

Stablecoin Safety Assessment

Coin	Liquity USD (LUSD)
Date	04-06-2023
Overall Grade	A

Factor Scores:

S. No	Factor	Score	Assessment
1	Stability	0.91	Stable
2	Management	1.00	Very low risk
3	Implementation	N/A	Not assessed
4	Decentralization	1.00	Very low risk
5	Governance	1.00	Very low risk
6	Externals	N/A	Not assessed

Summary

- LUSD is the most decentralized stablecoin and is entirely issued, managed and redeemed on-chain.
- It is part of Liquity Protocol, a lending dApp that is autonomous, immutable, and governance-free.
- LUSD is one of the safest on-chain stablecoins, because it requires no governance, management, or trust in counter-parties. In designing such a stablecoin, the makers of LUSD have made a conscious decision to eliminate risks which stem from human judgment and embrace technical risks instead.
- Liquity advertises a minimum required collateralization ratio (CR) of 110%, which can be perceived as risky, but the actual CR is currently above 250%.
- Although Liquity's smart contracts have been audited twice and no exploits have occurred till date, users are reminded that smart contract and oracle risks cannot be eliminated. Unidentified vulnerabilities can lead to a loss of all funds. This risk is common to all stablecoin systems that are managed by smart contracts.
- LUSD is most ideal for sophisticated users who trust code over humans as custodian of their assets, and can make independent judgment about a stablecoin's technical risk.

Evaluation**1. Stability** [Score 0.91]**1.1. Reserves** [Score 0.96]**1.1.1. Collateralization % and Type of Collateral** [Score 0.88]

LUSD is solely backed by ETH and is 268% collateralized. This is well above the minimum CR of 110% for individual vaults and 150% for the protocol.

Note: Please see the Mechanism section for an explanation of LUSD's stability.

1.1.2. Storage of Assets [Score 1.00]

LUSD's reserves are held in Liquity's fully audited contracts. These contracts have been audited by Trail of Bits and Coinspect.

Our score does not reflect whether Liquity's smart contracts are technically sound and error-proof. Rather, it indicates the general relative safety of protocol-owned smart contracts over third-party smart contracts, multi-sig wallets and EOA accounts.

1.1.3. Asset Segregation [Score 1.00]

ETH reserves are fully segregated for the benefit of LUSD holders and trove owners.

1.2. Market Feedback [Score 0.95]**1.2.1. Frequency of Deviation Below Peg** [Score 1.00]

Number of Days where VWAP < Peg by 0.5% or more during the past 180 days = 0

1.2.2. Max Deviation Below Peg [Score 1.00]

Biggest daily VWAP deviation below peg: 0.3%

1.2.3. Volatility (% per day) [Score 0.75]

Daily volatility (%) over the past 180-day period: 0.41%

1.2.4. Downside Volatility in a Market Downturn [Score 1.00]

Average deviation below peg during the 5 worst-performing days for BTC (DoD price change) in a 180-day period: 0.012%

1.2.5. Liquidity Pool Imbalance

[Score 1.00]

Pool 1 - LUSD Metapool (LUSD/3CRV)

- LUSD Share of Pool - 18%
- Pool Type - 2 Token
- Optimal Share of LUSD - 50%
- Deviation from Optimal Share - (65%)
- Non-LUSD TVL in the pool - \$18,370,523
- Pool Score - 1

1.3. Stability Mechanism

[Score 0.79]

1.3.1. Core Mechanism

[Score 0.83]

Liquity's smart contracts incorporate two mechanisms for LUSD's stability:

- Liquidation - LUSD is created when users open collateralized debt positions ('troves') to borrow LUSD against ETH collateral. LUSD is burned when borrowers close troves by repaying LUSD. However, this mechanism does not directly help LUSD maintain its peg. Instead, it is meant to ensure that the value of collateral in troves is always greater than the value of LUSD borrowed by trove owners. Without redeemability, it is possible for LUSD to trade at any value above or below \$1 even if fully-collateralized.
- Redeemability - Holders of LUSD have the option to redeem LUSD for ETH directly. This provides a \$1 floor value for LUSD.

Users should note that redemption of LUSD is currently possible only through 3 of 18 front-ends. They are available here: [Front-end 1](#), [Front-end 2](#), [Front-end 3](#).

Why do we consider LUSD safe?

- Liquity's CR is 268%, even though the individual minimum CR for triggering liquidation is 110% and system-wide minimum CR is 150%.
- Further, the stability pool derisks liquidation failures substantially. Over 60% of LUSD supply is in the stability pool, ready to pay off debts and take over ETH collateral in exchange.
- For the protocol to accrue debt through failed liquidations the following should happen:
 - 1) ETH price would first have to drop ~50% rapidly to trigger a system wide liquidation at 150% CR (for all troves at <150% CR)
 - 2) All LUSD in the stability pool is fully utilised during liquidation.
 - 3) Price of ETH continues to drop. Simultaneously, all liquidable debt is redistributed to other troves which have CRs >150%.

4) This continues until system-wide CR is <100% and debt accrues.

Essentially, a total liquidation failure is highly unlikely to occur in a short span of time. The protocol transfers the burden of liquidation and collateral management to healthy borrowers instead of retaining the responsibility.

As an added safety mechanism, while all of the above take place, an LUSD holder can directly redeem for underlying collateral at any point of time, without having to hope that liquidations will maintain the peg.

1.3.2. Primary Liquidity Access [Score 0.75]

Liquity's smart contracts offer permissionless redemption of LUSD but only a limited number of front-end applications enable this. Without easy accessibility, the redemption feature is practically useless. Our score factors in a 25% penalty.

2. Management [Score 1.00]

2.1. Restrictions [Score 1.00]

2.1.1. Known Core Teams [Score 1.00]

Liquity was developed by Liquity AG. However, the developer has no control over the smart contracts. Liquity AG is led by Robert Lauko (Founder and Head of Research) and Michael Svoboda (CEO).

2.1.2. Jurisdiction Score [Score N/A]

The Liquity Protocol does not have a legal structure in any jurisdiction. It is a set of fully autonomous smart contracts that exist on the Ethereum chain.

2.2. Track Record

2.2.1. Team's Background [Score N/A]

Not scored

3. Decentralization [Score 1.00]

3.1. Regulatory Oversight [Score 1.00]

Liquity Protocol is fully-decentralized and permissionless. It is not subject to any regulatory oversight.

3.2. Custodian Risk**[Score 1.00]**

Liquidity Protocol does not rely on custodians for storage of assets. All assets are held in the protocol's own smart contracts.

3.3. Type of Collateral**[Score 1.00]**

LUSD is backed entirely by ETH collateral which is not censorable.

(Fiat currencies earn a score of 0 and decentralized cryptocurrencies earn a score of 1).

3.4. Decision Making & Voting Power**[Score 1.00]**

LUSD is an independent stablecoin that is not governed by any governance token or equity holders. The protocol does not require any governance activities.

3.5. User Blacklisting**[Score 1.00]**

LUSD's smart contracts are permissionless. Blacklisting is not possible.

4. Governance**[Score 1.00]****4.1. Voting System****[Score 1.00]**

The Liquidity protocol does not have a voting system. The risks associated with voting and outcome execution are eliminated.

4.2. Anti-Governance Attack Measures**[Score 1.00]**

As an immutable protocol, Liquidity does not have a governance token, making it impervious to governance attacks.