants Solana to be as fast as the NASDAQ Stock Exchange (which completes a million transactions per second). We see evidence of this thriving blockchain highlighted in DeFi and NFT marketplaces through Solana's growth. As of January 28, 2022, Solana is priced at $91.31 with a market cap of $28B.[3]

MARKET CAP (AS OF JANUARY 28, 2022)

Source: CoinMarketCap.com, as of 1/28/2022.

SOLANA'S COMPETITIVE ADVANTAGES

A number of significant features and use cases contribute to the rising interest in Solana and its expanding ecosystem.

ADVANTAGEOUS FEATURES

SPEED

Decentralized app developers like the speed that the Solana blockchain offers.

LOWER COST

The Solana blockchain typically offers far lower transaction fees than currently seen on certain other smart contract blockchains.

USE-CASES OF SOLANA

NON-FUNGIBLE TOKENS

The soaring NFT market is positioning Solana as a viable alternative to Ethereum. Congestion on Ethereum's blockchain due to the number of users and transactions on the network caused gas fees to soar this summer, driving many to Solana.

SOCIAL MEDIA

Decentralized social media platforms require high-speed, low-cost blockchains like Solana in order to scale to the masses.

GAMING

Solana is ideal for blockchain-based gaming applications, enabling participants to own and earn in-game assets.

DECENTRALIZED FINANCE

Due to many developers' preference for Solana's speed, there's an increasingly diverse ecosystem of decentralized finance apps powered by SOL.

SOLANA'S SPEED ENHANCED BY PROOF OF HISTORY

As one of the fastest programmable blockchains, Solana has quickly become one of the most widely used blockchains and most significant digital assets. Solana caught the attention of developers and investors as a cheaper and faster alternative to Ethereum and other smart contract platforms. Experts speculate that Solana's processing speed may reach 700,000 TPS as the network advances.[4] With Ethereum currently processing between 15 to 45 TPS, it's easy to see why interest in this digital asset continues growing. Solana has quickly proven that a faster and more secure blockchain does not have to mean higher transaction fees.

Solana's success as a secure, scalable blockchain with record-breaking transaction processing capabilities is made possible by its ability to cut down on time spent linearly validating nodes across the blockchain. This innovative PoH feature builds upon the PoS consensus algorithm but dispenses with its expensive, energy-inefficient need for linear data validation. No longer must validators expend time and energy congregating to agree simultaneously upon a time and sequence of events. Instead, validators use these unique identifiers to non-sequentially sort and order events. The network chains these historical records together, creating a proof of order relative to the unique assigned identifiers.

Combining a PoS consensus mechanism with the PoH validation feature delivers a lighter, faster blockchain with heightened security. The validators processing transactions run the Solana network. Validator selection considers the amount of SOL each individual has staked on the network. Nodes with the highest amounts staked are most likely to be selected to validate and add transaction blocks to the blockchain. Users holding smaller quantities of SOL can delegate their holdings to a larger validator in exchange for a portion of the validator rewards. This delegation method incentivizes both large and small shareholders of SOL to support the network while increasing the overall security. Staking requirements for achieving validator status serve as a helpful barrier of entry, deterring malicious actors from attacking the blockchain.

4) FXEmpire.com.

BITCOIN VS. ETHEREUM VS. SOLANA

We see differentiation emerging among the predominant blockchains as the digital asset space matures. With that differentiation, it's clear there's plenty of room in the digital asset class for multiple winners. Bitcoin (BTC) is the strongest store of value digital asset. It has firmly secured its reputation as 'digital gold,' playing an important role in portfolio hedging against global uncertainty. The Ethereum blockchain is proving to be more flexible than Bitcoin. Its open-source rails allow for decentralized applications to tap into smart contract capabilities. The Solana blockchain is proving to be quicker than Ethereum by maximizing throughput and information flow and achieving record-setting TPS processing rates. What follows is a summary of these three blockchains and an analysis of their differentiating features in the unfolding digital asset economy.

BITCOIN

According to the Bitcoin whitepaper, creator Satoshi Nakamoto's goal was to create a digital representation of cash capable of fulfilling the role of today's fiat currency.[5] To do this, bitcoin needed to work as a medium of exchange, a unit of account, and store of value. Therefore, when Satoshi created bitcoin, he focused on the principles of durability, intrinsic value, and scarcity.

These principles are crucial to how bitcoin functions today. While bitcoin is secure, it clocks in at 7 TPS, making it one of the slowest blockchains. Changes to the Bitcoin blockchain take a long time due to the requirement for a majority of nodes to agree on proposed adjustments. This requirement explains the four-year gap between bitcoin's recent Taproot upgrade and its 2017 upgrade. Other more agile blockchains gain traction across the sphere due to their ability to innovate and achieve consensus quickly. Lastly, bitcoin has a maximum supply due to its programmatic monetary policy, unlike Ethereum (ETH) which has no limit on its maximum issuance.

ETHEREUM

The Ethereum whitepaper details how Vitalik Buterin liked the Bitcoin blockchain's technology, but felt it wasn't flexible enough for applications.[6] Seeing this window of opportunity, Vitalik set out to create Ethereum to help developers build decentralized applications with the ability to interact with each other efficiently. The resulting Ethereum blockchain introduced a built-in Turing-complete programming language, allowing anyone to write smart contracts and decentralized applications. Within each application built on Ethereum, developers can create their own arbitrary rules for ownership, transaction formats, and state transition functions.

The creation of smart contracts initiated the demand for token standards that ensure smart contracts remain composable and compatible with existing decentralized exchanges.[7] This environment led to the development of tokens like ERC-20, which opened the door to the creation of NFTs and other smart contract-enabled digital assets. It's worth noting that the Ethereum blockchain was never created with the sole purpose of supporting a cryptocurrency. Instead, the Ether cryptocurrency was created to provide an in-house currency for decentralized apps on Ethereum.

All Ethereum users pay fees to use decentralized apps. These fees – referred to as "gas" – are currently high on Ethereum due to congestion and popularity. You may think of this congestion, due to popularity, as the Ethereum blockchain exceeding its bandwidth to support activity across all apps on the chain. The more users seen operating on the blockchain, the higher the congestion, resulting in more power required for processing activity on the chain. This high activity, or congestion, leads to higher gas prices for those transacting on the chain. High gas fee fluctuations impede some users' ability to interact on the chain and have led many to look to other blockchains with lower transaction fees that support smart contract capabilities.

5) Bitcoin.org.
6) Ethereum.org.
7) Ethereum.org.

SOLANA

Anatoly Yakovenko, the creator of Solana, believed that blockchain platforms could scale faster than 15 TPS because payment systems demanded higher transaction speeds (1500+). He, along with a colleague, created the Solana blockchain and its PoH framework as a solution to the slow transaction processing dilemma.

Yakovenko's research resulted in Solana, a web-scale, open-source blockchain protocol, similar to Ethereum, with a stronger focus on digital payment crypto functionality. To achieve the goal of reaching faster transaction processing rates, Anatoly focused on speed over security and decentralization. The result of Yakovenko's priorities produced the Solana blockchain, which we see reaching speeds far surpassing other blockchains.[8]

Solana is less decentralized, as the Solana Foundation has a central point of control over the network. However, Solana's gas fees are extremely low – currently less than one cent of a US dollar, which is a significant reason why the NFT boom migrated to Solana this summer.

In this nascent asset class with breakthrough technology unfolding in real-time, we see room to explore multiple competitive advantages. The world continues adopting crypto for varying use cases, including Web3, the metaverse, digital payments, and more. Differentiation amongst blockchain capabilities creates room for BTC, ETH, SOL, and additional competitors entering the space to claim a hold on their niche within this market.

8) Solana.com.

SOLANA USE CASES

While Solana's initial goal was to support decentralized apps, it has also found accelerated popularity across the NFT market as an advantageous alternative to Ethereum. The rapid progression of the NFT market and the greater digital asset class sets the stage for Solana to continue gaining market share. The Degenerate Ape project was a significant catalyst for Solana's rise this summer. Their NFT volume reached a total of 982K SOL as of November 1, 2021.[9] Popular NFT marketplaces like OpenSea are likely to enable SOL NFT sales in the future. Meanwhile, Solanart.io, a leading SOL NFT marketplace has over 500K in sales and over $4M in volume since inception in mid-2021, signifying the eagerness amongst NFT collectors to transact in SOL. Other NFT projects using SOL include Aurory with 526.6K SOL in trades and SolPunks with 404.6K SOL.[10]

Across the NFT market, Ethereum's NFT ecosystem saw 130K unique buyers and 102K unique sellers during October 2021, while Solana hosted 35% of Ethereum's unique buyer numbers and over 50% of the unique sellers.[11] These numbers are positive signs for Solana user adoption in the more mainstream NFT market.

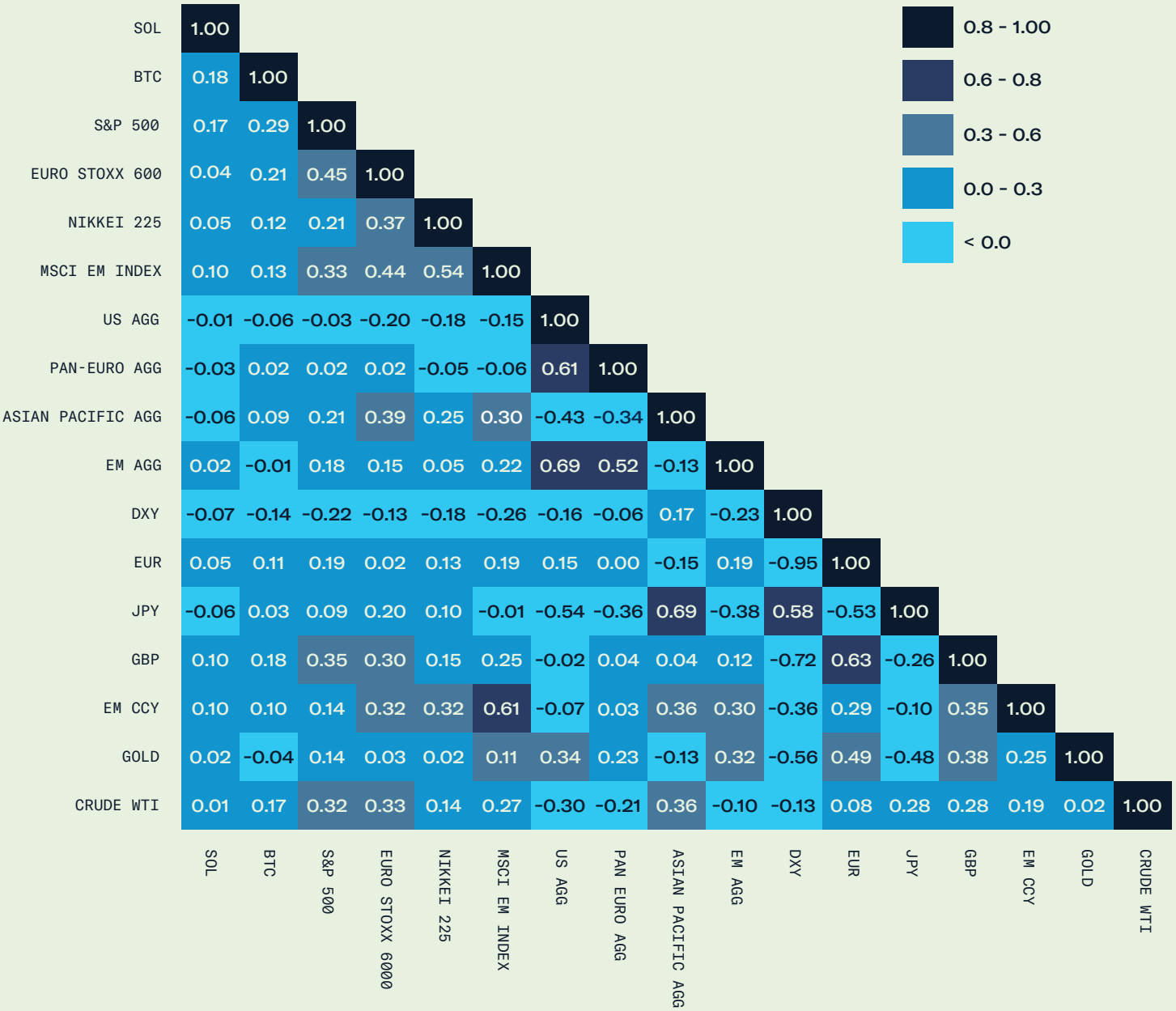
Other active decentralized app use cases for Solana include DeFi open order book exchanges, automated market makers, lending and borrowing platforms, digital payment tools, online gaming, music streaming services, social media platforms, and Decentralized Autonomous Organizations (DAOs).

9) Messari Report, as of 11/1/2021.
10) Solanart.io.
11) Solana.io, as of 1/05/2022.

SOLANA'S ROLE IN THE PORTFOLIO

Given the early stages of the SOL token on the digital asset stage, an investment in SOL should be viewed similarly to other venture-style investments. SOL is an opportunity to invest in Web3 and the future of the internet. And while we believe more than one winner will exist in the digital asset space, Solana delivers key advantages on speed and cost, making it a vibrant ecosystem for rapid decentralized development. Investing in SOL, which suffers from periodic outages, may be akin to an investment in an early-stage internet. While there remains risk and volatility, the overall world of Web3 is presenting itself as more inevitable.

SOLANA CORRELATION WITH MAJOR INDICES/CURRENCIES



Source: Galaxy Digital Research as of 1/28/2022.

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