

Solana

The High-Speed, Low-Cost
Blockchain Rival

MARCH 2025

Understanding Solana & SOL

What is Solana?



Solana is a high-speed, low-cost programmable settlement network blockchain designed to support smart contracts and decentralized applications (dApps)—similar to Ethereum, but with a strong focus on scalability, efficiency, and affordability.

A blockchain is a decentralized digital ledger that records transactions across a network of computers in a secure and transparent way. Unlike traditional systems controlled by banks or companies, blockchains are trustless, tamper-proof, and operate without a central authority. Unlike older blockchains that struggle with slow speeds and high fees, Solana can handle thousands of transactions per second while keeping costs extremely low. This makes it an ideal platform for building financial services, games, social networks, and more in a decentralized and censorship-resistant way. Solana uses a combination of innovative technologies to process transactions faster and cheaper than most blockchains.

How Does Solana Work?

- **Validators Keep the Network Secure:** A global network of computers (validators) work together to verify transactions and maintain the blockchain, ensuring security, transparency, and decentralization.
- **Smart Contracts Automate Processes:** Solana supports self-executing contracts (smart contracts), which automate agreements without middlemen—powering everything from decentralized finance (DeFi) applications to NFT marketplaces and games.
- **SOL Token Powers the Ecosystem:** SOL is the native cryptocurrency of Solana, used to: Pay for transaction fees (which are much lower than Ethereum's). Stake and participate in the blockchain's security while earning rewards. Serve as a digital currency for payments and decentralized applications.

What Makes Solana Different?

- **Unmatched Speed:** Solana uses a groundbreaking system called Proof of History (PoH) combined with Proof of Stake (PoS) to process thousands of transactions per second (TPS)—compared to Ethereum's 13 TPS.
- **Ultra-Low Fees:** On Solana, transactions cost fractions of a cent (~\$0.01), while Ethereum transactions can cost \$5 or more.
- **Scalability Without Sacrificing Decentralization:** Solana's technology allows it to scale while remaining secure and decentralized, making it ideal for large-scale applications.
- **Ideal for Developers and Businesses:** From finance and gaming to real estate and social media, Solana's infrastructure empowers developers to create applications that are fast, affordable, and resistant to censorship.

What is SOL?



SOL Fuels a New Era of Digital Contracts and Apps

SOL is the native cryptocurrency of the Solana blockchain, a high-performance, decentralized platform designed for fast, secure, and scalable applications. Launched in 2020 by Anatoly Yakovenko, Solana has rapidly gained traction in the blockchain space, becoming one of the leading platforms for decentralized finance (DeFi), gaming, and other decentralized applications (dApps). Solana was built to address the scalability issues of earlier blockchains like Ethereum. It introduces innovative technologies such as Proof of History (PoH) combined with Proof of Stake (PoS) to achieve unparalleled transaction throughput and efficiency, making it a preferred choice for developers building high-performance dApps.

SOL serves multiple functions within the Solana ecosystem. It acts as a digital currency, enabling peer-to-peer transactions without the need for intermediaries. Additionally, SOL is used to pay for transaction fees and computational services on the network. When users execute smart contracts or perform transactions, they pay fees in SOL, which are significantly lower than those on other platforms due to Solana's high efficiency. Solana's consensus mechanism allows users to "stake" their SOL tokens, securing the network while earning rewards for their participation, incentivizing active involvement in the ecosystem.

The Solana protocol relies on several key components:

- Smart contracts: Self-executing agreements with the terms directly written into code, eliminating the need for intermediaries and enabling trustless interactions.
- Proof of History (PoH): A unique consensus mechanism that timestamps transactions, enabling the network to process thousands of transactions per second.
- Solana Program Library (SPL): A collection of tools and libraries that developers use to build and deploy dApps efficiently on the Solana network.

Source: Kraken

Investing in SOL

Investment Thesis: A Scalable Smart Contract Platform



The investment thesis for SOL and Solana is based on its position as a decentralized smart contract platform capable of executing any transaction that can be algorithmically defined. Solana's ability to process transactions in parallel allows for fast settlement times and high throughput. The layer-1 scalability that Solana offers positions it to capture market share from other settlement layers in payments, decentralized finance, and decentralized physical infrastructure networks. Additionally, Solana's tokenomics creates an incentive for token holders through staking rewards and a fee-burning mechanism that reduces the circulating supply. This creates fundamental value for SOL, as the token passes all of the network's fee revenue through to holders.

Next, we will outline how the following points translate into how Solana will power the next generation of applications built for the decentralized web.

Smart Contract Platform



A decentralized environment, enabling the creation and execution of self-executing contracts and decentralized applications.

Scalability



The ability to handle more transactions as demand grows, without compromising speed, security, or decentralization.

Tokenomics



The blockchain's economic model, focusing on token design, distribution, and incentives to ensure network growth and stability.

Fundamental Value

$$\sum \frac{CF}{(1+r)^t}$$

The intrinsic worth of an asset based on its ability to generate and sustain future cash flows.

Solana is the Foundation for Scalable DeFi and Beyond



The High-Throughput Player in the Decentralized Web

Total Addressable Market (TAM) quantifies the revenue opportunity available for a product or service, assuming maximum market penetration under ideal conditions. First-generation blockchains, like Bitcoin, primarily focused on secure, decentralized monetary transactions. Second-generation blockchains like Solana function as programmable settlement layers, aiming to expand their TAM by leveraging smart contracts.

Solana is a next-generation smart contract platform designed to achieve the highest possible throughput while maintaining security and decentralization, similar to Ethereum. Solana’s smart contracts, which are self-executing agreements on the blockchain, have proven to be effective for decentralized exchanges (DEXs) and payment systems, thanks to their high throughput and rapid execution.

Solana’s emerging use cases extend far beyond DeFi and payments, with a significant emphasis on decentralized physical infrastructure networks (DePIN). DePIN systems manage and coordinate physical assets and services through blockchain technology, enabling decentralized ownership and operation. Cloud computing serves as a prime example of DePIN’s potential, requiring massive data processing that could be augmented by a decentralized network of computers. Additionally, Solana’s high-performance capabilities make it an ideal platform for gaming, where real-time interactions are crucial. These varied applications highlight Solana’s versatility and its potential to be a key player among programmable layer-1 blockchains, serving a diverse array of industries and use cases.

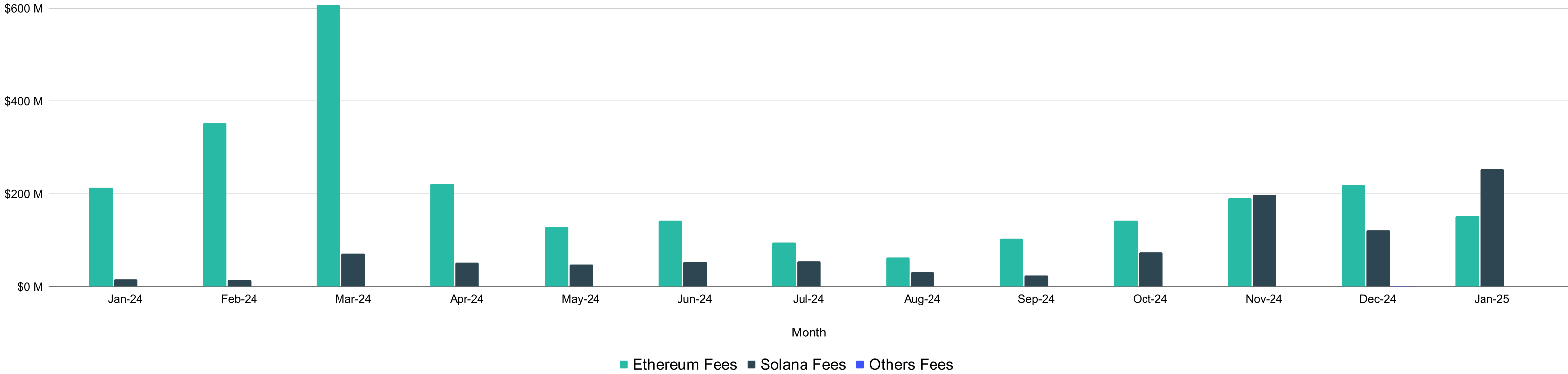
	Traditional Systems	Activity on Solana
CAPITAL FORMATION	\$127.3B Global IPOs, 2024	\$1.8B Token Launches, 2024
TRADING	\$160.6T Global Equity Trading Volume, 2023	\$2.7T DeX Volume, LTM
DEPIN	18.2B Total IOT Devices, 2024	3.5M IoT Devices February 17th

Sources: CF Benchmarks, Dune Analytics, Statista, World Federation of Exchanges 2023 Market Highlights Report, DePINscan.io

Solana Dominates ‘Programmable’ Network Revenue



Monthly Total Fees (Side-by-Side) from 1/1/2024 to 1/31/2025



Smart contract platforms generate revenue from the fees users pay whenever they interact with the underlying blockchain. These fees, often referred to as “transaction fees,” are distributed to the network’s validators as compensation for securing the chain and processing each transaction. From an investment perspective, a platform’s fee revenue can be viewed as an indicator of both the network’s utility and its user adoption: more users and more transactions tend to drive higher overall fees, thereby increasing the potential return for token holders who support the network via staking.

Solana’s approach to revenue generation centers on its monolithic approach to scaling, which prioritizes high transaction throughput on the settlement network (layer-1) while keeping fees per interaction to a minimum. By enabling swift and low-cost transactions, Solana has attracted a growing user base, pushing its share of total fees among layer-1 blockchains from 6.7% in January 2024 to 62.5% by January 2025. This shift illustrates how Solana’s strategy of rapid settlement, minimal transaction costs, and liquidity concentration can stimulate network activity, ultimately boosting its fee-based revenue despite having the lowest fees per transaction among major layer-1s.

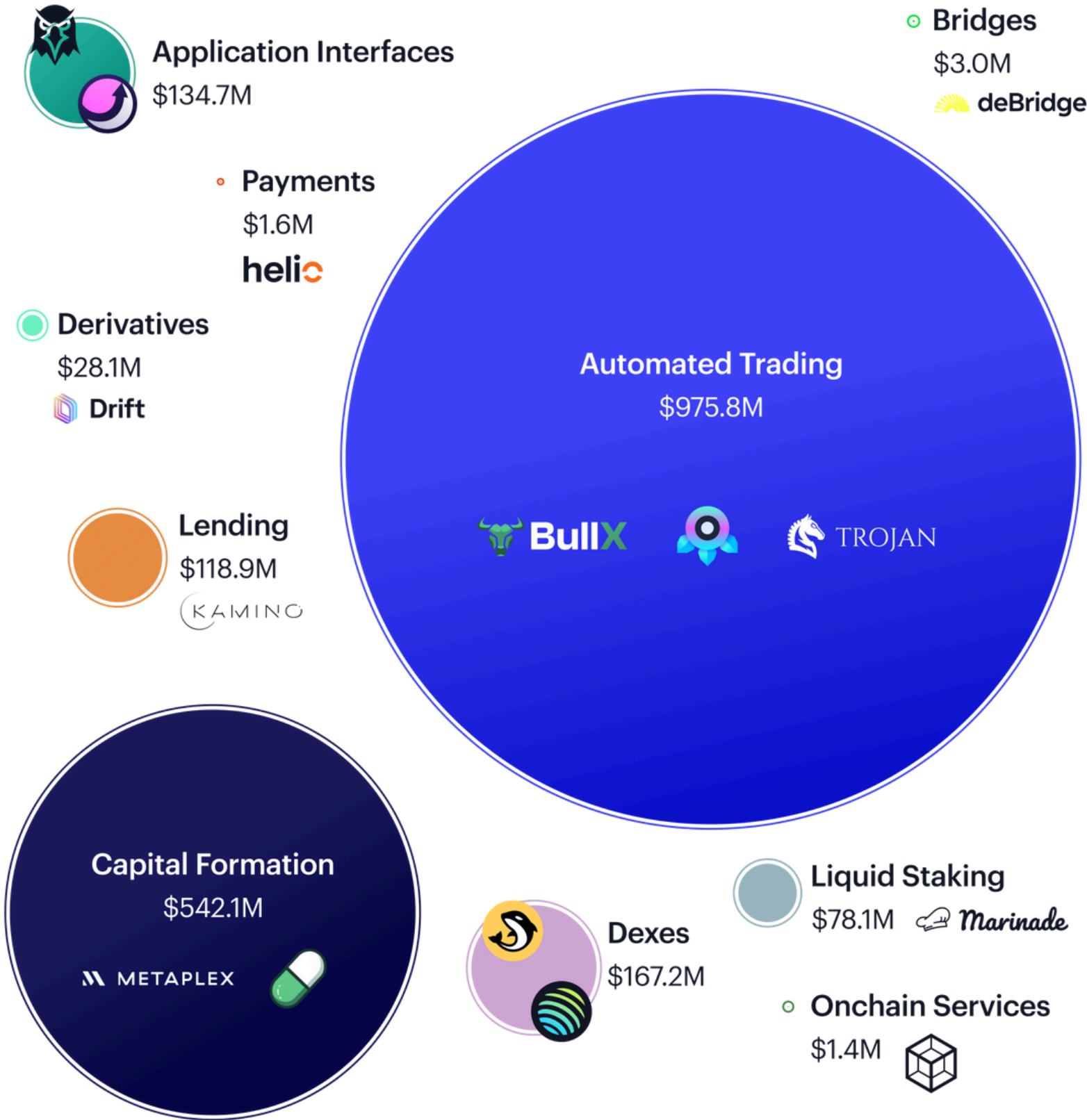
Source: CF Benchmarks, as of January 31, 2025

Solana Found Product Market Fit With Traders



The Solana ecosystem has evolved into a robust environment supporting a wide range of on-chain protocols, primarily focused on token launches and trading. Designed for high throughput and extremely low transaction fees, Solana has become a preferred platform for digital asset issuers. Token launchpads, which facilitate the creation and distribution of new digital assets by connecting project developers with early adopters, have emerged as key components of this ecosystem. For example, Pump.fun has generated over \$500 million in fees in the last twelve months (LTM). In addition to protocol-level fee generation, developers are also profiting by building front-end interfaces for Solana applications. Moonshot and DexScreener, for instance, have collectively earned nearly \$120 million in fees over the same period. These figures not only demonstrate the viability of high transaction volumes but also underscore the benefits of the improvements in user experience that Solana enables.

The impressive revenues protocols generate on-chain are a result of Solana’s efficiency, ease of use, and high throughput, which keep average transaction fees under one cent. With liquidity consolidated on the layer-1 network, users benefit from a seamless, unfragmented experience. More than five million daily active addresses engage with the network at costs competitive with layer-2 scaling solutions on other blockchains. While Solana’s higher hardware requirements result in fewer validators compared to some other blockchains, it maintains sufficient decentralization to ensure network resilience. These factors collectively highlight a thriving ecosystem that continues to adapt to the evolving demands of the digital asset landscape.



Source: Dune Analytics, CF Benchmarks, DeFiLlama, as of February 17, 2025

Solana's High Throughput Unlocks Value



Proof of Stake (PoS) is a consensus mechanism used by blockchain networks to validate transactions and secure the network. In PoS, validators are chosen to produce blocks and confirm transactions based on the number of tokens they hold and are willing to "stake" as collateral.

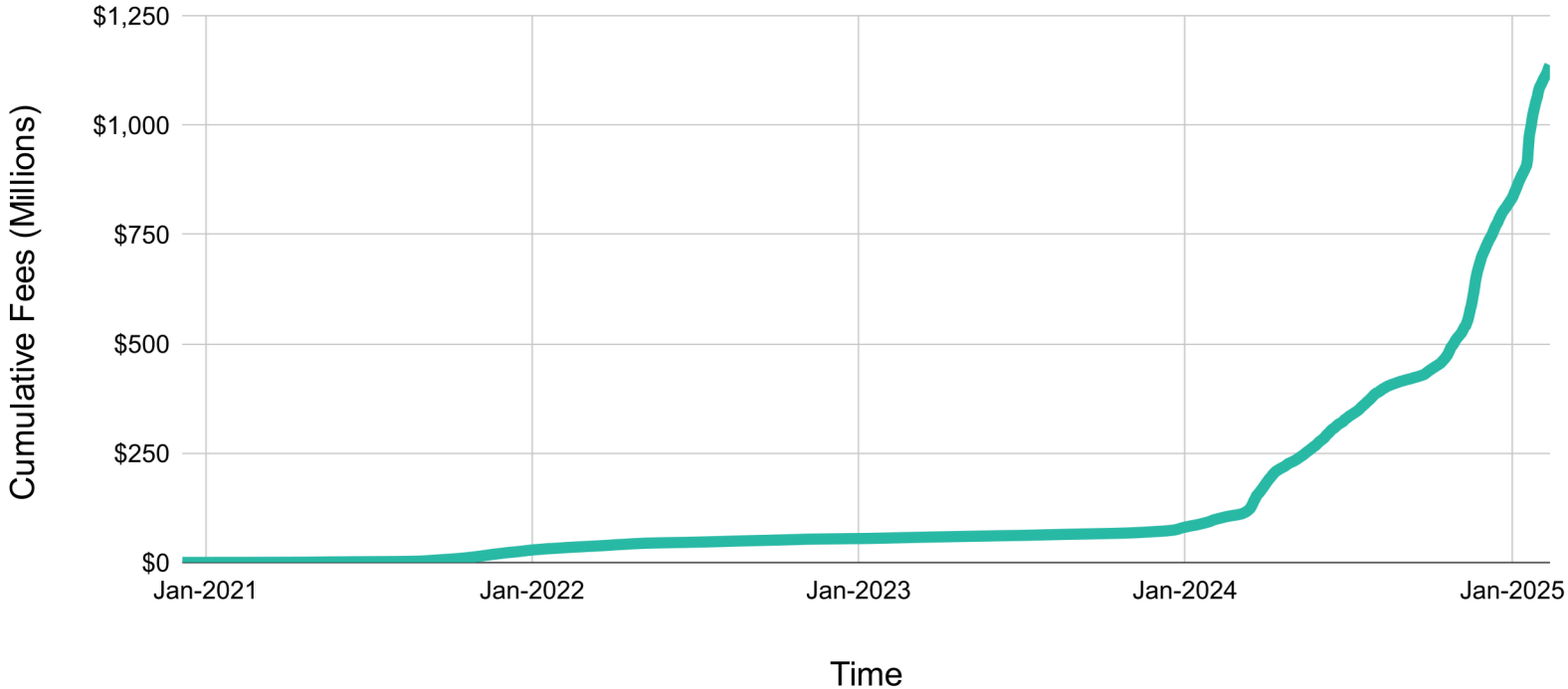
Staking on Solana allows holders of SOL, the native token of the Solana blockchain, to participate in the network's security and consensus mechanism while earning rewards. SOL holders delegate their tokens to validators, and in return, stakers receive a portion of the rewards generated by the network. These rewards are distributed based on the amount of SOL staked and the performance of the validator.

Solana also rewards holders through its fee-burning mechanism. When a user transacts on Solana, half of the fee they pay to validators is removed from the Solana supply. As network activity increases, the burning of SOL can reduce the supply inflation rate. Solana's inflation rate is designed to decrease by 15% annually until it reaches a stable 1.5% total supply inflation. As the inflation rate falls, Solana may even become deflationary due to this fee burn.

The intrinsic value of Solana and its native cryptocurrency, SOL, stems from the platform's ability to generate fees from its growing ecosystem of decentralized applications (dApps) and smart contracts. As the network has expanded, cumulative network fees have surged to over \$1.1 billion, growing approximately 36.8% year-to-date (YTD). This increasing demand for SOL to power transactions and dApp interactions underscores its fundamental value as a key component of the Solana ecosystem.

Source: CF Benchmark, as of February 17, 2025
 Supply inflation is inclusive of token unlocks

Solana's Cumulative Fee Revenue Over Time



Solana's Technological Edge

	Solana	Ethereum
Average Cost per Transaction (1Y)	\$0.01	\$5.24
Transactions Per Second (1Y)	3252	13
Staking Reward Rate	6.9%	2.7%
Inflation Rate (1Y)	11.6%	0.3%

Solana's Network Effects Drive Innovation



Network effects refer to the phenomenon where the value of a product or service increases as more individuals participate. In the context of blockchain, this means that as more users join a network like Solana, the overall utility and appeal of the ecosystem grow exponentially. A larger user base attracts developers, which in turn encourages the creation of more applications, further enhancing the platform's value: a dynamic similar to what is observed in successful Web2 platforms.

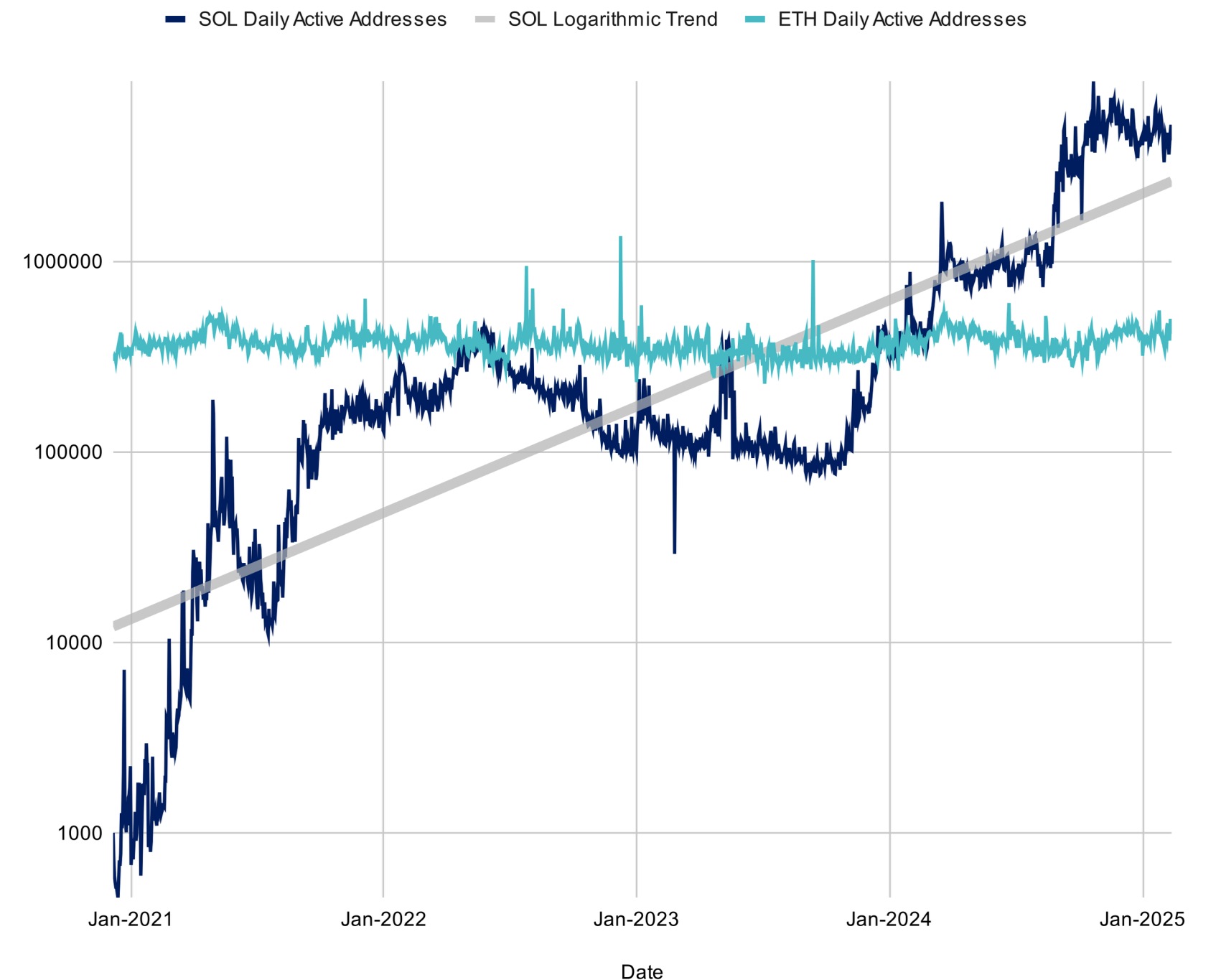
Solana's network effects are driven by three key growth flywheels.

- Fast settlement speeds and superior user experience (UX) draw in an increasing number of users, setting a strong foundation for adoption.
- A robust developer community has emerged, with growing engagement leading to a proliferation of decentralized applications (DApps) that reinforce Solana's ecosystem.
- Growing on-chain liquidity within decentralized finance (DeFi) protocols attracts traders and additional DeFi builders, cementing the platform's market position.

These elements create a reinforcing feedback loop: more users lead to greater developer activity, which drives further liquidity expansion and the development of innovative applications, thereby perpetuating the cycle of growth.

Our illustration highlights the active addresses on Solana, which serves as a proxy for daily active users. Daily active user growth on Solana translates into more transactions and smart contracts being executed, which creates an increased demand for SOL. Alongside the recent rise in SOL's price, the number of users has reached new highs. This continued growth underscores Solana's improving utility and expanding user base.

Solana's Daily Active Addresses Over Time (Log Scale)





Portfolio Construction

Solana is Among the Largest Digital Assets



A Smart Contract Platform with a Growing Market Position

Solana currently holds a market capitalization of almost \$100 billion, representing approximately 3% of the total cryptocurrency market. This market weight is comparable to that of large-cap stocks within traditional equity indices. In the same way that investors include well-established large-cap companies in their portfolios to mirror the broader market, adding Solana as a core digital asset can help align a digital asset portfolio with the overall market dynamics, thereby reducing tracking error.

From an indexing perspective, including Solana makes strategic sense. Equity indices are constructed based on market capitalization, with each component's weight reflecting its relative market importance. By positioning Solana as a core holding within the digital asset sleeve of a diversified portfolio, investors capture a significant and high-growth segment of the market. This mirrors the approach used in equity investing, where a well-diversified index fund includes a mix of large-cap stocks to effectively track the performance of the broader market.

Moreover, Solana's robust network effects, efficient transaction throughput, and strong developer ecosystem reinforce its role as a foundational asset in the digital asset space. Its integration into a digital asset portfolio not only provides exposure to a rapidly growing layer-1 but also contributes to a more comprehensive representation of the crypto market. This balanced approach, akin to holding a key large-cap component in an equity index, can help investors achieve both diversification and alignment with the overall market performance.

Name (Asset)	Market Cap (\$M)	Weight (CF Broad Cap)
Bitcoin	\$1,936,842	64.6%
ETH	\$ 329,492	11.0%
XRP	\$ 142,635	4.8%
SOL	\$ 95,802	3.2%
DOGE	\$ 39,019	1.3%
ADA	\$ 28,633	1.0%
LINK	\$ 12,214	0.4%
SUI	\$ 11,058	0.4%
AVAX	\$ 10,914	0.4%
XLM	\$ 10,189	0.3%

Source: CF Benchmarks, table represents the top-10 digital assets in the CF Broad Cap Index by free-float market capitalization, as of February 17, 2025

Solana is Correlated to Other Large Digital Assets



	Bitcoin	Ether	Solana	XRP	ADA	CF Ultra Cap 5 Index	Global Equities	Global Bonds
Bitcoin	1.00	0.80	0.72	0.54	0.68	0.94	0.26	0.09
Ether	0.80	1.00	0.54	0.49	0.67	0.86	0.36	0.16
Solana	0.72	0.54	1.00	0.43	0.61	0.69	0.23	0.09
XRP	0.54	0.49	0.43	1.00	0.75	0.57	0.18	0.07
ADA	0.68	0.67	0.61	0.75	1.00	0.72	0.28	0.22
CF Ultra Cap 5 Index	0.94	0.86	0.69	0.57	0.72	1.00	0.27	0.13
Global Equities	0.26	0.36	0.23	0.18	0.28	0.27	1.00	0.54
Global Bonds	0.09	0.16	0.09	0.07	0.22	0.13	0.54	1.00

The correlation matrix underscores Solana’s potential for diversification in a multi-asset portfolio. It compares Solana (SOL) to Bitcoin (BTC), Ether (ETH), Ripple’s XRP, Cardano (ADA), the CF Ultra Cap 5 Index, global equities, and global bonds, revealing a correlation to other digital assets but lower correlations with other asset classes. Because SOL’s price movements have historically had low correlation with equities and bonds, it can help reduce volatility and hedge against sector-specific downturns.

Meanwhile, SOL’s higher correlation with the rest of the digital asset class is reflective of its shared growth drivers and risk factors. This dual nature positions SOL as both a distinct element in a multi-asset strategy and a representative holding within the broader cryptocurrency ecosystem. By balancing correlations between digital assets and traditional instruments, SOL can reduce overall portfolio volatility while preserving exposure to the rapidly evolving crypto landscape. Such characteristics underscore the importance of considering SOL as a strategic addition to multi-asset portfolios, particularly for investors seeking alternative sources of growth.

Source: CF Benchmarks, Bloomberg, weekly correlations are calculated on price return indices over the past 4 years, as of January 31, 2025

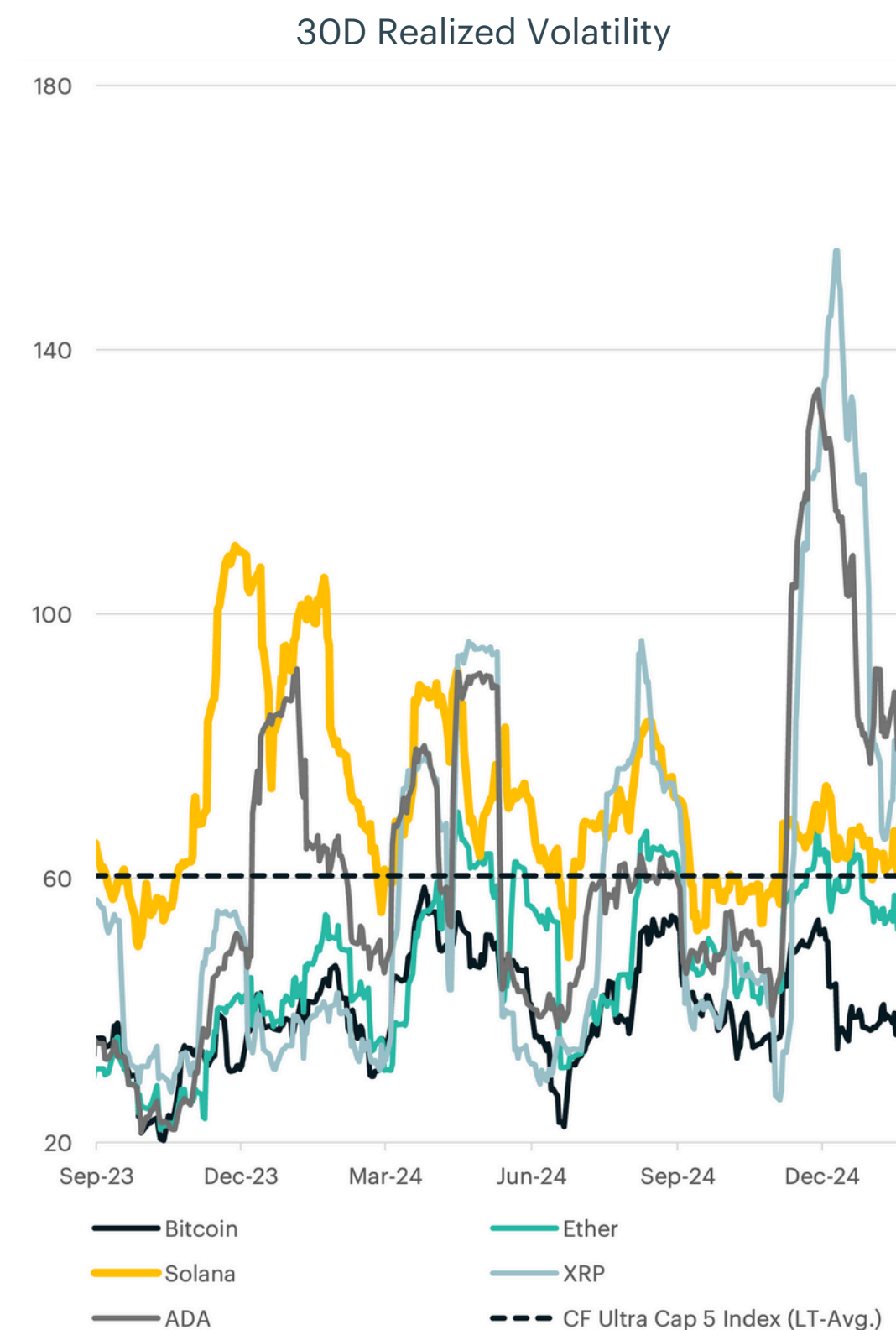
As a Less Mature Asset, Solana has High Volatility



The digital asset market exhibits varying volatility profiles that enable investors to tailor risk exposures in much the same way as they would in a portfolio of equities. In traditional portfolios, selecting assets with distinct volatility characteristics can help manage overall portfolio risk and capture targeted beta exposures. Similarly, in the crypto space, differences in volatility among major digital assets allow portfolio managers to strategically adjust their allocations to achieve desired outcomes.

A rolling 365-day volatility chart comparing Solana (SOL), Bitcoin (BTC), and Ether (ETH) underscores these differences. Despite high correlations that indicate common return drivers, each asset demonstrates a unique volatility profile. For example, as of January 31, Solana's 30-day realized volatility stands at 77.9, compared to 55.7 for Ether and 37.9 for Bitcoin. This significant variation in volatility suggests that while these digital assets are influenced by similar market factors, they respond to changing market conditions with differing degrees of intensity.

These distinctions in volatility directly influence the beta of each asset. Solana's higher volatility is reflected in its beta to Bitcoin, which sits at approximately 1.5 based on its weekly price movements over the last four years. This elevated beta indicates that Solana tends to experience more pronounced price movements than Bitcoin as macroeconomic variables affect the cryptocurrency asset class. Consequently, portfolio managers have a tactical opportunity: by adjusting their exposure within the asset class, they can alter the beta of their digital asset portfolios. This strategy is analogous to tilting an equity portfolio towards higher beta stocks to capture greater market upside during bullish periods, while still benefiting from diversification across the asset class. Understanding these volatility profiles and their impact on beta is crucial for making tactical adjustments to a digital asset portfolio to allow investors to capitalize on shifts in the crypto landscape.

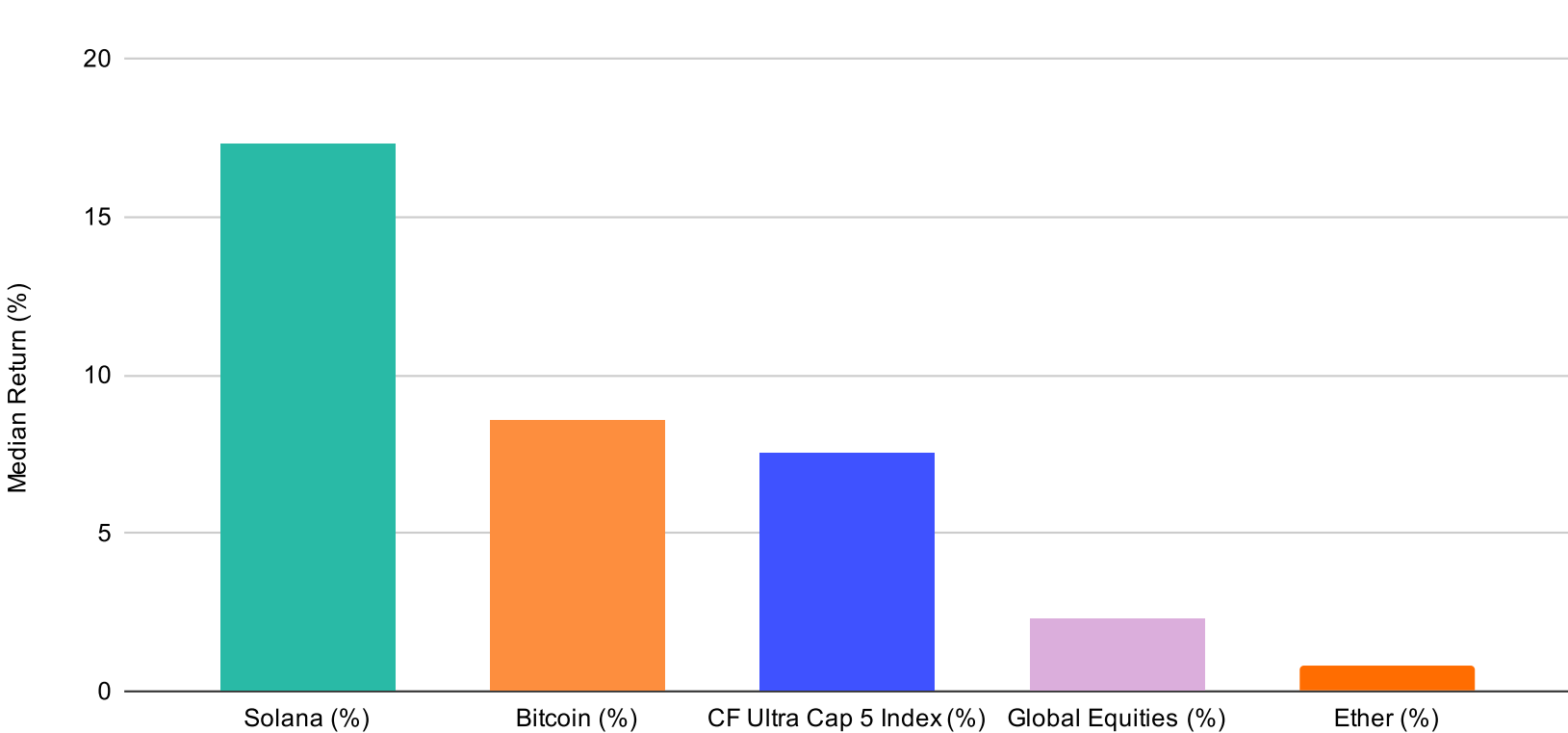


Source: CF Benchmarks, metrics shown are the rolling 30-day realized volatility, Bloomberg, as of March 1, 2025

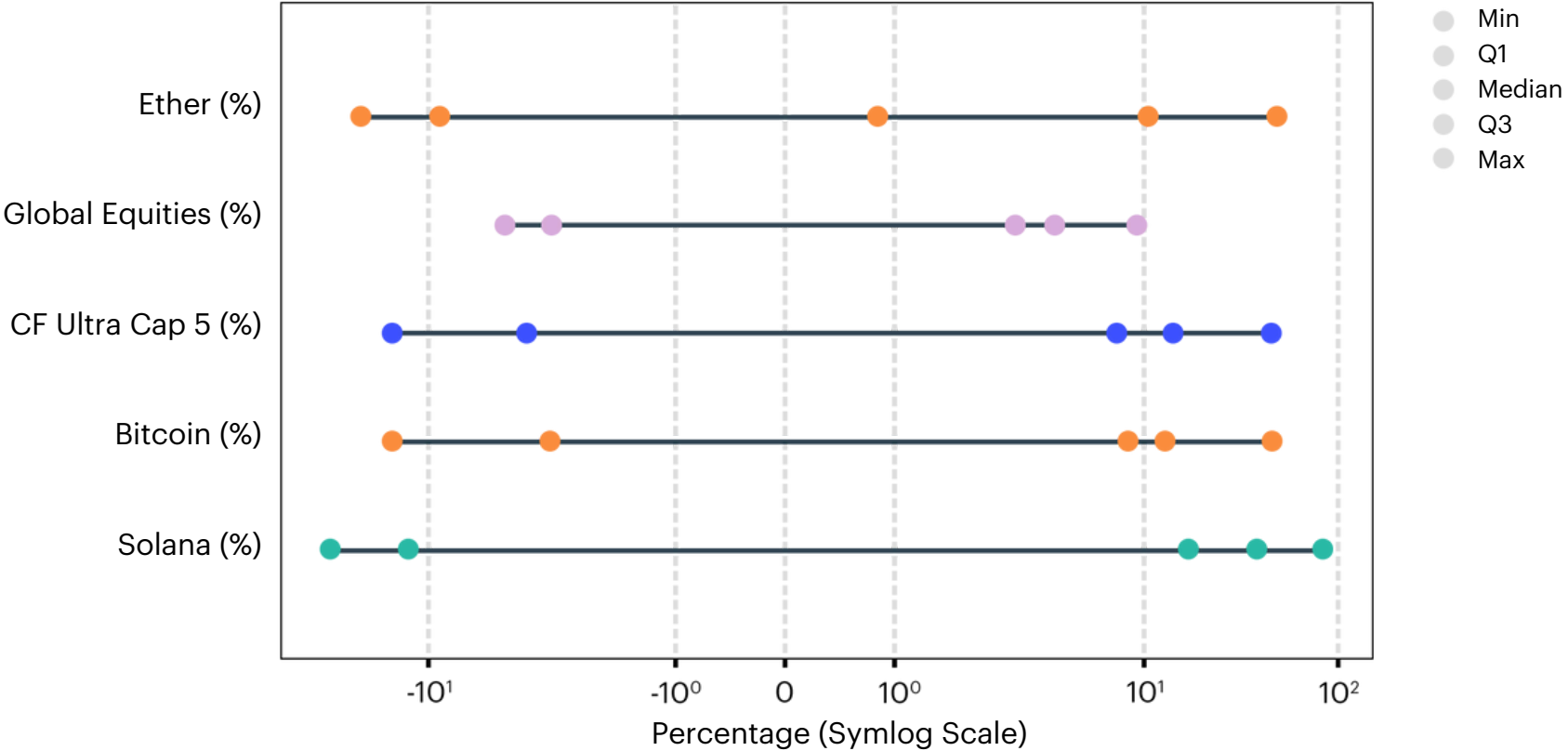
High Volatility has Resulted in Asymmetric Returns



Median Values for Different Categories



Box Plot (Min, Q1, Median, Q3, Max)



Solana (SOL) exhibits an asymmetric return profile, a characteristic prevalent across the digital asset class. Unlike traditional asset classes, which typically follow a leptokurtic distribution, digital assets like Solana display a positively skewed return distribution. This asymmetry is particularly evident when comparing Solana’s return profile with other cryptocurrencies and global equities. While digital assets broadly share similar return characteristics, global equities demonstrate far less variability. Over the observation period, global equities exhibited an interquartile range (IQR) from -2.34% to 3.64% and a median monthly return of 2.28%.

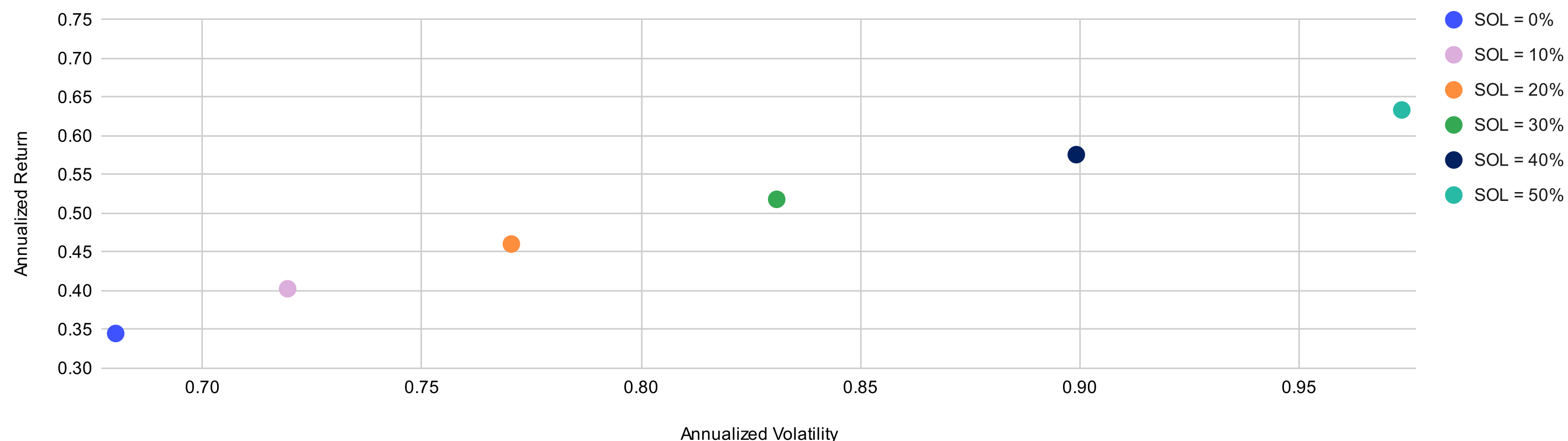
As the least mature asset in this comparison, Solana’s IQR extends from a first quartile of -12.68% to a third quartile of 39.26%, with a median monthly return of 17.29%. In contrast, the more established assets, Bitcoin and Ether, report median monthly returns of 8.57% and 0.84%, respectively, reflecting their relative volatility and market maturity. For those willing to gain exposure to a more nascent crypto asset, Solana offers the potential for substantial returns with a material increase in downside risk. This unique return profile makes Solana a compelling addition for portfolios seeking to gain broader exposure to the growth potential of the digital asset space.

Source: CF Benchmarks, Bloomberg, observation period begins on August 31, 2023, as of January 31, 2025

In a Portfolio of Digital Assets, SOL is Constructive



Portfolios with Fixed SOL Allocations and Equal Bitcoin/Ether Weights



Incorporating Solana (SOL) into a digital asset portfolio already exposed to Bitcoin and Ether can enhance both absolute and risk-adjusted returns. The attached analysis illustrates how incremental allocations to SOL, ranging from 0% to 50%, historically increased the portfolio’s annualized return from approximately 34.5% to 63.4%. While this higher return comes with increased volatility, rising from 68.0% to 97.3%, the portfolio’s Sharpe ratio also improved from 0.51 to 0.65. This upward trend in risk-adjusted performance suggests that each additional unit of risk introduced by SOL was more than compensated by incremental gains.

This improvement can be partly attributed to SOL’s relative immaturity as an asset. Its recent launch, coupled with rapid network growth, has driven outsized returns in recent years. These factors may help differentiate its performance profile from Bitcoin and Ether, offering potential diversification benefits. By broadening the portfolio’s exposure to diverse use cases and technological approaches, investors can mitigate idiosyncratic risks while tapping into a wider spectrum of returns.

Solana: The High-Speed, Low-Cost Challenger in Programmable Blockchains

- Solana is a next-generation blockchain designed for high-speed, low-cost transactions, supporting smart contracts and decentralized applications (dApps). Unlike Ethereum, which faces network congestion and high transaction fees, Solana introduces a unique combination of Proof of History (PoH) and Proof of Stake (PoS) to process thousands of transactions per second efficiently. This makes it an attractive alternative for developers, businesses, and users looking for a scalable and cost-effective blockchain solution. By eliminating bottlenecks common in older blockchains, Solana has positioned itself as a leader in decentralized finance (DeFi), gaming, and Web3 infrastructure.
- At the core of Solana's economy is SOL, its native cryptocurrency, which is used for transaction fees, staking rewards, and network security. Unlike Ethereum's Layer-2 scaling solutions, Solana employs a monolithic scaling approach, meaning all transactions are processed directly on its Layer-1 blockchain without requiring off-chain solutions. This design helps avoid fragmentation, improves network efficiency, and ensures liquidity concentration remains high. As a result, over five million daily active addresses are now engaging with the network, significantly increasing Solana's market share of Layer-1 transaction fees. Its low-cost and high-speed execution have also made it a preferred platform for traders and developers, with token launch platforms and trading interfaces generating hundreds of millions in protocol fees annually.
- From an investment perspective, Solana has rapidly established itself as a top-tier digital asset, with a market capitalization approaching \$100 billion. While highly volatile, its asymmetric return profile suggests substantial upside potential for investors. Although Solana's price often correlates with Bitcoin and Ethereum, its lower correlation with traditional assets like equities and bonds makes it a valuable diversification tool. Furthermore, Solana's high beta (1.5 relative to Bitcoin) means it is more sensitive to market fluctuations, making it appealing to investors seeking higher-risk, higher-reward opportunities. Its increasing adoption by institutional investors and developers reinforces its role as a key player in the evolving blockchain landscape.
- As a serious competitor to Ethereum, Solana delivers faster transactions, lower fees, and superior scalability, all while maintaining a high degree of decentralization. Its growing ecosystem, strong developer community, and expanding real-world applications—ranging from financial services and DeFi to gaming and decentralized infrastructure—highlight its long-term potential. However, like any emerging technology, Solana faces challenges, including network stability concerns, regulatory scrutiny, and competition from other blockchains. Despite these risks, Solana's ongoing innovation, increasing adoption, and technological advantages suggest it will play a pivotal role in shaping the future of blockchain and Web3.

Appendix

Further Resources



CFB Podcast



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CFB Research & Insights

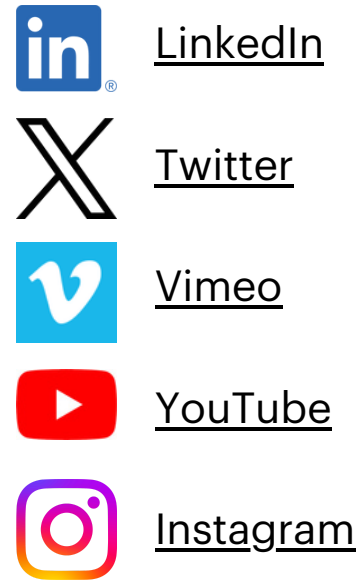
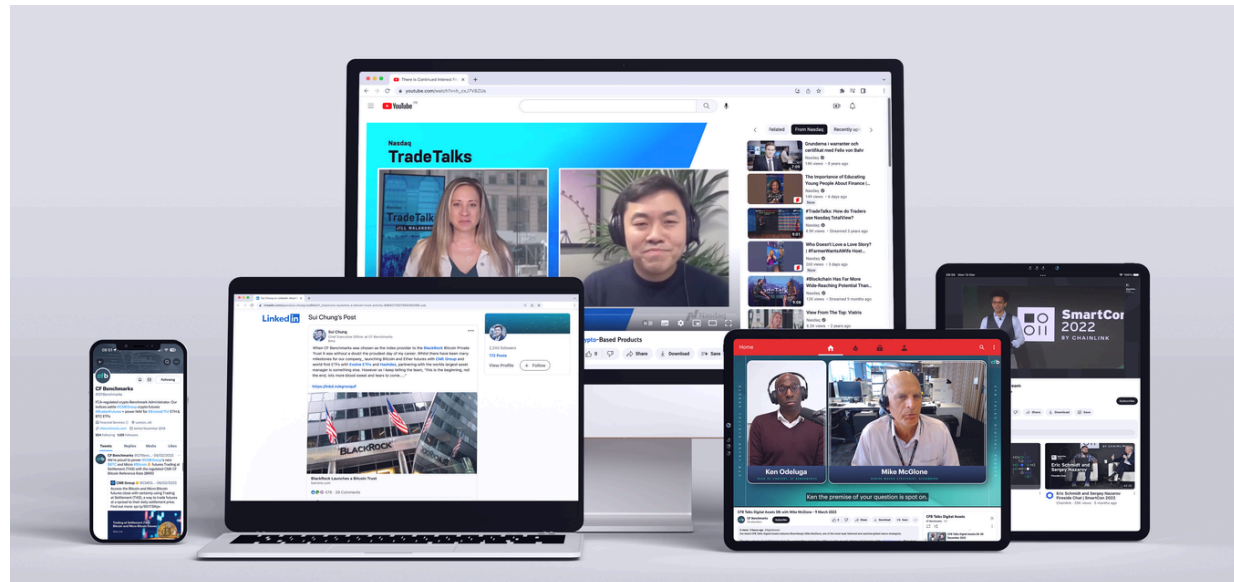
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Further Resources



CFB Social Channels



CF DACS Token Explorer



CFB Indices & Methodologies

For more information about our CF Benchmarks indices and our methodologies, please visit the respective web links:

- [CF Diversified Large Cap Index](#)
- [CF DeFi Composite Index](#)
- [CF Web 3.0 Smart Contract Platforms Index](#)
- [CF Digital Culture Composite Index](#)
- [CF Blockchain Infrastructure Index](#)
- [CF Cryptocurrency Ultra Cap 5 Index](#)
- [CF Broad Cap Index Market Cap Weight](#)
- [CF Broad Cap Index Diversified Weight](#)

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CF Digital Asset Classification Structure



CF Digital Asset Classification Structure

The CF Digital Asset Classification Structure (CF DACS) classifies coins and tokens based on the services that the associated software protocol delivers to end users, grouping assets by the role they play in delivering services to end users. The CF DACS powers CF Benchmarks' sector composite and category portfolio indices and allows users to perform attribution analysis to better understand the fundamental drivers of returns within their digital asset portfolios.



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