S&P Global
Ratings

Stablecoin Stability Assessment

USDS/DAI

Dec. 17, 2024

Summary

S&P Global Ratings assesses USDS/DAI's ability to maintain its peg to the U.S. dollar at 4 (constrained). USDS is the new decentralized stablecoin issued through the SKY protocol (previously called MakerDAO). DAI holders can convert their holding into USDS (1 for 1) or keep them in their current format. Both USDS and DAI share the same reserve mechanism. Our assessment covers both USDS and DAI and for the purpose of brevity we refer to USDS.

Our asset assessment of 4 reflects the lowest quality we observed in those vaults that we consider material. Three main types of reserves back this stablecoin: crypto assets (such as ether and staked ether), real world assets (RWAs such as U.S. government bonds), and other stablecoins (essentially USDC). In our view, RWAs diversify the protocol's revenue but also the risk profile of some assets (some specialized RWAs may introduce credit risk and limited liquidity).

We make no adjustment from the asset assessment despite certain weaknesses. This is because we consider these features, which relate to a concentration of decision-making powers, untested liquidation processes for collateral, and secondary market liquidity, to be commensurate with an assessment of 4.

The stablecoin stability assessment could improve if we observe a significant shift toward lower-risk assets. Stronger governance could also lead to a better assessment (improvement following the "endgame" strategic plan is still to be confirmed). In contrast, a material increase of what we consider riskier assets, such as more specialized RWAs or cryptocurrencies with a limited overcollateralization ratio, could result in a weaker stablecoin stability assessment.

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For more on our approach and definition of price stability, see our [Stablecoin Stability Assessment Analytical Approach]

This report was not produced at the request of the stablecoin issuer or sponsor but with their input.

Asset assessment

1 | Very strong
2 | Strong
3 | Adequate
4 | Constrained
5 | Weak

Adjustment

Neutral (0)

Stablecoin stability assessment

4
Constrained

Assessed on a scale of 1-5, where 1 is very strong and 5 is weak.

Asset assessment: 4 | Constrained

1 | Very strong	2 | Strong	3 | Adequate	**4 | Constrained**	5 | Weak

As part of its "endgame" strategic plan, MakerDAO protocol rebranded as SKY while a new stablecoin, USDS, was launched. DAI holders have the option to convert their DAI into USDS 1 for 1 as of Sept. 18, 2024. The conversion into USDS is optional and for the time being DAI will continue to exist. Therefore, USDS and DAI should be considered equivalent, with both tokens backed by the same collateral and mechanism.

USDS is backed by collateral deposited in vaults by borrowers (vault owners) in the SKY protocol. Each vault in the protocol is organized based on a single collateral type and risk parameters, including a borrowing interest rate, a minimum overcollateralization threshold, and a debt ceiling. Vault owners borrow USDS created by the protocol against their collateral. If the collateral value falls below the minimum overcollateralization threshold, their collateral is liquidated for USDS to repay the debt.

In addition to the “core” vaults, SKY introduced direct deposit modules (D3M) which enable third-party protocols to interact with the SKY ecosystem and mint USDS while third-party users are interacting and depositing crypto assets within the third-party protocols.

An important aspect of the SKY protocol is that collateral is not fungible across vaults . This means that, if a vault is undercollateralized, the shortfall will not be covered by excess collateral from another vault. Rather, if a vault is liquidated and the liquidation proceeds are insufficient to cover the debt, the shortfall is covered through a DAI surplus fund. This surplus can be replenished through revenue generated by vaults and is available to cover potential defaults on vaults, if any. The size of the DAI surplus fund target was increased to US$60 million over 2024. Following several community votes, 20 million USDS/DAI from the surplus was used to finance the endgame strategic and incentive campaign. The surplus fund has since then been replenished (US$49 million as of November 2024). In case the fund is exhausted, the protocol will issue an amount of native SKY (previously MKR) tokens sufficient to cover the remaining shortfall. However, we do not consider that the issuance of SKY tokens mitigates risk, since these tokens are endogenous assets to the protocol. To assess the risk of loss on USDS' reserve assets, we consider the risk profile of each vault individually, and the sufficiency of the surplus fund to cover losses in aggregate.

Our analysis focuses on risks to USDS' stability from the perspective of all USDS holders rather than specific vault owners. Once vault owners have created USDS through the protocol, it can be used to make on-chain transactions, such that USDS may be held by anyone, not only vault owners. In contrast to the collateral assets, USDS tokens are fungible, meaning that USDS holders are not exposed to one specific vault but to the risk of any loss across all vaults.

To assess the risk of each underlying asset becoming undercollateralized, we consider the nature of the collateral, the liquidation threshold and mechanism, and the ability to liquidate each collateral type. Our asset assessment of 4 (constrained) reflects the lowest quality we observed across all collateral that we consider material relative to the size of the surplus fund:

- **Crypto-related vaults totaling $1,092 million (21.4% of reserves) as of Nov. 13, 2024.** This is a combination of multiple vaults backed by either ether (ETH), wrapped bitcoin, or wrapped staked ETH (WSTETH). While we classify these assets as volatile under our analytical approach, based on the relatively high minimum overcollateralization ratio, the asset assessment is improved to 3 (adequate) for ETH and bitcoin vaults while the asset assessment of the WSTETH vaults is improved to 4 (constrained). Considering our observations on historical daily volumes, we believe the protocol's ability to liquidate a significant amount of staked ETH in a market stress scenario is still untested and uncertain.

- **Crypto-related D3M vaults totaling $1,642 million (32.1% of reserves) as of Nov. 13, 2024.** There are several active D3M vaults:
  - SparkLend vault, which is a crypto asset lending platform like Aave protocol (SparkLend is a fork of Aave V3). Unlike the vault set up of SKY protocol, it allows users to cross-collateralize various crypto asset borrowings. As of the date of this review, the underlying collateral that can be deposited to borrow USDS is a combination of wrapped ETH, wrapped bitcoin, and several staked ETH (WSTETH, rocket pool ETH, wrapped ETH), each with their respective overcollateralization (loan to value) and liquidation threshold. Minimum overcollateralization ratios are between 65% and 82%, which is lower than the respective overcollateralization ratios under SKY protocol "core" vault (although a borrower's collateral is fungible across exposures, so the ratios are not directly comparable). Nevertheless, these are minimum overcollateralization levels and the current available overcollateralization is much higher. As of Nov. 13, 2024, for an outstanding USDS amount of US$1,220 million there was US$3,270 million of overcollateralization with a US$1,309 million buffer until liquidation. Overall, this vault supports an asset assessment of 4 (constrained)
  - Spark MetaMorpho vault, which is another lending platform where USDS is minted by depositing Ethena's USDe. USDe is a so called "synthetic" dollar which aims at maintaining its value by entering offsetting hedge positions. To mint USDS, users must deposit a larger amount of USDe. Overcollateralization ratios range from 86% to 91.5%. Considering these overcollateralization levels and the relatively limited size of this vault within the entire underlying assets of USDS, this vault supports an asset assessment of 4 (constrained).
- **Money market RWA vaults totaling 1,276 million (25.0% of reserves) as of Nov. 13, 2024.** There is only one active vault, RWA015-A (Blocktower Andromeda vault). This vault comprises a combination of U.S. short-term treasury bills with tenors of up to six months. Assets are deposited with the custodian, Wedbush Securities Inc. (established in 1955), in segregated accounts for the ultimate benefit of SKY. This vault supports an asset assessment of 2 (strong).
- **Other RWA vaults totaling $104 million (2.0% of reserves) as of Nov. 13, 2024.** These vaults comprise various exposures, including business loans, trade receivables, and private unrated securitization products like asset-backed securities and collateralized loan obligations, as well as an unsecured loan to H.V. Bank (not rated). While the unsecured loan to H.V. Bank would have an asset assessment of 4 (constrained), the rest of these vaults would typically have an asset assessment of 5 (weak) considering their embedded credit risk and limited liquidity in the market. However, all have overcollateralization of 10%-30%. Furthermore, there is the presence of the DAI surplus fund which could be replenished by revenue from all vaults, compensating for potential additional losses on the aggregate amount in all vaults. Considering the relatively limited size of these vault within the entire underlying assets of USDS, our asset assessment is 4 (constrained) on these vaults.
- **Stablecoins/peg-stability module (PSM) totaling $918 million (18.5% of reserves) as of Nov. 13, 2024.** The PSM aims at stabilizing the price of USDS by allowing anyone to exchange other stablecoins with USDS at a 1-to-1 rate. Over the first months of 2024, several community votes decided to reduce the exposure of GUSD and USDP to zero. Currently, the only eligible stablecoin is therefore USDC (under the stability scope that covers the management of the USDS/DAI stablecoin). Furthermore, in August 2024, the PSM lite module was introduced, which allows the protocol to benefit from the "Coinbase Institutional USDC Rewards" plan while holding USDC tokens on a self-custody basis on chain (using the Coinbase Web3 wallet). Our stablecoin stability assessments for USDC is 2 (strong); therefore, the asset assessment for this specific stablecoin vault is also 2. While this new set-up removes previous potential custodian

risk with Coinbase Custody International Ltd., we do not believe the use of Coinbase Web3 wallet introduces material concerns at this stage.

- **Stablecoins/Uniswap liquidity pools totaling $79 million (1.5% of reserves) as of Nov. 13, 2024.** This category includes Uniswap liquidity pools of stablecoin pairs (DAI/USDC), mainly Uniswap V3. It is important to note that the DAI in this liquidity pool is already-minted DAI backed by other types of collateral. These liquidity pools comprise a combination of DAI and USDC, which could, under certain market conditions, be mostly DAI. Since the DAI in this vault is already minted and backed by collateral, this vault does not introduce further risk and therefore does not modify the overall asset assessment.

Adjustment: Neutral

Neutral Negative

Overall adjustment

Although the endgame strategic plan could improve the governance of the protocol, we still see weaknesses due to a concentration of decision-making powers, as well as the lack of a regulatory framework and secondary market liquidity. However, we consider these features to be commensurate with an assessment of 4 (constrained), with no further adjustments from the asset assessment.

Governance: Concentration of voting power could decline with the strategic plan

- There is a high degree of transparency on upcoming changes and proposals open to a vote. However, there is also a high concentration of holders of the SKY governance token. Co-founder Rune Christensen maintains significant influence in the SKY community. One objective of strategic plan announced in 2023 is to improve the overall governance process and incentivize a broader number of voters to take part in voting on each proposal.
- Anyone can verify the composition of the reserves on the blockchain in real time. This provides full transparency regarding the on-chain assets, whether directly in core vaults or within the third-party modules (Sparklend or Spark Morpho vaults). However third-party verification of assets on RWA vaults is not always consistently available. Moreover, the liquidation process for RWA vaults involves several counterparties, such as custodians and brokers, which may lead to time delays in liquidating the collateral. Furthermore, the protocol's ability to liquidate such assets in a market stress scenario is untested. In August 2024, SKY launched the RWA Tokenisation Grand Prix which is an initiative to introduce new projects in the tokenization of RWAs with the objective to improve liquidity on RWA collateral. Depending on the projects chosen, this initiative may improve both transparency and liquidity of RWA assets going forward.
- Individual token holders can transfer their voting power to delegates approved by Sky governance, particularly as they are unlikely to have the time, legal, and finance expertise, and capacity to vote on every proposal. Although the mechanics supporting delegation are in place, in practice voting on collateral risk parameters is currently dominated by a small number of token holders. This may evolve between now and completion of endgame. Another objective is to split the governance process into one core Dao and specific smaller and more agile SubDao, each having their own governance and expertise on a specific asset type.

Regulatory framework: Absence of a regulatory regime for decentralized stablecoins may inhibit adoption and liquidity

- Reserve assets for crypto-related vaults are locked in a smart contract and not in the custody of a centralized entity, limiting the risk of assets being tied up in bankruptcy proceedings. However, it is uncertain how any dispute to the outcome of a smart contract would be treated in courts in different jurisdictions.
- The new USDS stablecoin features a freeze function which has created some controversy among the SKY community. However, this feature may allow intervention in case of hacks and legal violations and can be seen as an attempt to bring SKY in line with regulation.
- Reserve assets for RWAs are typically held by custodians in segregated accounts for the benefit of SKY.
- The absence of a regulatory regime for decentralized stablecoins, and the emergence of regulatory frameworks for centralized stablecoins across different jurisdictions, may favor the use and liquidity of centralized stablecoins over decentralized stablecoins.
- We note that as part of the Tokenization Grand Prix, there has been significant interest to engage with the Sky protocol from issuers of tokenized products, some of which use centralized stablecoins in their setup. This may point to complementarity rather than purely competition between the centralized and decentralized stablecoins. This remains a nascent development that we'll be monitoring.

Liquidity and redeemability: The peg-stability module allows 1-to-1 trading with USDC

- As a decentralized stablecoin, USDS cannot be redeemed against fiat currency by an issuer per se. Nevertheless, anyone can exchange USDS 1 to 1 for USDC through the on-chain peg stability module, which allows conversion to fiat currency through USDC. USDC should represent more than 20% of USDS/Dai overall reserves, per the general protocol guidelines (Stability Scope).
- In addition to the Peg Stability Module, USDS holders would rely on centralized exchanges to convert USDS into fiat U.S. dollars or use decentralized exchanges to swap them for other ERC-20 tokens, the technical standard for interchangeable tokens using the Ethereum blockchain.
- Although daily trading volumes for USDS appear high relative to other decentralized stablecoins, they are significantly lower than for the main centralized stablecoins: USDT and USDC.

Technology and third-party dependencies: A resilient setup so far, despite complexities and dependencies

- While the Sky protocol core accounting system is deployed on Ethereum Mainnet, USDS is available on several other chains such as Base and Solana.
- Both USDS and DAI smart contracts are more complex than for a centralized stablecoin since they govern the liquidation mechanisms and peg-stability module. However, the smart contracts have been audited, with no critical or high-risk observations. The latest audit for DAI was performed in May 2024 while an audit on USDS was performed in September 2024.

The contracts are written in Solidity, a well-tested programming language, and follow an established standard, the ERC (Ethereum request for comment). Public participation in identifying and addressing issues is encouraged through a bug bounty program that offers compensation for identifying and reporting vulnerabilities. We also note that Spark smart contracts (in conjunction with SKY ecosystem) seem to be reasonably secure.

- Absent a centralized issuer, the SKY protocol relies on third parties to perform key functions, including:
  - A community of developers to maintain the smart contract and implement any fixes or upgrades needed.
  - Keepers to support the liquidation mechanism. Keepers are protocol participants who purchase the collateral from vaults that fall below their liquidation trigger; they are rewarded with a liquidation fee. The protocol's economic resilience is dependent on these keepers providing sufficient liquidity to ensure successful and timely liquidations. That said, the liquidation mechanism proved resilient through material sell-offs in 2022.
  - Price feeds (oracles) to inform the collateral liquidation mechanism. The main oracle used is Chronicle Labs, which is run by 22 different operators. Oracle risk--the risk of interruption, manipulation, or inaccuracy in the data--is mitigated by using a median from multiple price feeds through this protocol and safeguards in the SKY protocol against stale or zero prices.
- The RWA vaults have introduced new dependencies and counterparty risks from the managers of those assets as well as the custodian or brokers, which could delay the liquidation process.

Track record: Increased link to USDC

- DAI depegged from the U.S. dollar in March 2023, mirroring the depegging of USDC. We did not observe any material depeg over the course of 2024.
- While the peg stability module of SKY used to allow for three different stablecoins (GUSD, USDP, and USDC), the community decided to remove GUSD and USDP. This strategy to have USDC as main stablecoin under the peg stability module has been reinforced with the launch of the PSM lite module. If a depeg was to occur on USDC, it could lead to a depeg on USDS, similar to what we observed in March 2023.
- Over 2024, USDS/DAI has consistently operated with roughly $5 billion in circulation and established itself as the third-largest stablecoin behind USDT and USDC.