

Risk Assessment - “**DAI**” Collateral Asset on FiRM

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Useful Links

- [Coingecko](#)
- [Website](#)
- [Github](#)
- [Twitter](#)
- [Discord](#)
- [Docs](#)
- [Blog](#)
- [Forum](#)

Background

See DAI Collateral [Proposal](#)

Protocol Analysis

Org. Structure

☐ Is the Protocol a DAO? How is it governed eg. delegates , snapshot (10)

MakerDAO's governance system is managed through a combination of several smart contracts called the Maker Governance Module, consisting of the DS-Chief, DS-Spell, and DS-Pause contracts.

DSChief (Chief Contract):

DSChief is the core of the MakerDAO voting system. It is essentially an approval voting contract. Users lock up their MKR tokens in the DSChief contract, and in exchange, they receive IOU tokens that represent their locked MKR. This locked MKR then provides the weight of their vote.

The chief contract manages the election of 'hats' - the winning proposals - via an approval voting system. Votes are cast for slates, which are simply lists of addresses that represent different proposals (spells). The address (or proposal) with the most votes becomes the 'hat', or the winning proposal.

DS-Spell (Spell Contract):

A spell, in MakerDAO's terms, is a smart contract that embodies a proposal. When executed, it performs the necessary modifications to the Maker protocol as per the proposal's specifics. This could be changes to risk parameters such as stability fee, debt ceiling, etc., or more complex system upgrades.

Spells are added to the blockchain, and their addresses are added to a slate of proposals for MKR holders to vote on via the DS-Chief contract. If the address of a spell gets the highest votes, it's set as the 'hat'. The spell, once it becomes the hat, can be executed to enact its proposed changes to the Maker Protocol.

DS-Pause (Pause Contract):

The Pause contract introduces a delay between the approval of a proposal (when the spell becomes the hat) and when it can be executed. This delay is crucial for maintaining the security of the system. It provides a window of opportunity for MKR holders and the ecosystem at large to react if a potentially harmful proposal gets approved.

For instance, if a malicious proposal is identified during the delay, the MKR holders can vote in a new proposal to replace the harmful one and prevent its execution. This period of pause helps to avert sudden, unexpected changes and furnishes an extra layer of oversight and security for the system.

In this governance system, each component plays a critical role:

- DSChief manages the voting process and elects the proposal with the highest votes.
- DS-Spell enforces the changes proposed.
- DS-Pause provides a safety buffer for the governance system by delaying the execution of proposals.

The combination of these elements ensures a decentralized, transparent, and secure governance process that gives control to MKR token holders. Each step in the process is recorded and verifiable on the blockchain, making it a fully transparent and trustless system.

☐ **Does Protocol publish analytics / transparency via Dune or similar (10)**

There is an active Data Insights Core Unit in the MakerDAO discord that provides analytics for the DAO. <https://tracker-vaults.makerdao.network/>

community-run pages such as <https://daistats.com/#/overview> are also very informative and paints a complete picture of Dai's collateralization.

☐ **working group structure (10)**

The working group structure at MakerDAO is Core Units. Important to note that MakerDAO plans to transition away from Core Units with their implementation of "Endgame" in 2024. The Core Unit model will change into multiple "Sub-Daos" and Ecosystem Actors.

[MakerDAO Core Unit Expenses](#)

- Dai foundation
- Data insights
- Deco fixed rates
- Govalpha
- Growth
- Immunefi security
- Oracles
- Risk
- Sidestream auction services
- Starknet engineering
- Strategic finance
- Sustainable ecosystem scaling
- Techops

☐ **are core contributors compensated / Doxed (10)**

[MakerDAO Core Unit Expenses](#)

Contributors are compensated and core unit budgets are voted in through governance, Most seem to be doxed.

☐ **Any known controversies in crypto space (e.g. Sifu) (10)**

[“Is MakerDAO Becoming a Company Run by Politics?”](#)

MakerDAO has had some governance controversy in the 2022, notably around its Lending Oversight Core Unit (LOVE). This controversy over extending the existence of the LOVE core unit brought forth the largest governance participation in MakerDAO history.

☐ **do they have a security or risk management team (10)**

Yes MakerDAO has a Risk Core Unit

Multisig Structure

☐ **Is protocol transparent of multisigs and signers, List/links of multisigs, purpose, and setup x of x (10)**

[Core Units and attached Multisigs](#)

Yes MakerDAO is transparent of multisigs which can be found in the link provided above. Most Core Units have attached multisigs, all multisigs at MakerDAO are purely budgetary.

☐ **Can multisigs interfere with collateral options? EOA minting (10)**

No. MakerDAO doesn't use multisigs for e.g. parameter changes, it's all done through governance.

Influence, Reputation, and Partnerships

☐ **How long has the protocol been around , have they endured long bear markets (10)**

MKR token contract was launched 2069 days 4 hrs ago (Nov-25-2017 06:24:17 PM +UTC), we believe this to be the inception of MakerDAO. MakerDAO is DeFi 1.0. Few protocols have more experience than this one.

- ☐ **Have they been exploited and how was it handled , was value restored to users (10)**

Not that we can tell.

- ☐ **Current and notable past partnerships , are they a net positive on the DEFI space (10)**

MakerDAO is a net positive in DeFi, it's attracted billions of dollars in TVL and is debatably the most trusted protocol in the space. MakerDAO partnerships are many, warranting their own blog which can be viewed [here](#).

Audits & Bug Bounties

Previous and Ongoing

- ☐ **Previous and Ongoing audits & bounties with links (10)**

MakerDAO has a \$10,000,000 Immunefi Bug Bounty on their contracts, They are also heavily audited by ChainSecurity who are highly regarded in Defi. With 8 total audits and the second largest bug bounty in the industry MakerDAO are among the most safe and trusted Defi protocols attracting 5.121B TVL.

[Immunefi Bug Bounty](#)

-<https://chainsecurity.com/security-audit/maker-protocol-liquidations-2-0/>
-<https://chainsecurity.com/security-audit/makerdao-g-uni-lp-oracle/>
-<https://chainsecurity.com/security-audit/makerdao-direct-deposit-module-d3m/>
-<https://chainsecurity.com/security-audit/makerdao-optimism-dai-bridge/>
-https://drive.google.com/file/d/1StG_v4qmV6EJjJDD-p7O11Ql3Dmrtfew/view?pli=1
-https://drive.google.com/file/d/1113PnxOz2ljsQih0tMkVW_raWcum0ZgU/view
-https://github.com/makerdao/dss-direct-deposit/blob/master/audits/ChainSecurity_MakerDAO_Direct_Deposit_V2_audit.pdf
-<https://chainsecurity.com/security-audit/makerdao-dss-charter-smart-contracts/>

Contracts in Scope

- ☐ **Is the scope a comprehensive list of contracts including collateral and wrappers**

Yes

Reward Payouts

- ☐ **Rewards paid, vulnerabilities found with severity**

None

Collateral Analysis

Oracles

☐ **Available Chainlink Oracles**

There are 12 Chainlink Data Feeds for DAI Listed below:

PAIR	NETWORK
DAI/ETH	Polygon
DAI/USD	Arbitrum
DAI/USD	Ethereum
DAI/USD	Fantom
DAI/ETH	Ethereum
DAI/USD	Avax
DAI/USD	Polygon
DAI/USD	Harmony
DAI.e PoR	Avax
DAI/USD	Optimism
DAI/USD	Moonriver Mainnet
DAI/USD	Moonbeam

☐ **Any advanced oracle or market implementation required**

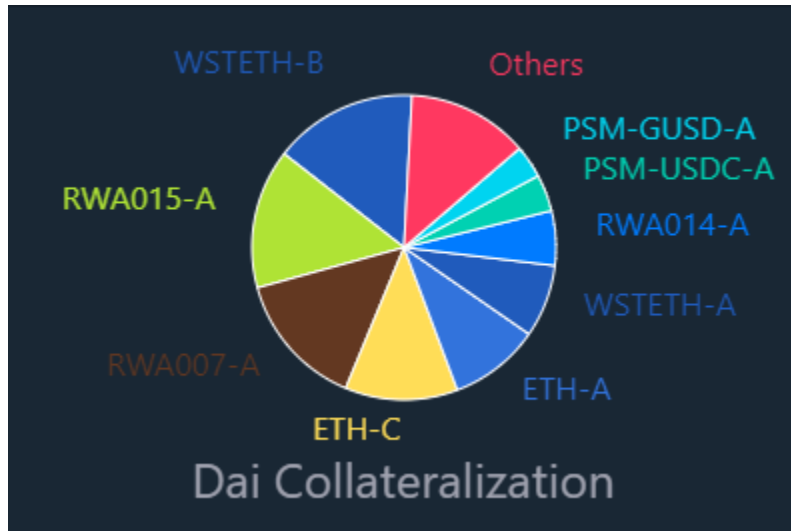
No advanced oracle required. For market implementation, DAI's DSR (savings rate) doesn't issue a receipt token. As such, the rewards implementation will differ compared to other reward-generating collaterals with markets on FiRM.

☐ **Peg Risk if any**

DAI is heavily collateralized by MakerDAO as seen [here](#) on DefiLlama along with very deep liquidity making this stablecoin ... stable. However, the Dai peg is subject to off-chain events which we've seen recently with the collapse and liquidation of [banks](#) that hold USD collateralization for USDC. Dai is heavily collateralized by USDC which means it too is affected by these events. These events trigger "bank runs" in on-chain liquidity pools where users swap to non affected stablecoins such as USDT.

<https://tracker-vaults.makerdao.network/>

<https://daistats.com/#/>



Token Statistics

☐ **Contracts**

[DAI](#)

[DSR](#)

☐ **Price / Market Cap / Circulating Supply / Locked Supply / True Circulating / Total / Max**

[Coingecko](#)

Price	Market Cap	Circulating Supply
\$1	4,196,598,908	4,196,598,908

Liquidity

☐ **Mainnet Dex Liquidity**

LP	Protocol	Liquidity (\$)	24 Hour Volume (\$)
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3POOL	Curve	290M	56.80M
DAI/USDC	UNI	107.20M	2.71M
DAI/USDC	UNI	62.32M	134K
FRAX/3POOL	Curve	159M	200k











☐ On-Chain Slippage

Trade	DAI ->	DOLA	Slippage (%)
\$50,000	50000	50084	0.17%
\$100,000	100000	100168	0.17%
\$250,000	250000	250411	0.16%
\$500,000	500000	500770	0.15%
\$1,000,000	1000000	1001341	0.13%
\$2,000,000	2000000	2001919	0.10%
\$4,000,000	4000000	4000895	0.02%
\$6,000,000	6000000	5996686	-0.06%
\$8,000,000	8000000	7988095	-0.15%
\$10,000,000	10000000	9971953	-0.28%

☐ Token Holders

The holders of DAI are very diverse, one thing to note is that there are large amounts of DAI in various bridges and lending protocols which are subject to exploits. The decentralization of the asset makes these risks negligible.

[Holders: 494,192](#)

1	 PulseX: Sacrifice 	278,919,727.186877714909963561	6.6758%
2	 0x60FaAe...5d29fB7F 	153,712,896.132913584452749328	3.6790%
3	 Polygon (Matic): ERC20 Bridge 	145,048,247.139309074702318548	3.4717%
4	 Arbitrum: DAI L1 Escrow 	132,106,586.491328567459095074	3.1619%
5	 Compound: cDAI Token 	115,792,912.473566391487939427	2.7714%

Utility & Use Case

☐ Does the Token have utility

[Dai Savings Rate \(DSR\)](#)

[DSR Contract](#)

The DsrManager provides an easy to use smart contract that allows service providers to deposit/withdraw dai into the DSR contract [pot](#), and activate/deactivate the Dai Savings Rate to start earning savings on a pool of dai in a single function call. To understand the DsrManager, it is necessary to have an understanding of the [pot](#) first. The DSR is set by Maker Governance, and will typically be less than the base stability fee to remain sustainable. The purpose of DSR is to offer another incentive for holding Dai.

☐ Goal of the token, where is value derived from

The origin of DAI was designed to represent any token that the core system considers equal in value to its internal debt unit. This makes Dai very similar to DOLA in that they are debt backed stablecoins. This allows users to swap in and out of volatile positions and hold their on-chain value in USD denomination.

Competitive Analysis

Competitive Markets & Implementation

☐ Competitor Markets with supply & borrow capacity

One notable competitor that closely resembles the configuration of FiRM isolated markets is Abracadabra. Abra offers a yvDAI market where collateral APY is 5.3%, CF is 98% and liquidation fee is 0.5%.

FiRM will not be using 3rd party collateral (yvDAI) for this market, it directly uses the MakerDAO DSR contract to enable DAI yield. The DSR contract has been heavily audited and falls under a \$10M bug bounty with Immunefi.

☐ Competitor Oracle Solutions

Chainlink

☐ Notable competitor failures

Terra and UST.

Conclusion

Asset Score

July 26th, 2023: The RWG evaluated DAI making use of our in-house comprehensive [asset scoring model](#). This framework evaluates the relative “risk” of DAI as an asset, using wETH as a benchmark, by considering six essential factors: market capitalization, trading volume, price volatility, token distribution, project fundamentals, and token utility. A breakdown of the Total Asset Score (TAS) follows:

Component	Link/Rationale	Score
Market Capitalization	$MCS = \min(10, (DAI \text{ Supply} * DAI \text{ Price} * 200) / (wETH \text{ Supply} * wETH \text{ price}))$	10
DEX Trading Volume	$TVS = \min(10, (30 \text{ Day Avg Token Trading Volume} * 200 / 30 \text{ Day Avg wETH Trading Volume}))$	10
Price Volatility	$PVS = \min(10, 10 - (Token \text{ Log Price Volatility} / wETH \text{ Log Price Volatility}) * 9)$	9.93
Token Distribution	$\text{Token Distribution Score} = \min((1 - \text{Token Gini Index}) * 10 / (1 - wETH \text{ Gini Index}), 10)$	10
Project Fundamentals	Risk Assessment DAI Collateral on FiRM - See Protocol Analysis, and Audits & Bug Bounties Sections	10
Token Utility	Risk Assessment DAI Collateral on FiRM - See Collateral Analysis Section	10
Total Asset Score		
$TAS = 10 * 0.2 + 10 * 0.15 + 9.93 * 0.15 + 10 * 0.1 + 10 * 0.2 + 10 * 0.2$		
$TAS = 9.98 / 10$		

DAI scores exceptionally in all categories. From this we can draw the following conclusions:

1. **Price Volatility:** A high score in price volatility suggests that DAI price experiences minimal fluctuations or instability compared to the benchmark (wETH). This volatility indicates a lesser level of risk associated with DAI's price movements.
2. **Token Distribution:** A high score in token distribution indicates that DAI tokens are well distributed amongst numerous holders or addresses, potentially resulting in an even distribution of ownership. This distribution speaks to the asset's decentralization, market stability, and deep liquidity.
3. **Market Capitalization:** A high score in market capitalization suggests that DAI has a noteworthy overall market value relative to wETH. A high market capitalization score indicates that DAI has attained a considerable level of adoption or popularity.
4. **Trading Volume:** A high score in trading volume indicates that DAI experiences high levels of trading activity compared to wETH. Higher trading volume generally implies deep liquidity and market interest, making it easier for investors to buy or sell DAI without significant price impact or slippage. This is also important in the context of liquidations.
5. **Project Fundamentals:** A high score in project fundamentals suggests that DAI's underlying project has strong attributes, such as an experienced team, solid technology, and a promising roadmap. This positive evaluation indicates that the project has a strong foundation and potential for success.
6. **Token Utility:** A high score in token utility implies that DAI's tokens have diverse use cases and functionality within the associated ecosystem. The higher the score, the more versatile and valuable the tokens are perceived to be. Token utility is essential as it reflects the demand and practical applications of DAI within its ecosystem.

Parameter Recommendations

Supply Ceiling	5,000,000 DOLA
Initial Fed Supply	2,000,000 DOLA
Daily Borrow Limit	500,000 DOLA
Firm Global Supply Ceiling	42,000,000 DOLA
Collateral Factor	90%
Liquidation Factor	50%
Liquidation Incentive	5%

- ☐ **Supply Ceiling** - Setting the supply ceiling for an asset, though influenced by such factors as market demand, collateral volatility, correlation with other assets, and overall risk appetite, should ultimately be determined by considering the overall liquidity picture and slippage figures for said asset. Put simply, If the collateral has high liquidity, then the supply ceiling can be set higher because it is easier to sell the collateral in case of liquidations. In the case of DAI, liquidity is deep. Slippage figures are minimal, with a \$10M DAI trade incurring only 0.28% slippage. DAI has enough liquidity depth spread

across different markets to support multiple 8-figure sell orders without price being affected. At the same time, it's in Inverse's best interest to diversify the backing of DOLA and the stablecoin asset class, yet to be explored, is a "must-have". With the introduction of the DAI market, the RWG is targeting a 25% stablecoin backing for DOLA. Based on the above, we recommend the initial supply ceiling for DAI be set to \$10,000,000.

- ☐ **Initial Fed Supply** - the amount the Fed injects to the market up to supply ceiling. The RWG recommends this amount be \$5,000,000. The Fed Chair plays an active role in liquidity management of FiRM markets and has the proven track record of adding and/or removing DOLAs on short notice.
- ☐ **Daily Borrow Limit** - Like all factors here, daily borrow limit is set to strike a balance between meeting market demand and managing risk. DAI scored exceptionally in our asset scoring model framework, receiving full marks in most categories. Based on this, the RWG recommends the daily borrow limit amount be set to \$1,000,000 per day. This figure matches the highest borrow limit for an active market.
- ☐ **Firm Global Supply Ceiling** - Global Supply ceiling (currently set at \$37,000,000) will increase to \$47,000,000 to account for the supply ceiling for the DAI market.
- ☐ **Collateral Factor** - Represents the maximum amount of debt a user can borrow with a selected collateral token. Setting the collateral factor requires balancing the risks associated with the asset being used as collateral with the demand for loans. Assets with lower risks may have higher collateral factors, while assets with higher risks may have lower collateral factors. Ultimately, the collateral factor is closely related to, and influenced by many of the factors pertaining to the parameters presented above. While parameters above act as a backstop, the collateral factor determines whether an attack on the protocol can be profitable for the potential exploiter capable of manipulating our price oracle implementation. Given all the above and taking into account the results of our Asset Scoring Model, the RWG recommends we launch the DAI market with collateral factor set at 90%. At 90% CF, the protocol starts to take on bad debt if the DAI oracle price allows for an account's collateral to become less than 10% the value of the loan position. For this to happen, a price drop of 9% or more is needed for the collateral asset before a full liquidation is able to take place (full liquidation meaning the position is brought back to health, not the entire loan being repaid).
- ☐ **Liquidation Factor** - This represents the threshold at which a borrow position will be considered undercollateralized and subject to liquidation. It's likely our TWG will have to carry out liquidations for this market initially as we can't assume automated liquidations will take place by MEV liquidators (until we can prove DAI is being searched). As such, we recommend the liquidation factor be set to 50% to match the Collateral Factor.
- ☐ **Liquidation Incentive** - The discount a liquidator gets when buying collateral flagged for liquidation. The RWG recommends this be set to 5%.

