x Døllar

On behalf of xSD contributors

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March 9, 2021

Abstract

Most realizations of decentralized stablecoins so far have been based on collateral reserve models. These work reasonably well, but are both capital inefficient and carry risk to the underlying collateralized assets. Additionally, the total supplies of these stablecoins are constrained to strictly less than the available reserve assets on-chain. However, the few uncollateralized stablecoins like ESD and its forks that have been implemented, have severely underestimated the non-market driven parameters for expansion and contraction (especially during bootstrap) and the negative feedback loops it created and moral hazards introduced in governance to try and solve some of the issues. In this paper we'll propose instead an elastic market driven supply stablecoin constructed on existing primitives like ESD, and describe its implementation as a fully decentralized Avalanche DAO.

1   Prior Work

Instead of reinventing the wheel, we aim to construct x Døllar using already existing primitives where possible, namely from ESD and its forks on Ethereum. This allows for a minimal implementation with few unknown unknowns while learning from the failures of previous uncollateralized stable coins

x Døllar's mechanisms are inspired by the ESD whitepaper[1].

2   Contract Architecture

The Døllar protocol is operated by a DAO that governs and can regulate the supply of its stablecoin xSD via enabling a market over control of supply. Its DAO utilizes a price oracle contract built ontop of the xSD:USDC Pangolin pool. This modular

design allows for easy upgrades as x Døllar's ecosystem becomes more robust.

3   Epoch

x Døllar's DAO splits time into distinct epochs of a couple hours to simplify logic around governance, supply regulation, and flash loan resistance.

Epochs are *advanced* manually by sending an advance() transaction to the DAO. This allows us to apply state transformations like coupon expiry and supply regulation on advancement. To incentivize this behavior, the DAO mints xSD tokens to the sender upon successful advancement (during bootstrap, and only when above $1 reference price. When xSD is trading below $1 outside of bootstrap, the advancement happens when the first person places a coupon bid).

Epochs are available for advancement based on the current block timestamp, however there are no guarantees that an epoch will be advanced immediately when available.

4   Bonding

x Døllar is a single token protocol. In addition to being the stable asset, xSD tokens are also used to gain ownership in its DAO.

Users deposit xSD tokens into the DAO which can then be bonded. Bonded tokens grant the owner stake in the DAO.
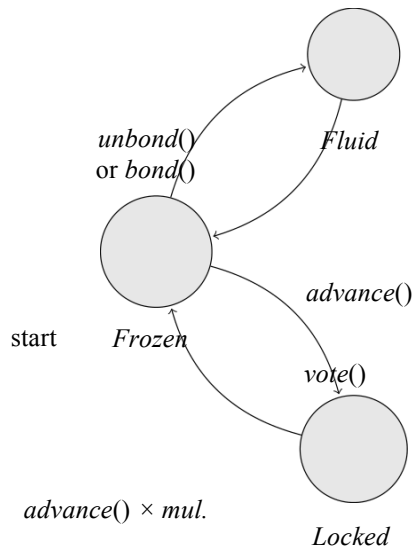

We introduce a special state Locked to cover cases where our DAO must lock already-bonded user funds for multiple epochs. A user enters this state when voting during the governance process, and remains there until the election has concluded to ensure the user's balance is unchanged for the duration.

To summarize, the user can only bond and unbond when their account is Frozen or Fluid, but can deposit, withdraw, vote.

5 Oracle

x Døllar's initial oracle is constructed using the xSD:USDC Pangolin pair, giving us a flash loan resistant price feed out of the box. New average weighted prices are polled and computed from the oracle's data during each epoch advancement cycle.
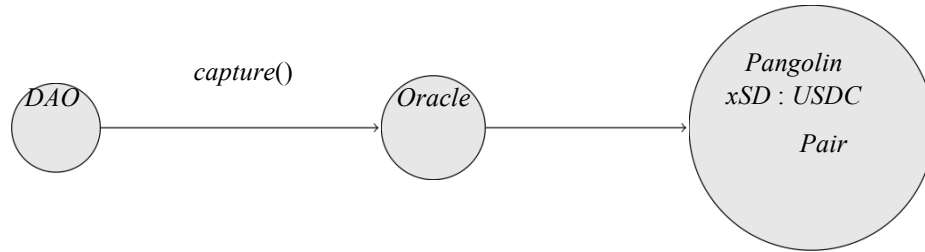
5.1 Incentivization

At launch there is no incentivization for the DAO or for LP, however after the governance lock up period, this can be changed if governance allows for a cut from the redemption pool for them.

6 Stability Mechanism

x Døllar has no built in stability mechanism to determine the change in supply, $\Delta supply$. That is to say, $\Delta supply$, is solely determined by the best bidders coupons assigned in the coupon market and coupon expiration before redemption. This forces all market participants to put xSD tokens at risk if they want a share of any expansion and reduces competition between the DAO seen in ESD et al (which is relegated to solely for governance at launch) and inflation below peg due to advancements as seen in aforementioned.

6.1 Supply Extension

For positive $\Delta supply$, new xSD tokens are minted by the DAO and distributed as follows:

1. When xSD price > 1, tokens are credited to redeemable pool, for outstanding coupons, based on the best bidders in the previous settled auctions. (1st bidder in Auction 1, 1st bidder in Auction 2, 1st bidder in Auction n, 2nd bidder in Auction 1, 2nd bidder in Auction 2, etc).

6.2   Supply Contraction

In order to contract the supply, we must incentivize participants to burn their xSD tokens. This is accomplished by offering coupons redeemable for a premium quantity of future xSD at the premium of the markets choosing.

To contract $\Delta supply$, the DAO creates a coupon auction for every epoch, which xSD holders pick their expiration, premium and how much xSD tokens that may be burnt in exchange for coupons.

7   Coupon Market

To incentivize burning xSD for coupons, control of xSD supply (and indirectly the DAO) is put up for auction at every epoch, where the top x% of bidders in the auction are assigned coupons on the terms they bid for them on. Bidders with the most riskiest (highest xSD burn, lowest yield, shortest expiration) bids pay less gas for their bids, bidders with the least riskiest (lowest xSD burn, highest yield, longest expiration) bids pay more gas for their bids.

7.2   Redemption

Coupons entitle holders to a 1:1 redemption of xSD tokens at some point in the future. When there is a supply growth event, new xSD tokens are first credited to the redeemable pool. This pool is first-come first-served for redemption by any current coupon holder.

8 Governance

The DAO is fully self-governing at launch after around 1080 epochs have passed A new DAO implementation may be proposed thereafter at any time by any current stakeholder with at least 1% of the current DAO stake.

Voters have 7 days to choose to either approve or reject the candidate implementation. If a quorum of 33% is reached and more votes approve, then the new implementation may be committed.

By allowing only full implementation upgrades, even for simple constant modifications, we ensure a lightweight governance process.

9 Bootstrapping Mechanism

xSD bootstraps by distribution supply to those who call advance, as well as those who put xSD at risk for coupons when the LP pool on Pangolin has at least 200 USDC in it (and only when above the $1 reference price after this). This ensures that the bootstrapping of xSD is purely driven by the demand in the market for xSD and that xSD isn't minted below the reference price.

References

[1] Empty Set Squad, Døllar , (2020).

https://github.com/emptysetsquad/dollar/raw/master/d%C3%B8llar.pdf