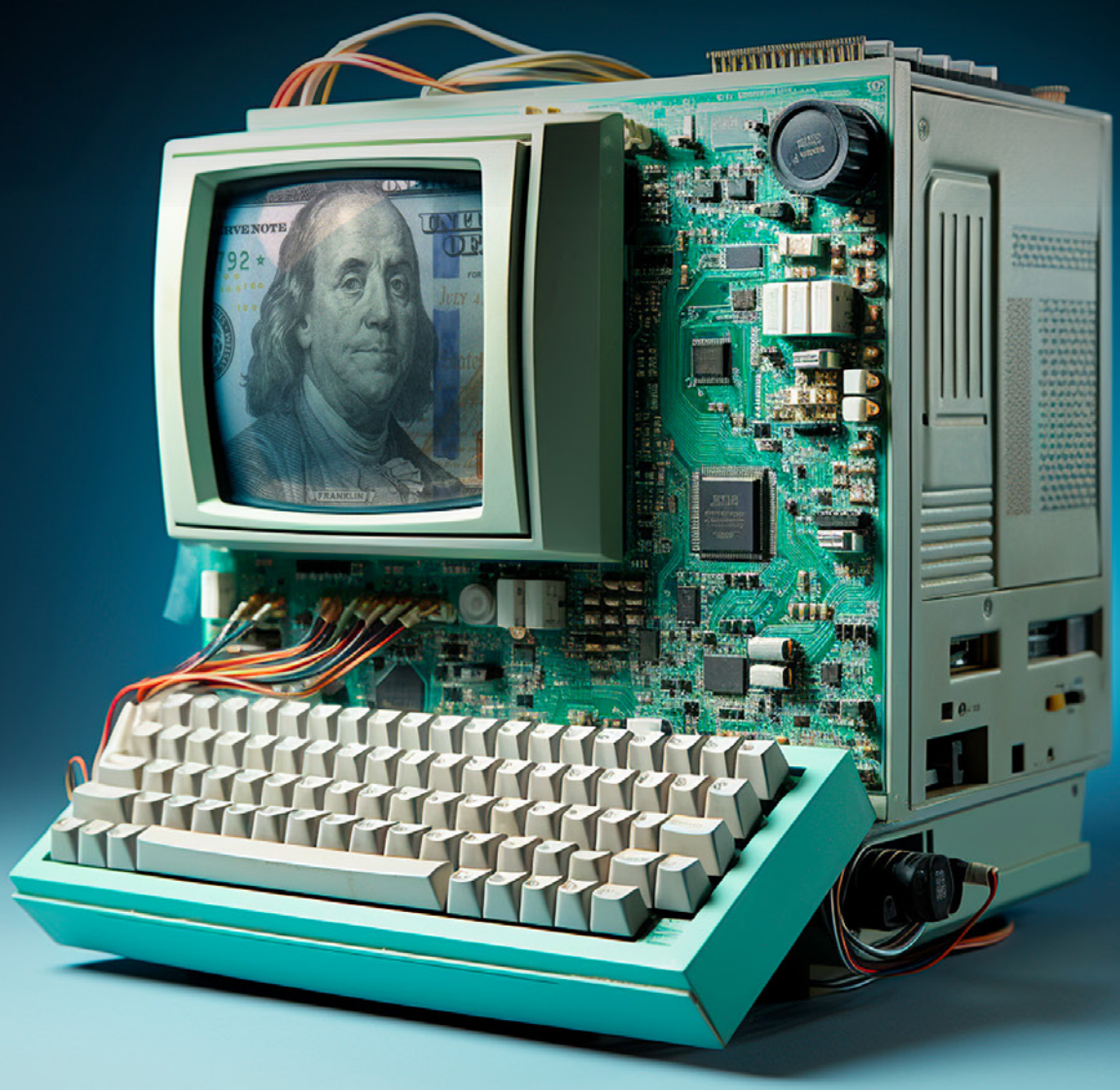
COINMETRICS

DECODING THE DIGITAL DOLLAR

Unraveling the Risks of Stablecoins

By Lucas Nuzzi, Kyle Waters, and the Coin Metrics Team



SUMMARY

Lorem Ipsum enthusiastically formulate error-free catalysts for change with equity invested e-tailers. Progressively target distinctive infomediaries rather than empowered platforms. Credibly engage quality e-tailers whereas backward-compatible leadership skills. Rapidiously re-engineer strategic infrastructures without focused customer service. Collaboratively whiteboard team driven process improvements before impactful platforms. Credibly matrix cross-platform opportunities before covalent action items.

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INTRO TO STABLECOINS

What Are Stablecoins?

Within the broader crypto economy, one particular class of digital assets has captured growing interest due to its unique properties – stablecoins. Stablecoins, as their name suggests, are a type of digital asset designed to maintain a stable value relative to a specific asset or a pool of assets. They are pegged to reserve assets such as the U.S. dollar, euro, gold, or a basket of currencies and offer the promise of the decentralization, security, and speed of cryptocurrencies while aiming to minimize the impact of the price volatility typically associated with them.

Stablecoins serve an array of use cases, particularly in the realm of Decentralized Finance (DeFi), a nascent suite of decentralized financial services. These applications range from providing a medium of exchange and a store of value, to facilitating remittances, serving as a unit of account, and enabling lending and borrowing platforms. Furthermore, they offer an opportunity for unbanked or underbanked populations to access financial services, thereby contributing to financial inclusion globally.

Some of the most common use cases of stablecoins are listed below:

- **Medium of Exchange:** Stablecoins provide a reliable medium of exchange in the crypto economy, permitting seamless and rapid transactions across global borders. They serve as a bridge between the world of cryptocurrencies and traditional fiat currencies.

- **Store of (Stable) Value**: Given their pegging mechanism, stablecoins are intended to be less volatile than traditional cryptocurrencies. They enable users to "park" their assets during times of high volatility without entirely exiting the crypto ecosystem.

- **DeFi Collateral:** Stablecoins are a crucial component of DeFi. They are used as collateral for lending and borrowing platforms, enabling users to earn interest on their holdings. They also facilitate leveraged trading and hedging strategies, and power innovative financial products and services that operate without intermediaries.

- **Quote Asset:** Stablecoins are often used as a quote asset in trading pairs on both centralized and decentralized exchanges (DEXs).

- **Remittances and Cross-Border Payments:** Stablecoins offer a cost-effective, quick, and secure method of sending money across borders, bypassing the traditional banking system. They are especially beneficial in areas where banking infrastructure is poor or non-existent.

- **Programmable Payments**: Through smart contracts, stablecoins can enable programmable payments for various applications, such as recurring payments, automated payouts, and conditional payment within the crypto economy.

Implementations

The implementation of stablecoins most frequently involves the creation of a digital asset whose value is tied to another reserve asset, with the intention of maintaining a steady price. This is achieved through a pegging mechanism which links the value of the stablecoin to the underlying asset. To maintain the peg, various mechanisms are employed depending on the type of stablecoin in question. These mechanisms ensure that for every unit of the stablecoin issued, there is *at least* a corresponding value held in the reserve asset. An essential element of stablecoins is transparency, which is often accomplished through regular audits to verify that the issuer holds the necessary reserves to back the stablecoins in circulation.

- **Fiat-Backed Stablecoins:** These are the most common type of stablecoins, backed 1:1 by traditional fiat currencies like the U.S. dollar or euro. The issuer holds an amount of fiat currency in reserve equivalent to the number of tokens in circulation. Examples of this type include Tether (USDT) and USD Coin (USDC). The value stability of these stablecoins is reliant on the trust that the issuer actually holds the necessary amount of reserve assets.

- **Crypto-Backed Stablecoins:** These are backed by other cryptocurrencies, usually over-collateralized to absorb large price fluctuations in the collateral. Because they are backed by volatile assets, smart contracts are typically used to manage the collateralization ratio and ensure stability. MakerDAO's Dai is an example of a crypto-backed stablecoin, pegged to the U.S. dollar but backed by mostly crypto assets like Ether and other crypto-collateral types.

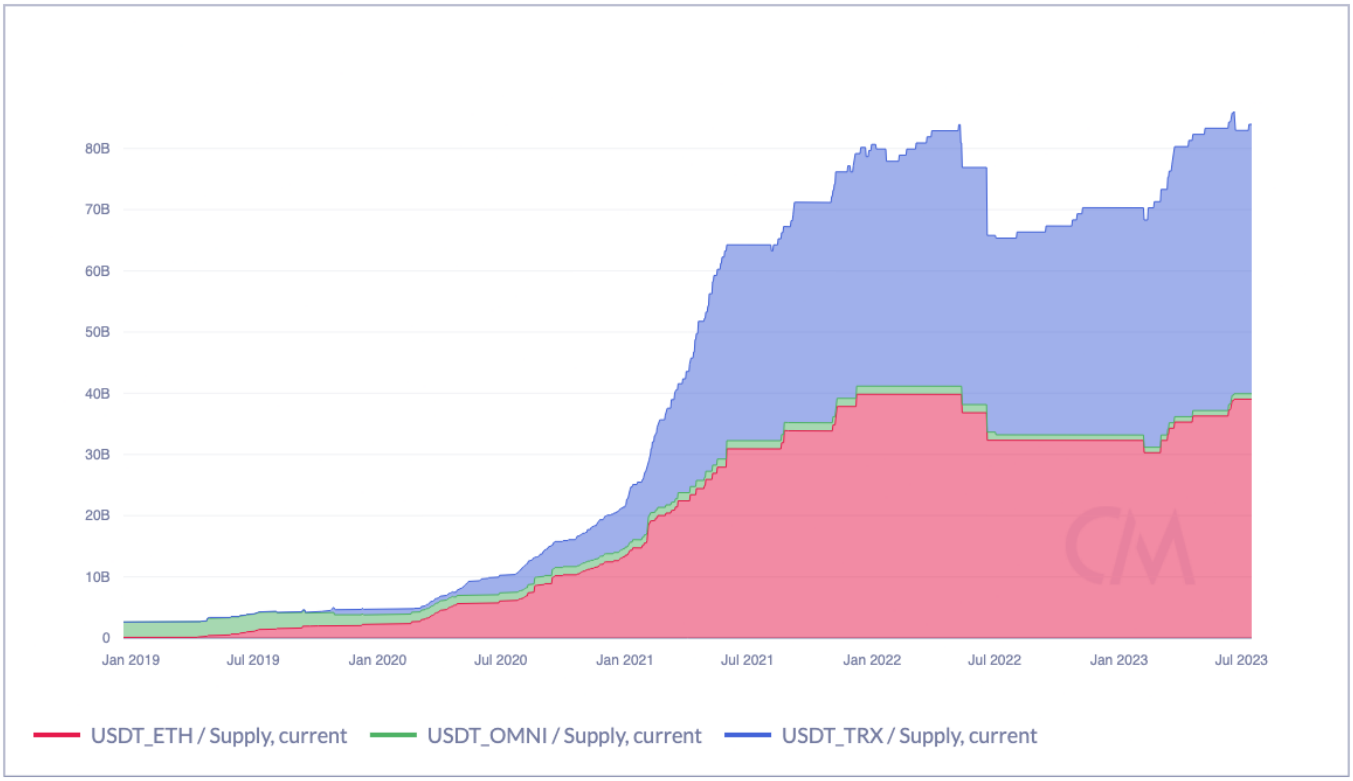
- **Algorithmic Stablecoins:** These are not backed by any reserves but instead use algorithms and sets of smart contracts to automatically adjust the supply of the token in response to changes in demand. This expansion and contraction mechanism aims to keep the stablecoin's price close to its peg. Algorithmic stablecoins, such as Ampleforth (AMPL), offer a different approach to achieving stability, yet they may carry increased risk due to their complexity and the absence of a tangible collateral backing them.

The proper categorization of stablecoins is critical given the variety of mechanisms used to implement them. The categories above were sourced from datonomy™, a new framework for digital assets classification designed to provide investors, service providers, developers, and researchers a way to help monitor market trends, analyze portfolio risk and returns, and help build new products. This framework is a collaboration between Coin Metrics, Goldman Sachs and MSCI and carries the ultimate goal of creating a consistent, standardized way for market participants to analyze the digital assets ecosystem.

One Stablecoin, Many Chains

Another key aspect of stablecoins is that they can be issued across a variety of blockchains, underscoring the flexibility and interoperability of these digital assets. A prime example of this is Tether (USDT), one of the most widely used stablecoins. Tether was initially launched on the Bitcoin blockchain, leveraging the Omni Layer Protocol, a platform for creating and trading custom digital assets on Bitcoin. However, as the Ethereum network grew and offered greater flexibility with its smart contract functionality, Tether was also issued on Ethereum to take advantage of these benefits.

When a stablecoin is issued across multiple blockchains, its total supply essentially becomes the aggregate of the supply across all chains where it exists. This feature can expand the reach of a stablecoin and offer users a choice of platforms with potentially different transaction speeds, costs, and core capabilities. However, it also necessitates a more comprehensive approach to monitor the stablecoin's total activity and supply.



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Coin Metrics helps address this challenge by denoting the blockchain where a token resides with a suffix. For instance, Tether on Ethereum is represented as USDT_ETH while Tether on Tron is denoted by USDT_TRX. By clearly differentiating the various blockchain manifestations of a stablecoin, Coin Metrics enables clients to better understand the stablecoin's activity across different blockchains. This feature empowers users to monitor stablecoin dynamics more holistically and make more informed decisions. After all, the ability to track a stablecoin's activity across multiple blockchains is particularly crucial in evaluating its overall market impact, liquidity, and potential risks, including the risk of de-pegging.

While the issuance of stablecoins has largely been concentrated on public blockchains to date, there is a potential for this landscape to evolve as more institutions engage with the crypto economy. Private blockchains, given their enhanced control, privacy, and permissioning features, could become an attractive platform for institutional-grade stablecoins. As this unfolds, the Coin Metrics approach to differentiate stablecoins by the blockchain on which they exist will become even more critical. This unique capability enables us to offer our clients a more granular and comprehensive understanding of the stablecoin market, including the potential shifts in the landscape towards private blockchains. Coin Metrics is committed to staying at the forefront of these developments, continuously adapting our monitoring and analytical capabilities to reflect the evolving nature of the stablecoin space, thereby empowering our clients to navigate this dynamic market with greater confidence and insight.

STABLECOIN RISKS

Depegging Risk

Downside Depegging

De-pegging risk, or the risk of a stablecoin losing its peg to the underlying asset, presents a critical concern for stablecoin users and investors. This risk fundamentally challenges the very purpose of a stablecoin – to maintain price stability. In particular, downside de-pegging, where the value of the stablecoin drops below its pegged value, often due to the lack of market trust or failed mechanisms of maintaining the peg, can have severe, irreversible consequences. When a stablecoin is no longer seen as equivalent to the underlying asset, it loses its function as a reliable medium of exchange, store of value, or unit of account. Market panic can trigger a rapid downward spiral, as users rush to offload the stablecoin, potentially leading to a 'bank run' scenario. It can result in a significant loss for users holding the stablecoin, disrupt operations in the crypto markets where the stablecoin is used, and in the worst case, lead to the collapse of the stablecoin altogether.

Case Study - USDC

In March 2023, Circle's USD Coin (USDC), a popular stablecoin pegged to the US dollar, experienced a considerable de-pegging event. This occurred in the wake of the collapse of Silicon Valley Bank (SVB), where Circle had tied up approximately 8% of its $40 billion reserve. When news of SVB's financial distress became public, the value of USDC crashed. Though designed to maintain a 1:1 peg with the US dollar, it dropped to a record low of 87 cents.

This event led to a rapid and widespread user migration towards Tether (USDT). The increased demand for USDT resulted in an appreciation of its price, an event called *upside de-pegging*, which we will discuss in the following section. At the same time, USDC's price fell further, reflecting the market's decreased confidence in its stability. This shows how de-pegging risk not only impacts the stablecoin in question, but it can also significantly alter the dynamics of the broader stablecoin market.

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The incident underscores the inherent risks associated with the backing of fiat stablecoins. These types of stablecoins, like banks, are exposed to the risks of the institutions they are associated with or rely upon for maintaining their reserves. Although stablecoins are touted for their on-chain transparency, the reserves are maintained 'off-chain' and necessarily require a degree of trust in the issuer's disclosures and assets. Due to USDC-issuer Circle's reserve composition and reliance on SVB, the bank's sudden collapse created a run on USDC, similar to traditional bank runs.

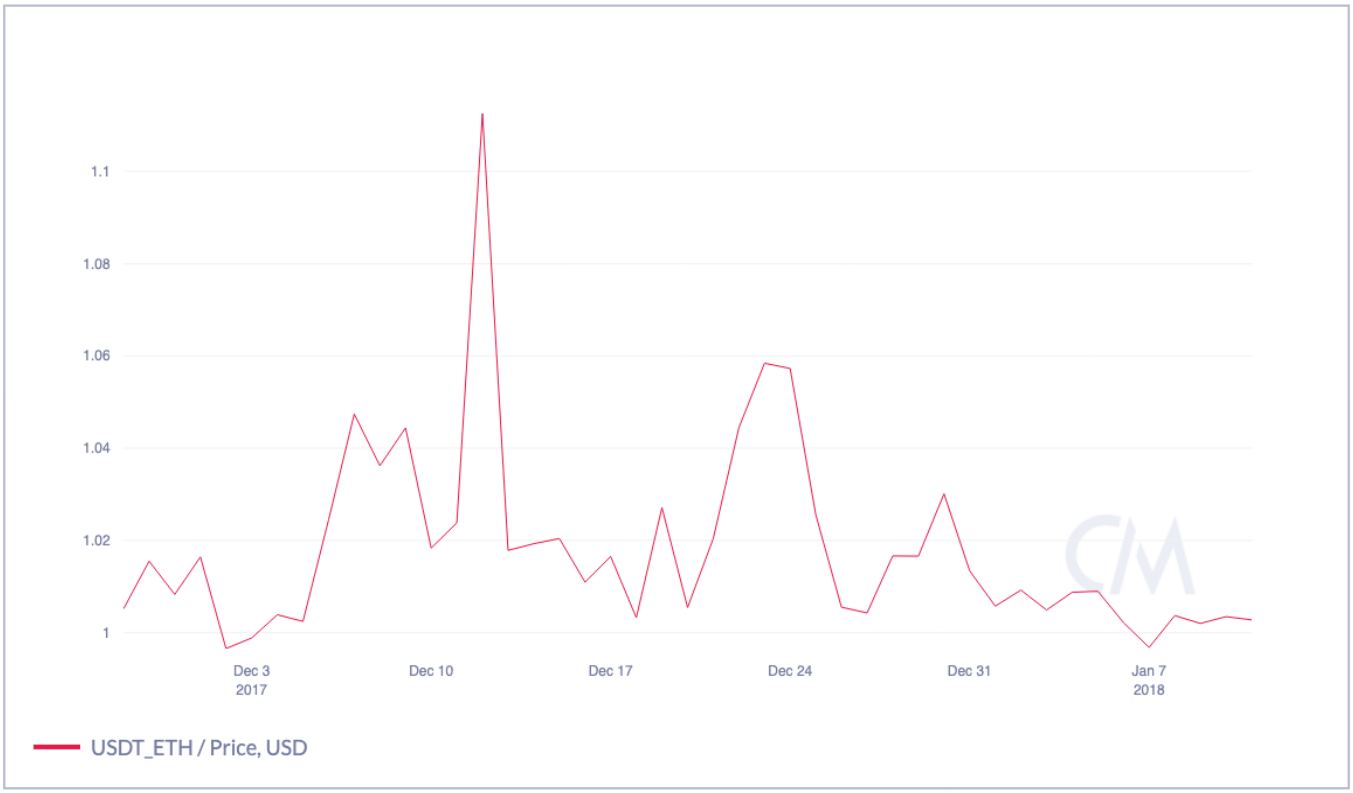
For USDC, this crisis highlighted the need for stablecoin operators to ensure that their reserve strategies are diversified and resilient. The substantial loss of peg to the USD brought about by SVB's failure demonstrated that the continuity and stability of stablecoins are closely tied to the financial health of the institutions holding their reserves. This event has undoubtedly contributed to a reevaluation of risk management strategies among stablecoin operators, particularly in regards to de-pegging risks.

Upside Depegging

As alluded to earlier, upside de-pegging occurs when the value of a stablecoin exceeds its pegged value. While this can also present issues, they are generally less dire. This scenario can occur due to a sudden surge in demand for the stablecoin, possibly driven by market events, regulatory changes, or periods of high volatility in other cryptocurrencies where traders seek safe-haven assets. While it might seem beneficial initially as it presents an opportunity for arbitrage, over time, it can disrupt pricing mechanisms. This is particularly problematic in the world of decentralized finance (DeFi) where stablecoins often play a foundational role. Overpriced stablecoins can distort the pricing of other assets and financial instruments pegged to them or affect yield strategies in DeFi, leading to potential losses for traders and other market participants. Moreover, persistent deviations from the peg, whether to the downside or the upside, could undermine trust in the stablecoin's stability mechanism, affecting its long-term viability.

Case Study - USDT Premium

The collapse of SVB was not the only time USDT traded at a premium. In December 2017, significant market volatility set precedents for the phenomenon of upside de-pegging. This month was marked by several flash crashes, during which Bitcoin's value plummeted over 30% within a day, causing drastic shifts in the market dynamics. Amid this tumultuous market condition, traders sought refuge in USDT, which at the time had a near-monopoly on stablecoins. Market participants were selling their volatile crypto assets and seeking to store their value in a stable medium, which led to a considerable increase in USDT's price over the course of that month.



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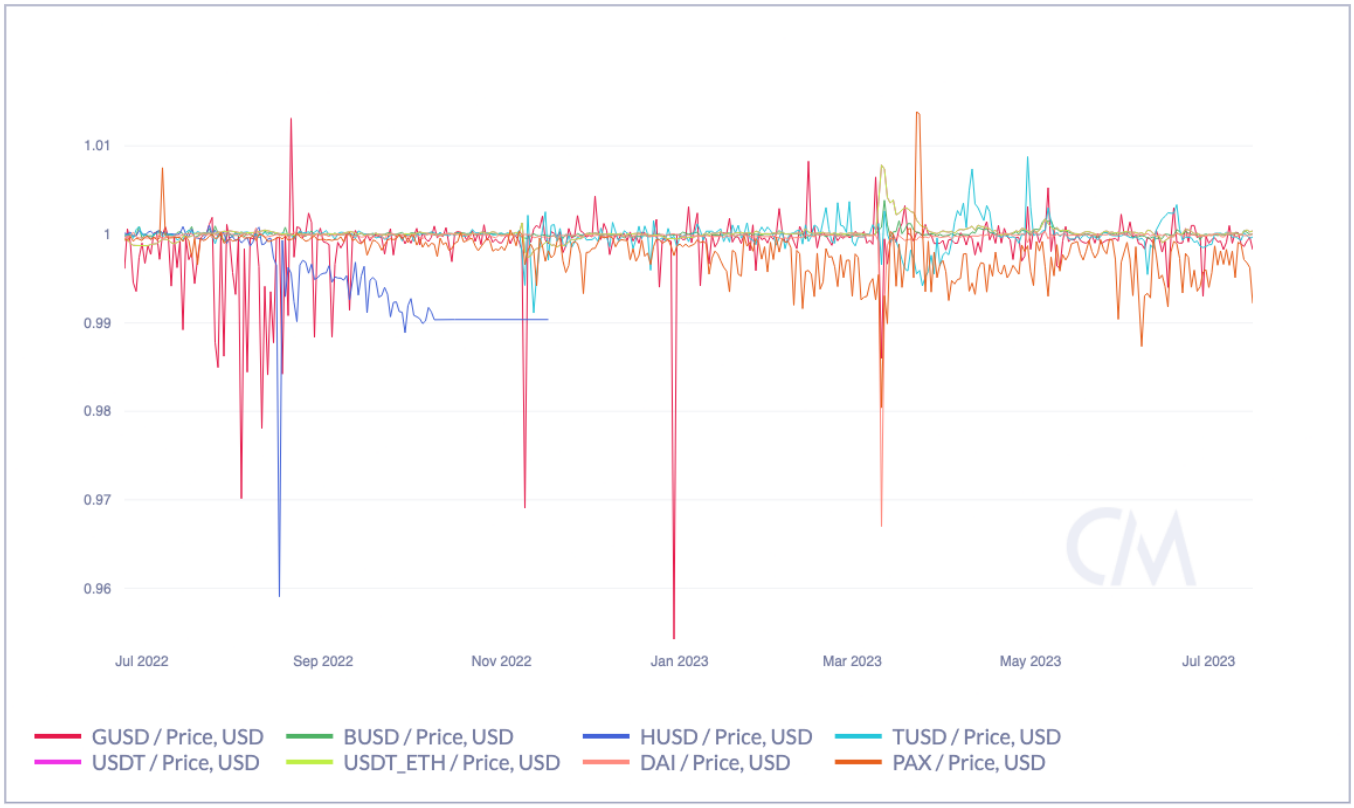
Monitoring Depegging Risk

CM Reference Rates

Monitoring de-pegging risk is of paramount importance to both stablecoin issuers and users, and this is where robust reference rates come into play. Reference rates, which calculate stablecoin prices across various markets using a consistent and reliable methodology, can serve as a crucial tool to manage and monitor de-pegging risk. These rates provide a clear, standardized measure of the current market price of a stablecoin, taking into account data from various exchanges and trading pairs. By closely tracking these reference rates, stakeholders can gain immediate insights into any potential deviations from the peg. In essence, reference rates act as an early warning system, enabling timely identification of upside or downside de-pegging risks. As these rates are typically based on comprehensive market data and sophisticated algorithms, they can capture a more accurate picture of the stablecoin's value across different market conditions and trading platforms.

This allows for swift action to correct deviations and restore stability, thereby helping to maintain trust in the stablecoin's stability mechanism and its overall market integrity.



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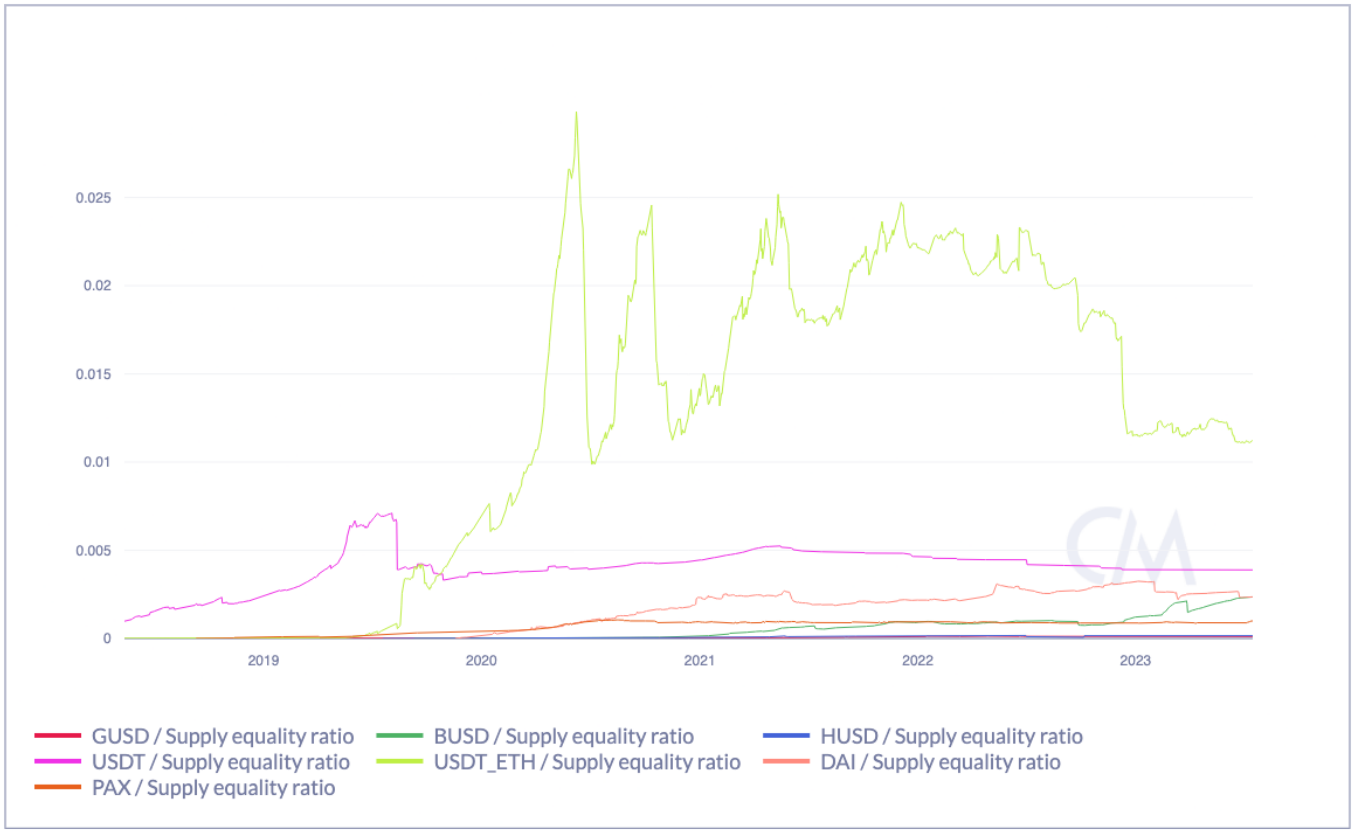
Ownership Centralization

Supply concentration, or the extent to which a significant portion of a stablecoin's supply is held by a small number of large holders, can also play a pivotal role in the stability of the stablecoin. If a small number of holders control a substantial part of the supply, the stablecoin could be vulnerable to sudden market swings if these large holders decide to sell off their holdings, or worse, if they become victims of a security breach leading to a forced liquidation of their holdings. Such events could flood the market with a sudden increase in the stablecoin's supply, potentially leading to a sharp drop in its value and thus, downside de-pegging. This 'whale risk' can undermine the stability mechanism of the stablecoin and presents a significant risk to other holders. Therefore, monitoring supply concentration and ensuring a broad and diverse distribution of the stablecoin's supply can be instrumental in maintaining its stability and reducing the risk of de-pegging.

Coin Metrics provides various metrics and tools that can be useful for analyzing supply concentration in stablecoins, including the Supply Equality Ratio (SER). The SER compares the supply of a stablecoin held by smaller holders relative to that held by the top one percent of addresses. More specifically, it calculates the ratio of supply held by addresses with less than one ten-millionth of the current supply of native units to the supply held by the top one percent of addresses. Higher SER values indicate a more evenly distributed supply and lower supply concentration, implying less vulnerability to the actions of a few large holders. Therefore, tracking the SER over time can help in assessing the supply concentration risk and thereby, the potential stability of a stablecoin.



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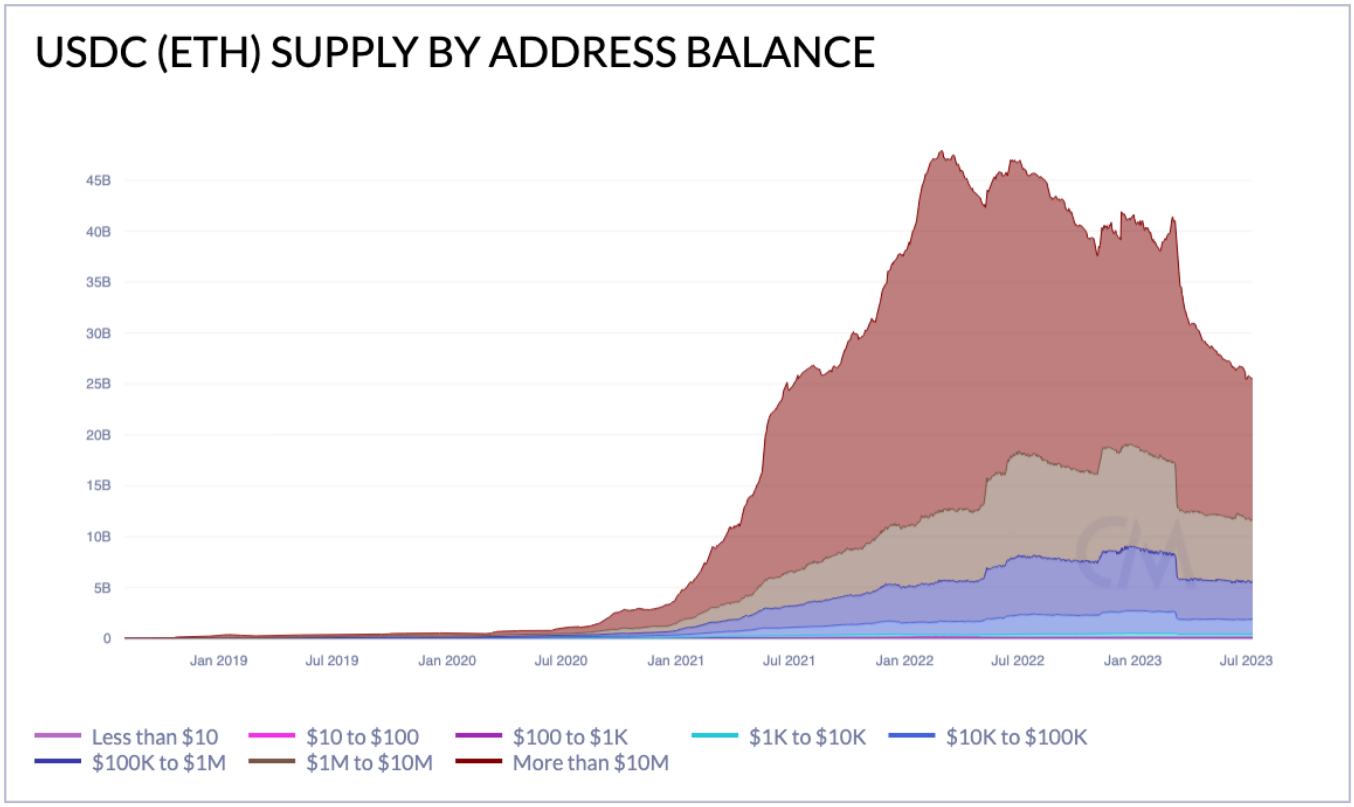
Coin Metrics also provides useful metrics to analyze the composition of supply by address size to further understand supply dispersion. The chart below shows the total amount of USDC held by wallets of various sizes, ranging from retail wallets (Less than $100) to institutional and whale wallets (More than $1M).



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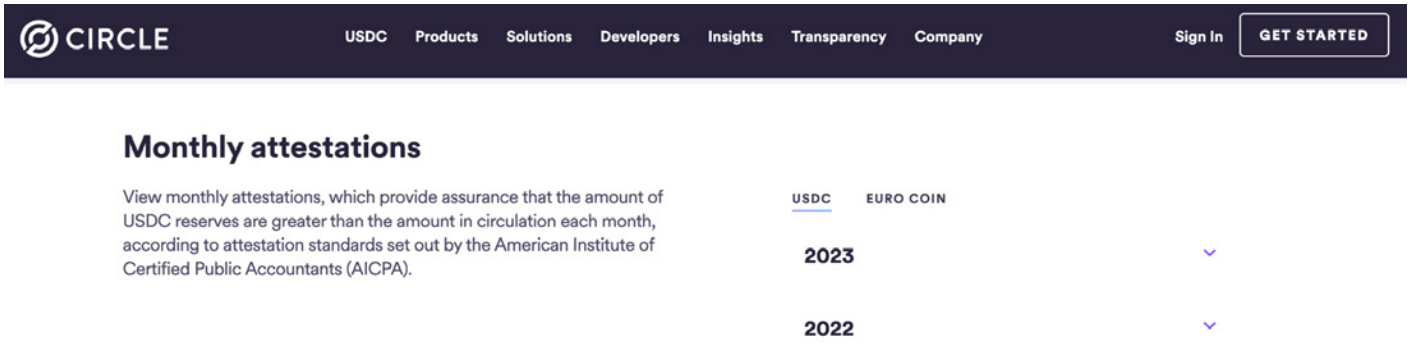
Furthermore, users can also leverage ATLAS, the blockchain search engine by Coin Metrics, to compute two other commonly used measures of supply concentration - the Gini coefficient and the Herfindahl-Hirschman Index (HHI). The Gini coefficient measures inequality in a distribution, with values ranging from 0 (perfect equality) to 1 (perfect inequality). The HHI, on the other hand, measures market concentration, with higher values indicating greater concentration. These calculations can provide a comprehensive understanding of a stablecoin's supply distribution, aiding in assessing its resilience against potential market shocks and the risk of de-pegging.

Reserve Quality & Auditability

Assessing the underlying reserves of a stablecoin is a crucial aspect of the risk assessment process. Unlike many facets of stablecoin evaluation, which rely on on-chain data, reserve analysis primarily takes place off-chain. It requires sourcing auditing and supporting documents directly from the stablecoin project, an endeavor that often presents a challenge due to varying levels of transparency

among projects. Given how nascent the crypto economy still is, several projects have been able to grow their user bases without providing any disclosures around their reserves.

As such, there's a wide range of transparency when it comes to the disclosure of reserves in the stablecoin landscape. Some stablecoins maintain a level of opacity around the composition of their reserves, making it difficult for third parties to evaluate the associated risks. However, others have taken a more transparent approach, providing audit reports and disclosing the composition of their reserves, which allows third parties to examine and assess the reserve risks more effectively. For example, USDC issuer Circle offers a monthly attestation completed by an independent accountant. Certain stablecoins have even implemented mechanisms such as Proof-of-Reserves, which offer additional assurance regarding the solvency of the project.



Source: Circle

As the stablecoin market continues to mature, we anticipate the emergence of more sophisticated mechanisms to facilitate reserve vetting. One could imagine a future where stablecoins are rated based on the quality of their reserves, akin to how credit rating agencies (CRAs) assess the quality of assets on a balance sheet. In this scenario, standardized rating systems could provide a holistic picture of the risk associated with the assets that comprise a stablecoin's reserve. By encouraging transparency and facilitating comparative analysis, such a development could further enhance risk assessment, instill greater confidence in stablecoins, and contribute to the overall maturation of the crypto economy.

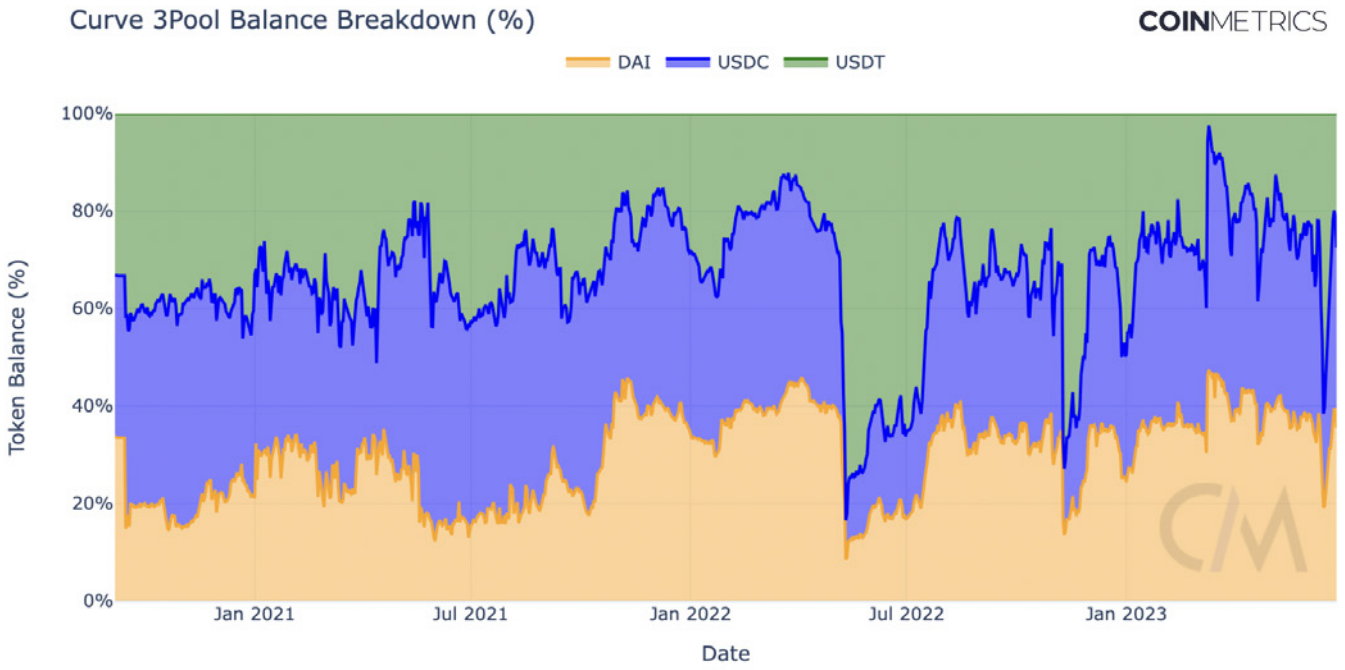
Liquidity On Decentralized Exchanges

As a crucial component of the decentralized finance (DeFi) ecosystem, a significant portion of stablecoin liquidity lies on decentralized exchanges (DEX's) like Uniswap and Curve. In particular,

Curve has established its dominance in stablecoin swaps by providing high liquidity and low slippage through its "*StableSwap*" automated market maker (AMM) mechanism. The 3Pool, comprising USDT, USDC, and Dai, is one of the most popular liquidity pools on Curve and DeFi in general as it plays a crucial role in maintaining stability for the three largest stablecoins by market capitalization. Therefore, monitoring liquidity imbalances within the 3Pool offers valuable insights into investor sentiment and the overall health of stablecoins, making it an essential tool for assessing de-pegging risk.

Case Study - Stablecoin Imbalances In The Curve 3pool

In May 2022, the infamous collapse of Luna and its associated algorithmic stablecoin—UST, ignited widespread fears causing a significant imbalance in the 3Pool with Tether (USDT) representing 83% of liquidity. Investors shifted their holdings to perceived safer alternatives like USDC and Dai, causing USDT to de-peg to 0.995. In other words, users drained the pool of USDC and Dai, leaving behind an excess amount of USDT. Contagion over the period contributed to a sharp decline in the 3Pool's total value locked (TVL), dropping from over $3 billion to below $1 billion, along with other DeFi pools facing a similar fate. Similarly, large imbalances emerged in November 2022, as the relationship between FTX and Alameda became apparent and also during the aforementioned collapse of Silicon Valley Bank which resulted in the 3Pool's liquidity shifting to ~50% USDC. These events led to heightened trading volumes as demand for stablecoins in the pool varied, ultimately resulting in the de-pegging of both USDT and USDC respectively.



Governance Risks

Admin Key Compromise

As the crypto economy continued to expand, developers found that the Silicon Valley ethos of "move fast and break things" is at odds with the meticulous, precision-required world of smart contracts. The parallels between DeFi and rocket science are striking; once deployed, the flaws and vulnerabilities of a smart contract cannot be rectified, much like a rocket in flight. Mistakes can be catastrophic, leading to financial losses and the implosion of projects, such as The DAO in 2016. This event triggered a reassessment of how applications are developed and led to the introduction of admin keys.

Admin keys were a response to the immutable nature of smart contracts and the need for a mechanism to manage risks and errors after deployment. OpenZeppelin's access management tool, Defender, played a pivotal role in their introduction, allowing smart contract owners or admins to halt or update an application in case of a security breach. This redefined paradigm of application development comprises two parts - the application and an intermediary, called the proxy, which directs user interactions with the application. The admin key, controlled by the application's creator, is used to upgrade the application's logic. This approach alleviates the need for perfection from the start, allowing developers to adapt and fix issues even after the application has gone live.

This administrative structure has also been instrumental in facilitating the operation of new applications, notably reserve-backed stablecoins like USDT and USDC. These stablecoins often require admin-level functions, such as the minting or burning of tokens to mirror changes in deposits, adjustment of key parameters, whitelisting or blacklisting of specific addresses for compliance, and in extreme cases, the ability to halt the application completely.

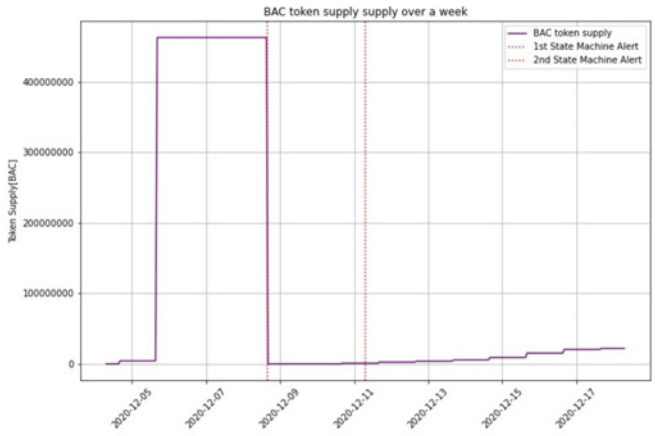
However, the introduction of admin keys comes with its own set of risks. They can be a potential centralization factor, introducing a single point of failure in the system. If admin keys were compromised, an attacker could wreak havoc by minting tokens at will, draining liquidity from DeFi exchanges or lending protocols, or introducing arbitrary changes to the application's code. To mitigate this risk, various security measures have been adopted by projects, including timelocks, multi-signature requirements, and community voting governance structures. Nevertheless, a significant number of applications, particularly reserve-backed stablecoins, do not have visible on-chain protections, underscoring the need to track admin operations in real time.

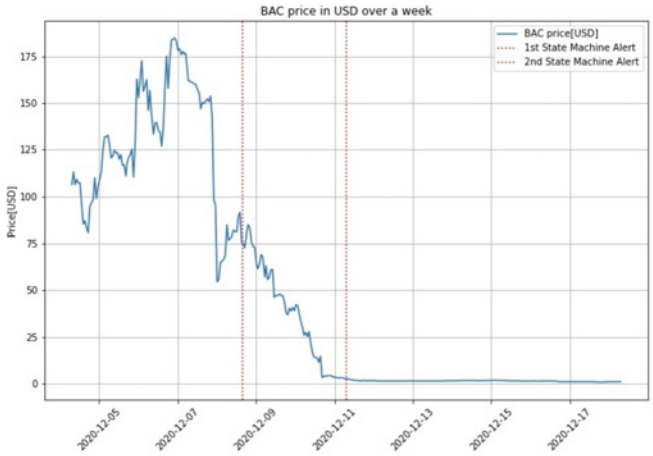
Case Study - The Basis Cash (BAC) Algorithmic Stablecoin

Basis was a prominent algorithmic stablecoin project that attempted to achieve price stability via so-called *Seigniorage Shares*. Although Basis received substantial amounts of interest and around $133M in investments in 2018, the project ultimately shut down in 2018 citing regulatory concerns. Nearly two years later, in November of 2020, a group of pseudonyms launched a spin-off of the Basis stablecoin called *Basis Cash*. Amongst the creators was *Rick Sanchez*, a pseudonym now believed to belong to Do Kwon, the infamous founder of LUNA.

Basis Cash relied on a complex system consisting of three ERC20 tokens: Basis Cash (BAC), Basis Shares (BAS), and Basis Bond (BAB). On November 29th, 2020, several markets were established on Uniswap to enable users to trade each of these assets using several different stablecoins, including USDC, DAI, SUSD, and USDT. The founders of Basis also created two "official" liquidity pools that were actively managed for the BAC-DAI and BAS-DAI pairs.

Although Basis Cash was designed to retain parity with the US Dollar, it reached upwards of $300 USD per token only two days after the launch. Markets saw considerable volume and the BAC-DAI liquidity pool was the 4th largest market on Uniswap by Total Value Locked (TVL). Due to the intrinsic design of BAC's stabilization mechanism, the smart contract automatically issued more units of BAC and increased circulating supply by many multiples.





Four days after the enormous BAC token mint, the project's admin key was invoked and the admin changed. This was highly unusual given that Basis Cash was designed to operate purely algorithmically. The entire contract was reinitialized and the new admin erased all tokens that had been minted using the *burn* function, thereby bringing supply back to previous levels. The *mint*

function was also used and the project's treasury awarded 1001 units of BAC. While the new admin was likely still part of the Basis Cash organization, the unusual nature of this "reset" should have served as a loud warning that the project was not working as intended.

The same exact event happened two days later, whereby the entire application was reinitialized, large quantities of BAC was burnt, and the treasury awarded freshly minted BAC tokens. This time, too, it appeared that the admin change was a "reset" – a desperate attempt to peg BAC to the US dollar. While the price of BAC did go down after the second alert, it was too late by then. The complete lack of stability irreparably damaged the project, which ultimately failed. No other attempts were made to reset the application after the two admin changes.

In this case, the change of the admin key and resulting reset were clear signs that the project was facing severe issues where the only solution was a complete reset. It is important to note that we have not found a direct connection between the treasury address that received the mints and any liquidity provider selling tokens on Uniswap. Nevertheless, had investors and market participants been aware of the drastic moves the admins were making behind the scenes, they would arguably have not provisioned liquidity to the project and potentially prevented multi-million dollar losses.

Token Holder Activism

The integration of governance tokens into the architecture of certain stablecoins represents another layer of complexity in the process of evaluating stablecoins. These tokens, which grant holders the power to vote on proposals relating to core aspects of the stablecoin's operations, have become increasingly prevalent, particularly within crypto-backed and algorithmic stablecoin projects. The ability of token holders to influence the stablecoin's operations through voting shares similarities with shareholder activism in traditional finance, and as such, it carries its own set of benefits, and risks.

At its best, token holder activism allows for a dynamic and adaptable operational model. Token holders, many of whom are likely to be users of the stablecoin, can vote to implement changes that might enhance the functionality or appeal of the token. This could include adding or removing types of collateral, adjusting interest rates, changing market data sources, among other operational aspects. Such a decentralized decision-making process can lead to innovative developments and strengthen the resilience of the stablecoin against market fluctuations and operational vulnerabilities.

However, the possibility of token holder activism also presents significant risks. Firstly, the decision-making process can be heavily influenced by a few large token holders, creating a risk of centralization and potential manipulation. Secondly, decisions made by token holders, although well-intended, may not always result in the best outcomes. Token holders may not have the necessary expertise or understanding to make sound operational decisions. Furthermore, they may be motivated by short-term gains rather than the long-term stability and success of the stablecoin.

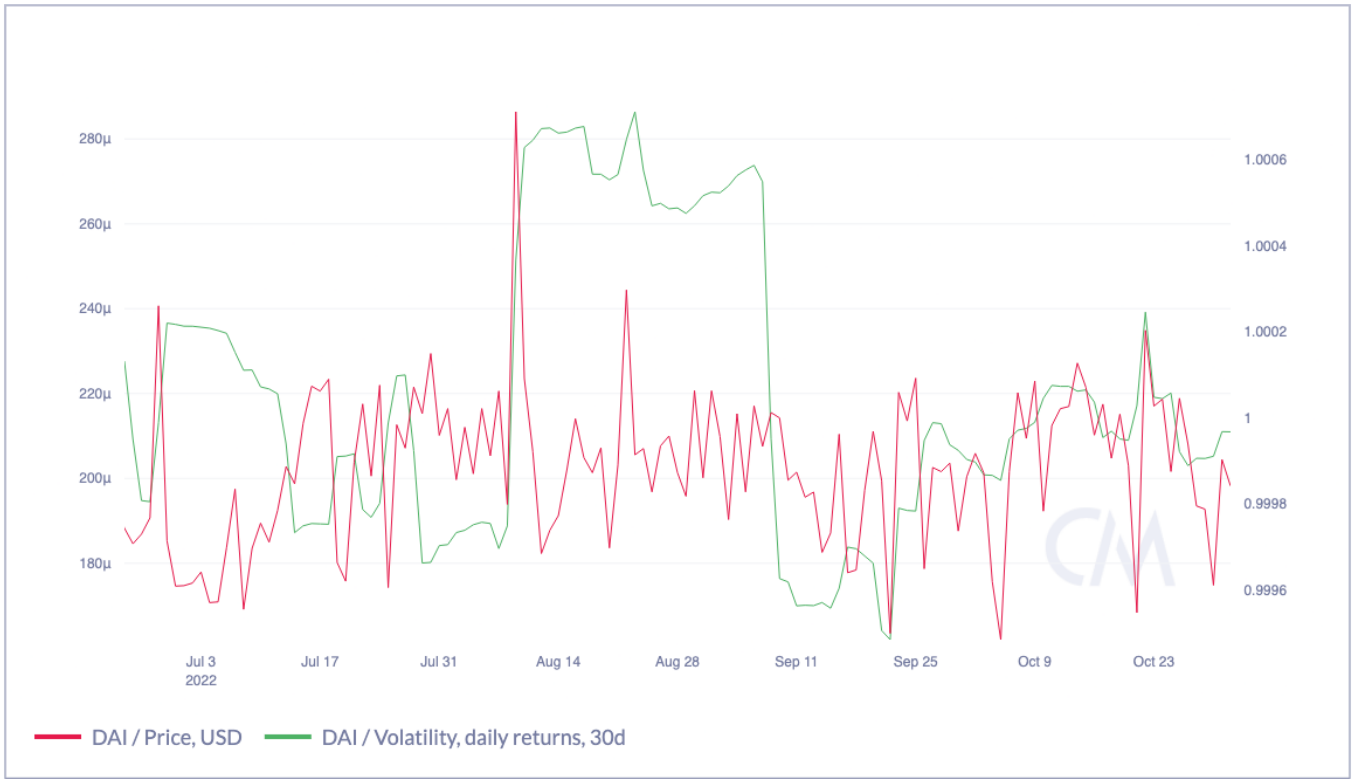
There's also the possibility of sudden and drastic changes to the stablecoin's operations, triggered by token holder votes, which could create instability and uncertainty. Such instability could affect the token's ability to maintain its peg, cause liquidity issues, and impact the broader DeFi ecosystem. Thus, while token holder activism can bring about positive change and innovation, it also introduces additional risk factors that need to be carefully managed and monitored by potential investors and stakeholders.

Case Study - MakerDAO

In August of 2022, the crypto-backed stablecoin project MakerDAO went through a volatile period as a result of what can be characterized as token holder activism. That month, a plan called the "Endgame Plan" was unveiled which highlighted the potential risks of token holder activism in the realm of stablecoins. The driving force behind this transition was the platform's founder, Rune Christensen. Given his significant token holdings, Rune's ability to propose and influence changes to the protocol's operations illustrates the weight and impact that a token holder activist can exert on a stablecoin's strategic direction.

The Endgame Plan proposed a major shift in MakerDAO's collateral model, focusing on aligning with environmental, social, and governance (ESG) standards, and further decentralizing decision-making through the creation of MetaDAOs. However, these changes have been met with mixed reactions. The potential disruption from de-pegging the DAI stablecoin from the dollar, as proposed in the Endgame Plan, raised concerns among other token holders and users. This demonstrates the potential conflict that can arise between a token holder activist's proposals and the broader community's interests.

This perceived disconnect between Rune's vision and the interests of the broader community may result in adverse market reactions. If the community sees the proposed changes as strategically unsound or risky, it could trigger selling pressure on DAI, leading to a decrease in its value. Furthermore, if the collateral shift under the new plan is not executed effectively, it could potentially lead to a rush of redemptions, further destabilizing the token's value. The mere discussion of the proposal increased the volatility of DAI, the project’s USD-denominated stablecoin near yearly highs.



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The token holder activism displayed by Rune also draws attention to the concentration of decision-making power within stablecoin ecosystems. Despite MakerDAO's move towards decentralization with MetaDAOs, Rune's influence in advancing these changes emphasizes the significant sway that major token holders can hold. This concentration of power can potentially lead to strategic decisions that do not align with the broader community's interests, highlighting a critical risk associated with token holder activism.

In conclusion, the MakerDAO case exemplifies the potential risks associated with token holder activism in stablecoin operations. It highlights the significant influence that key token holders can exert on strategic decision-making, the potential for strategic misalignment with the broader community, and the potential market implications these disagreements can bring about. This underlines the need for balanced governance structures that can mitigate these risks while still promoting innovation and strategic development.

Monitoring Risks

Governance Risk: Admin Key Alerting

Coin Metrics provides a critical toolset to monitor for admin key risk in stablecoin projects. We have developed a series of alert systems designed to track changes in smart contract administrators that may be indicative of a hack. By integrating these alerts, Coin Metrics' clients can mitigate their exposure to tokens that have been minted as a result of a hack, which has occurred in the past with exploits such as the PAID token hack. By implementing longer settlement times when receiving the stablecoin in question, clients are able to verify the legitimacy of the admin key change and mint with the stablecoin's treasury.

The first alert we developed is called the "Smart Contract Admin Change Alert" and is triggered if the admin of a smart contract changes. It is designed to serve as an early warning system as a compromised admin key can potentially lead to unauthorized takeover of the stablecoin's treasury. While many admin key changes are planned operational/administrative actions, there have been precedents of security breaches that started with an admin key change.

A subsequent alert, the "Admin Change with Issuance Event Alert," signals if an admin change occurs concurrently with the minting of any units of new asset units over the following 120 blocks (approximately 25 minutes). The alert highlights that the coinciding events may be indicative of a security breach leading to unauthorized minting and grants escalation.

Finally, the last alert, "Admin Change with Large Issuance Event Alert," responds to an admin change followed by a "large" token issuance event. It considers an issuance "large" if more than 5% of the token's total supply was minted within the 120 blocks following the admin key change. Like the previous alerts, it considers the possibility of either a planned change or a security breach.

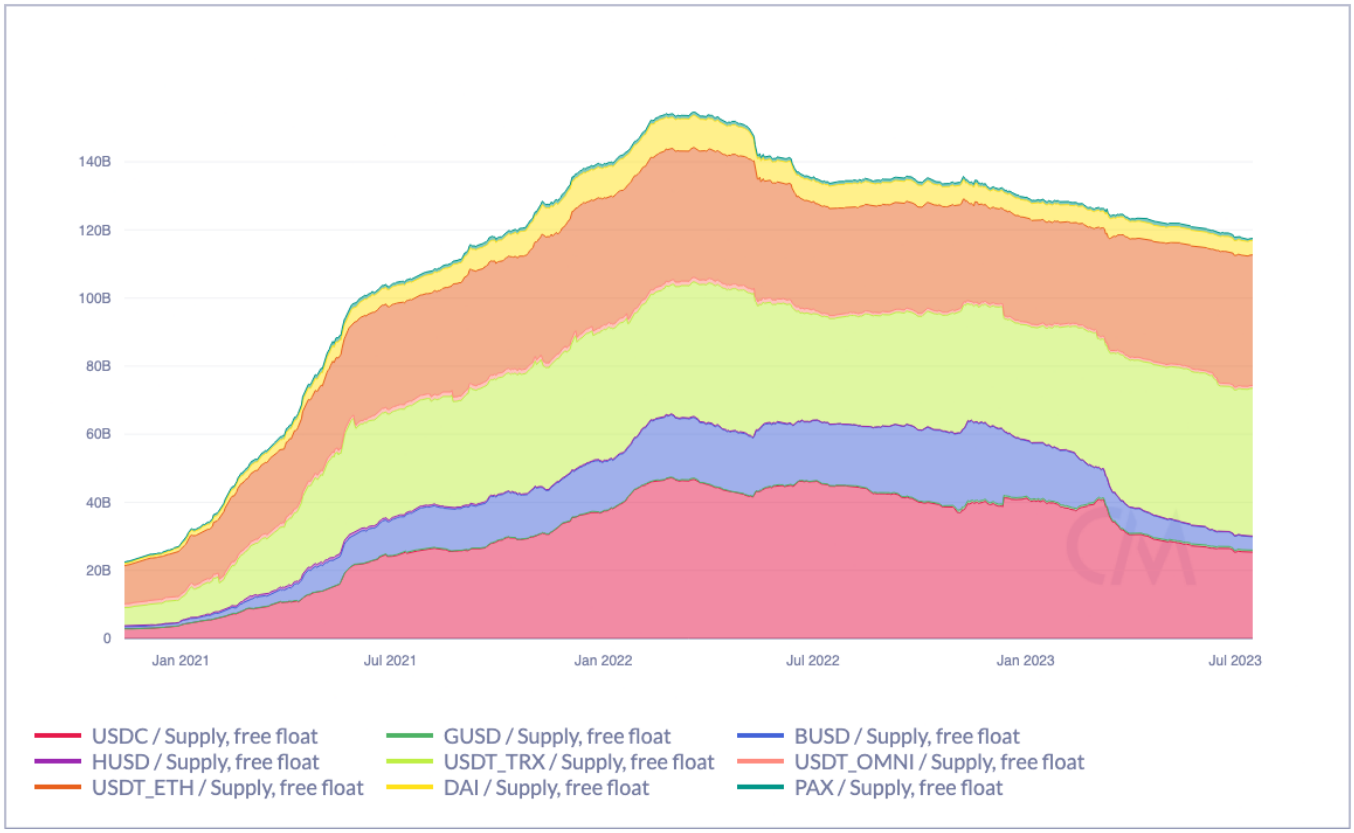
In all these alerts, the major concern is a compromised admin key leading to unauthorized changes and minting events. By monitoring these risks, Coin Metrics equips its clients with crucial tools to identify potential security issues swiftly, helping them to protect their investments, especially in the dynamic world of decentralized finance.

Free Float Monitoring

Monitoring the free float supply of a stablecoin is a critical aspect of managing governance risks. By providing real-time insight into the availability of tokens, this metric acts as a barometer of a stablecoin's market demand and the effectiveness of its treasury operations. Understanding these dynamics enables both issuers and token holders to react more effectively to changes in the stablecoin ecosystem and to develop more robust risk management strategies.

A stablecoin's treasury plays a key role in maintaining the stability of its token. When demand for the stablecoin increases, the treasury should respond by minting new tokens to maintain its peg. Conversely, when demand decreases, the treasury may need to remove tokens from circulation. Monitoring free float supply allows us to assess how effectively a treasury is responding to these market forces. A well-managed treasury should maintain an appropriate free float supply to ensure the stability of the token's value. In this context, rapid and unexplained changes in free float supply can serve as early warning signs of potential governance issues or operational mismanagement.

Furthermore, free float supply can also provide valuable insights into the popularity and usage of a particular stablecoin. An increasing free float supply, for instance, might indicate growing market demand for the stablecoin, possibly reflecting increased trust in its governance structures or wider acceptance in the marketplace. On the other hand, a shrinking free float supply might suggest reduced demand, which could be due to various factors, such as concerns about the stablecoin's governance, competition from other tokens, or changing market conditions.



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In conclusion, monitoring free float supply offers a critical tool for managing governance risks in the stablecoin realm. It provides a real-time snapshot of a stablecoin's market dynamics and treasury operations, enabling token holders and issuers to make more informed decisions and implement more effective risk management strategies.

Market Volatility Monitoring

Volatility metrics are essential in evaluating stablecoins as they provide real-time insight into how effectively a stablecoin maintains its peg, and thus its stability - the fundamental promise of any stablecoin project. Volatility tracking offers a lens to gauge the proficiency of the treasury operations in fulfilling their key roles: promoting stability via market making, effective communication, timely disclosures, and prompt execution.

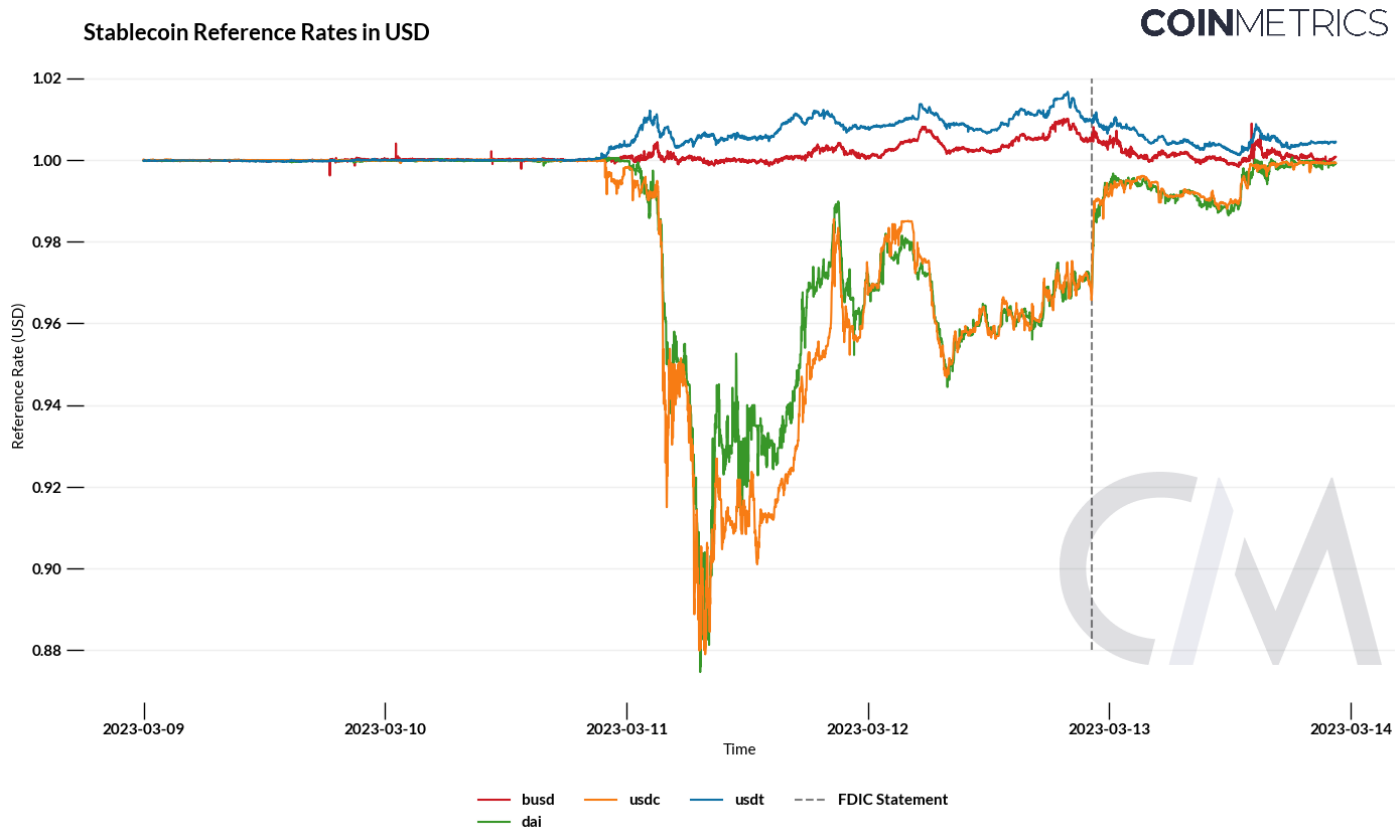
Coin Metrics, as part of its extensive toolkit, provides three key metrics to assess stablecoin volatility across different time frames: 30, 60, and 180-day windows. These three metrics offer a comprehensive overview of the stablecoin's short-term, medium-term, and long-term volatility, each telling a unique part of the overall story of a stablecoin's performance and governance.

https://charts.coinmetrics.io/crypto-data/?id=7833

Notably, stablecoin volatility can also serve as a powerful proxy for implied volatility across the entire crypto economy. This dynamic becomes evident during market downturns when demand for stablecoins increases, leading them to trade at a premium relative to the USD. Conversely, in an

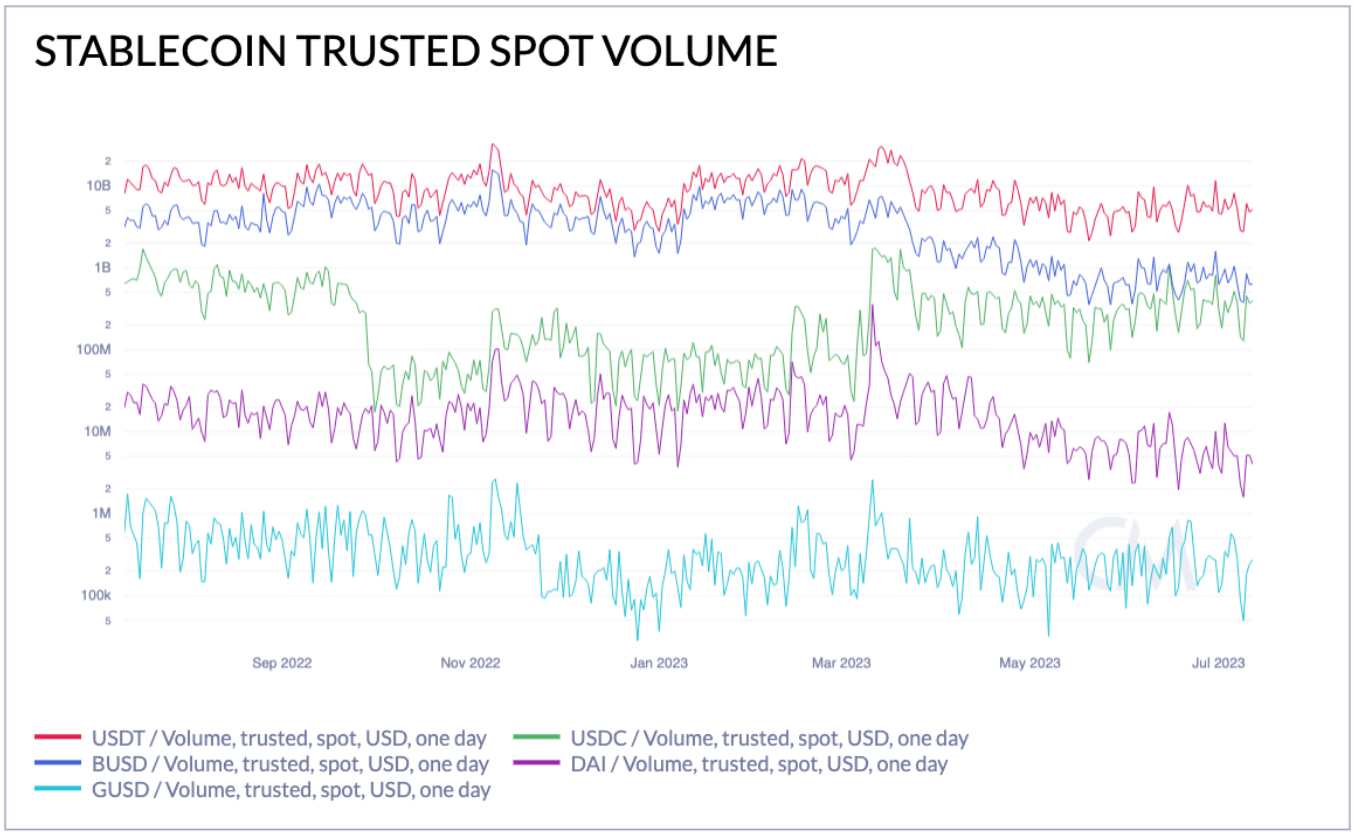
upswing market when crypto assets are expected to rally, demand for stablecoins diminishes, often resulting in a slight trading discount. These price fluctuations, which can be tracked through Coin Metrics' Reference Rates, inevitably result in increased volatility. This connection between stablecoin volatility and broader market movements underscores the importance of monitoring these Volatility metrics to gain a nuanced understanding of market sentiment and risk.

Real-time reference rates are a powerful way to track prices as they evolve, which can be especially important during high-stakes market events where prices can react quickly to news. During the 2023 March de-peg, the prices of USDC and Dai both rebounded quickly after the FDIC released a joint statement with the US Treasury assuring the soundness of SVB's reserves.



Following Liquidity

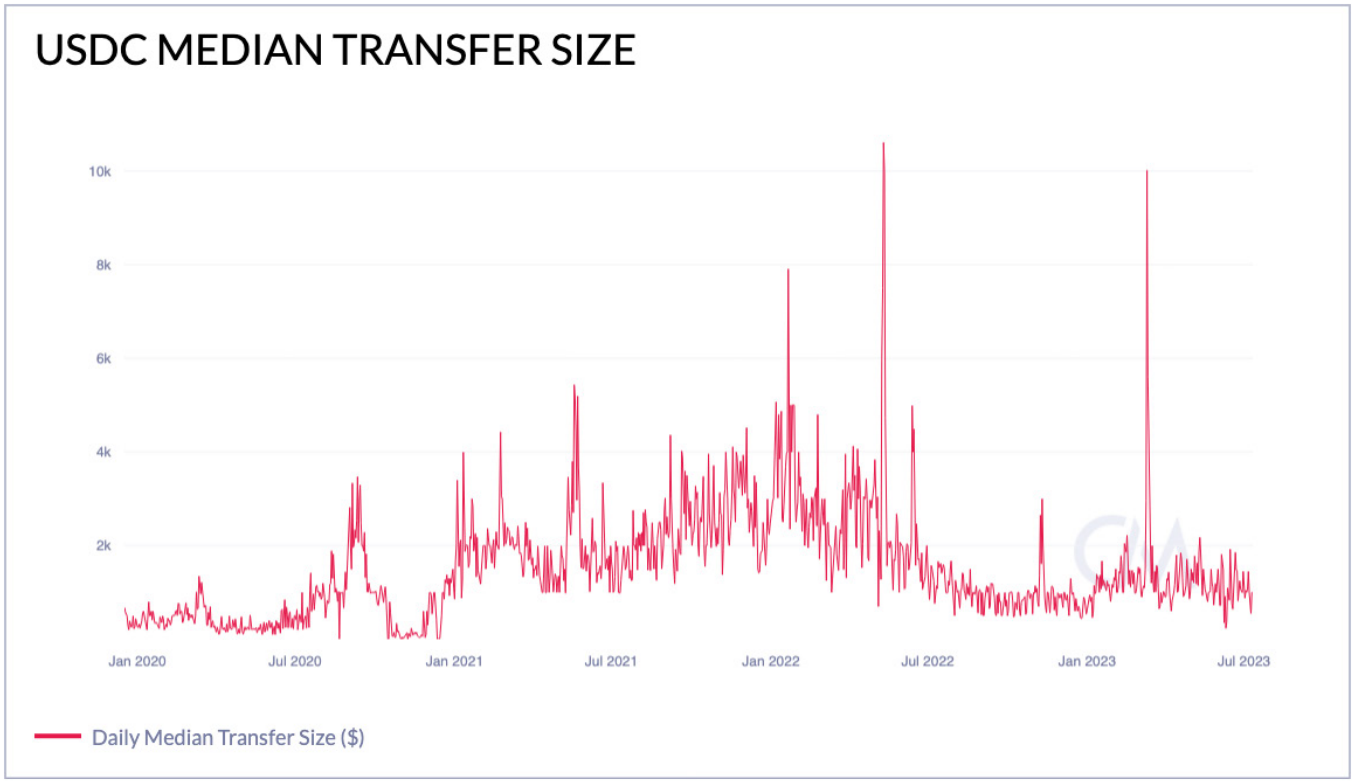
Monitoring liquidity is a crucial aspect of managing stablecoin risk, and Coin Metrics' market data feed provides an invaluable tool for this purpose. The market data feed offers real-time and historical data on stablecoin trading volumes across both major centralized and decentralized exchanges. This comprehensive view allows users to assess the liquidity of different stablecoins accurately, including trading availability, spot volumes, and order book depth. For instance, a sudden rise in trading volume paired with a thinning order book on a particular exchange or across multiple exchanges could indicate a potential liquidity risk. Similarly, tracking the trading volumes of stablecoins on decentralized exchanges (DEXs) like Uniswap can provide insights into the growth and activity of the DeFi sector. Finally, users can combine network and market data views to form powerful analyses. For example, combining ATLAS, one can follow the flow of stablecoins to known exchange addresses and track the market dynamics in real-time. Finally, Coin Metrics' trusted exchange set allows users to build more confident analyses by looking at a whitelisted set of high-quality constituent markets.



Source: *Coin Metrics Market Data Feed*
https://charts.coinmetrics.io/crypto-data/?id=7834

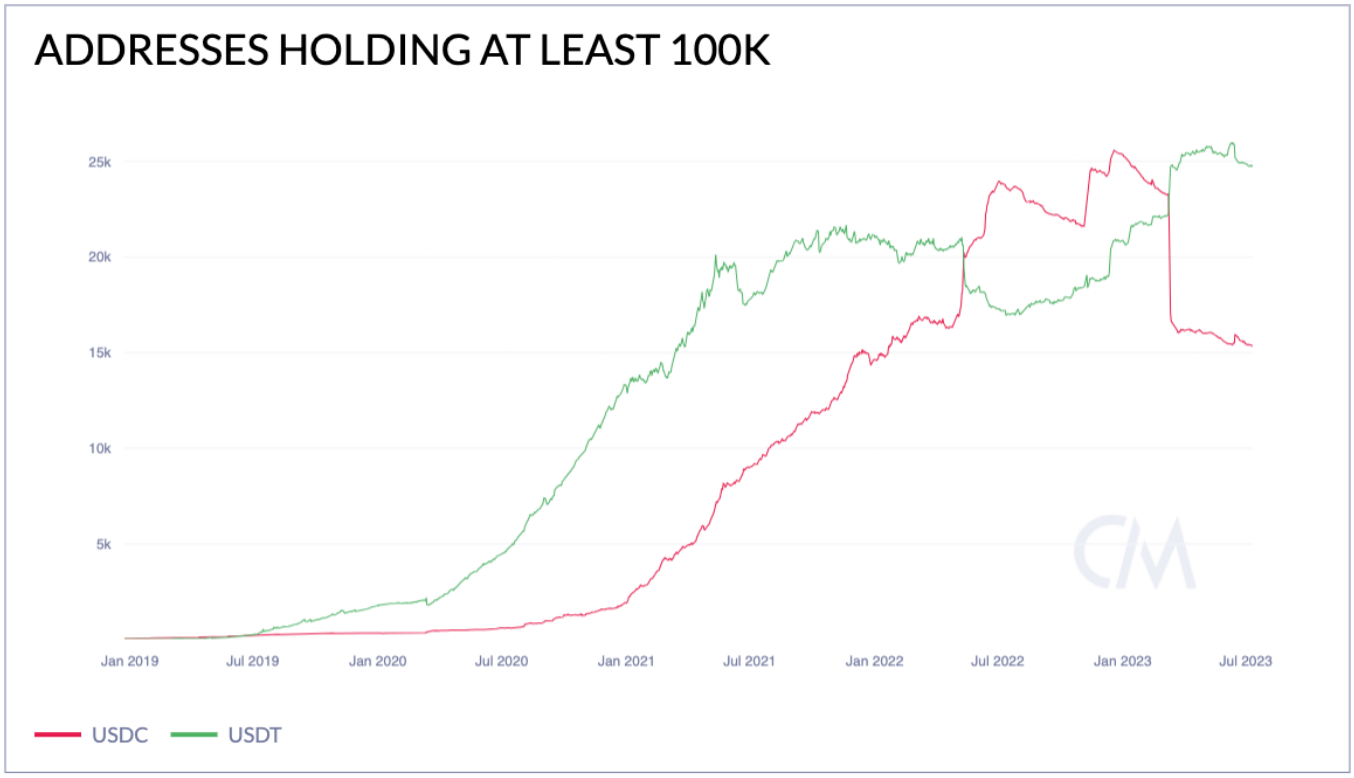
Anomaly Detection

Coin Metrics also provides a wealth of rich data that can be useful in detecting anomalies in stablecoin activity. By monitoring metrics such as transaction counts, active addresses, and transfer values, one can identify unusual spikes or drops that may indicate significant events or changes in stablecoin usage patterns. For instance, large transfers can be easily spotted by tracking changes in transfer values, which could signal major market moves, as was the case for the median transfer of USDC observed on-chain during SVB's collapse.



Source: *Coin Metrics Network Data Pro*

Further, a sudden increase in active addresses or transaction counts might suggest a surge in trading activity or a shift in user behavior such as movements to exchanges or new smart contracts. Finally, sudden changes in the distribution of owners can indicate a change in the underlying owner distribution.



Source: *Coin Metrics Network Data Pro*

CONCLUSION

Coin Metrics' holistic suite of network and market data provides an unparalleled window into the world of stablecoins. By offering detailed, real-time insights into supplies, transaction volumes, active addresses, transfer values, admin key changes, wallet balances, and more, Coin Metrics equips users with the tools they need to understand and navigate the stablecoin market effectively. Whether it's for making informed financial decisions, managing risk, conducting research, or developing new products, Coin Metrics' data serves as a vital resource. Stablecoins have quickly emerged as a multi-billion dollar market in the center of the crypto economy with ample opportunity for additional growth. The data presented in this report can empower users to begin to not only monitor current market conditions but also anticipate potential risks and chart out future trends.

Additional Reading & Research

Coin Metrics' research team has written extensively about stablecoins. All stablecoins research can be found here: https://coinmetrics.io/tag/stablecoins/

The Coin Metrics dashboard here presents some key data on USDC and Tether, including active addresses, transactions and transfers, usage trends, supply analysis, wallet adoption, and market-wide analyses.

DECODING THE DIGITAL DOLLAR

Unraveling the Risks of Stablecoins

By Lucas Nuzzi, Kyle Waters, and the Coin Metrics Team

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