StableBase: A Base layer Stablecoin protocol.

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Abstract

Most stablecoin protocols in the market today are optimized for yield incentives for stablecoin and token holders, making stablecoin borrowing costs prohibitive for many real-world use cases. In this whitepaper, we introduce StableBase, a base layer stablecoin protocol built in Solidity using Collateral Debt Position(CDP) mechanism. The protocol aims to provide a base layer stablecoin with 0% interest rate and user governed origination fees, allowing higher layer protocols to offer yield opportunities and enable the utility of stablecoins across various consumer use cases. This paper outlines the underlying technology, stability mechanisms, issuance and redemption processes, along with unique features and governance structure. StableBase protocol issues a USD-pegged stablecoin named SBD, also known as StableBase Dollar.

Introduction

The mainstream adoption of cryptocurrencies as mediums of exchange has been hindered by their volatility, prompting the emergence of stablecoins to meet market demand. However, most stablecoins today, excluding fiat-backed ones, are unsuitable for real-world use cases due to high interest rates and origination fees. The yield mania has attracted users, mainly speculators, leveraging stablecoins for speculative purposes. To make decentralized stablecoins attractive in broader contexts, we propose a layered approach, with a base layer being open, low cost, and decentralized, while higher layers innovate on incentives, accessibility, and other parameters. This paper presents the design for such a base layer stablecoin protocol.

Technology

StableBase is built using Solidity on the Ethereum blockchain, benefiting from its smart contract capabilities, security, and widespread adoption within the decentralized finance (DeFi) ecosystem. However, it is adaptable to any blockchain / smart contracting platform that has a reliable decentralized oracle. For our implementation on Ethereum, we use Chainlink as the oracle provider.

Borrowing and Withdrawal

StableBase utilizes a CDP mechanism, requiring users to overcollateralize their loans by at least 110%. Users create a Safe, where they deposit their collateral and the protocol issues SBD token. By opening a Safe with StableBase, the user borrows SBD coins at 0% interest rate, and pay an origination fee equivalent to the base rate, while also accepting the risks of Liquidation and Redemption, and actively contributing to the stability and governance of the protocol through CRR mechanism described below.

Withdrawal is facilitated through repayment of the borrowed SBD back to the protocol.

Base Stability Rate or Base Rate

Base Rate is initially set to 0%, and is dynamically updated based on average base rate set by users. For more details on this, check the governance.

Interest Rates

Interest Rates are always set to 0%.

Stability Mechanism

The stability of the stablecoin and protocol is ensured through three mechanisms: Liquidation, Redemption, and the Cash Reserve Ratio (CRR).

Liquidation

Liquidation occurs if the value of the collateral falls below 110% of the borrowed amount, ensuring stability. There are two liquidation modes:

Automatic Liquidation

When an automatic liquidation is triggered, the liquidated collateral is distributed among other CDP, and their debt is increased. The protocol also pays the user that triggered with a fee of base rate(maximum of 1%).

Third party Liquidations

A third party, such as a user or a Liquidation Pool(out of scope for the protocol), can trigger liquidation by paying the debt, and the collateral minus the liquidation fee equal to base rate(maximum 1%) will be returned to the liquidator.

Redemption

Users can redeem stablecoins for the underlying collateral at a 1:1 ratio, with fees equal to base rate charged to the redeemer and distributed to other depositors in the Reserve Pool.

Cash Reserve Ratio(CRR) and Reserve Pool

In traditional finance (TradFi), the Cash Reserve Ratio (CRR) is a rate determined by central banks, specifying the percentage of cash deposits that banks are required to hold as reserves. In our protocol, we adopt a modified definition of the CRR.

The CRR, defined as the percentage of borrowed stablecoin value held in the Reserve Pool, can be specified by users at the time of borrowing. This mechanism empowers the protocol to autonomously manage the coin supply in response to market conditions.

Redemption Mechanism

The CRR selected by the user will also determine the order of redemption, if and when the redemption happens. The lowest CRR Safes are the first to be redeemed. During redemption, a fee equivalent to base rate of the value redeemed will be charged to the redeemer.

Unique Features

StableBase offers several unique features:

1. 0% interest rate
2. Introduction of user governed origination fee.

3. Introduction of a mandatory User-defined Cash Reserve Ratio.
4. Introduction of redemption from Safes with the lowest CRR.
5. A base layer protocol with 0% interest rate, enabling higher layer innovation in yield and rates.
6. Yield for CRR depositors(Reserve Pool).

Use Cases

StableBase Dollar (SBD) serves as a reliable medium of exchange for various real-world transactions, including cross-border payments, remittances, e-commerce, and DeFi activities. It also enables layer 1 borrowing protocols to facilitate higher yield for stablecoin holders, or offer lower cost in supply chain and trade finance, enable efficient and high yielding peer-to-peer lending protocol, thanks to its 0% interest rate.

Stability Assurance

The redemption and liquidation mechanisms maintain the stability of StableBase (SBD), ensuring its value remains close to 1 USD, while Cash Reserve Ratio helps shrink and expand the supply of stablecoin further aiding in stabilising the peg.

Governance

Governance of StableBase is determined by users' stake in the Reserve Pool. The governance actions include:

1. Addition of new collateral types.
2. Setting base rate.

Addition of new collateral types

Any user can submit a proposal to add a new collateral type. The proposal consists of TokenAddress, CollateralizationRatio, EffectiveDate. Voting runs onchain for 28 days and users who have a stake in the reserve pool can vote. At the end of the voting period, Total votes will be tallied and the proposal will be made effective if > 67% of the voters voted 'yes' for the proposal. Users cannot withdraw from reserve pool until after the voting, and new users(< 30 days) in the reserve pool will not be considered for voting.

Dynamic Updation of Base Rate

The base rate is initially set to 0%. Any user can dynamically change the base rate and the protocol calculates a stake weighted average of the base rate set by stakes in reserve pool and that becomes the effective

1. Origination fee rate, when a new Safe is opened.
2. Redemption fee rate(minimum: 0.5%, maximum: 1%), when a Safe is redeemed.
3. Liquidation fee rate(minimum: 0.5%, maximum: 1%), when a Safe is liquidated.

Updating the base rate also has consequences for the Safes. Imagine, a user paid no-origination fee when they first opened their Safes, and they want to update the base rate to 0.5%, the protocol would only accept that rate if the user has also paid the newly calculated origination fee. This mechanism would ensure that the users do not set an arbitrarily higher base rate.

Tokenomics

As a purely decentralized stablecoin, StableBase (SBD) does not offer any additional tokens apart from the stablecoin itself.

Risks

While the unique features present exciting opportunities, there are associated risks. The complexity of the CRR mechanism and redemption process may challenge users, and robust risk management protocols are essential to mitigate potential manipulation.

User Experience

The complexity of the CRR mechanism and the redemption process may present challenges for users, especially those unfamiliar with DeFi/TradFi concepts. Ensuring a smooth and intuitive user experience will be essential for adoption.

Risk Management

While the CRR mechanism adds flexibility, it also introduces potential risks, such as manipulation. Thus, robust risk management protocols and monitoring mechanisms will be crucial to mitigate these risks by those that open a Safe with stablebase, thus the protocol mainly caters to the sophisticated players in the ecosystem, while higher layers of the protocol would allow for usage by regular users who want predictable rates.

Conclusion

StableBase represents a significant remodelling of existing CDP based protocols, with better stability mechanism through the introduction of a user-defined Cash Reserve Ratio and crowd governed Origination fees, along with a better incentive structure through the introduction of yield bearing reserve pool, and by providing a reliable medium of exchange with low rates, StableBase aims to accelerate the adoption of digital currencies in the global economy.