

them to purchase a basket of cryptocurrencies⁴ at market rates through a smart contract. These purchases get added to the reserves. This is analogous to a central bank expanding the money supply by buying financial assets on the open market and depositing them in the reserves.

When the coin supply needs to contract, the protocol uses reserve assets to buy Celo Dollars on the open market. This is analogous to a central bank selling financial assets on the open market in order to contract the money supply.

3. The protocol has a variable rate transfer fee on Celo’s native asset, to encourage long-term holding of the reserve currency. The proceeds from the fee goes to bolster the reserves, and the rate is based on the reserve ratio – the lower the reserve ratio, the higher the transfer fee.
4. The protocol uses a proof-of-stake model for governance. The weight of a node in governance decisions is dependent on the amount of Celo they stake⁵
5. Every time a block reward is distributed, an equivalent portion of Celo is released. If the reserve ratio is substantially higher than the target reserve ratio, then the released amount is largely allocated for incentives (e.g. to developers and users). If the reserve ratio is substantially lower than the target reserve ratio, the released amount goes mostly to towards bolstering the reserves.

An analysis of the stability characteristics of this protocol is given in [7].

3.3 Shared Reserves

While a single stable coin would be useful for several purposes (for example in cryptoasset trading and internet commerce), a more robust ecosystem would involve a family of local, regional, and utility stable value coins. The benefits of such a monetary ecology has been discussed broadly, for example in [9, 16, 15], but here we focus on one: a stable currency is only meaningful if it is stable vis-a-vis the price of goods and services that are purchased using that currency. Using a global currency for local transactions would introduce price volatility in regions where regional consumer price dynamics vary from the global consumer price dynamics⁶.

From a protocol perspective, we are interested in two mechanisms here: (a) a governance scheme that determines how the protocol makes decisions on introducing new regional stable coins, and (b) a structure in which the introduction of a new successful stable coin increases the stability characteristics of the coins in the family.

As a starting point, we can imagine a protocol where each new stable coin is independent – there is a blockchain and reserve for each new currency introduced. In this scheme, the governance question is straightforward – teams will independently choose to introduce new stable value coins outside of the protocol, and people can choose independently to purchase the new coins and their complementary reserve assets. Governance on this issue is determined outside of the protocol, by the market.

However, this simplicity comes at a cost: the introduction of a new successful stable coin has no stabilizing effect on existing stable currencies, and on the margins it has a small destabilizing effect⁷.

To address this issue, we introduce the idea of shared reserves. When the protocol introduces a new stable value coin – for example, a stablecoin pegged to the Euro – the reserves for that coin are the same reserves for Celo Dollars. When the supply of Celo Euros needs to expand, it expands using the same mechanism as with Celo Dollars – the protocol creates new Celo Euros, and uses those to purchase a basket of crypto assets for its reserves. When the supply of Celo Euros needs to contract, the protocol uses the same mechanism as before: it sells reserve assets in exchange for Celo Euros and retires the Celo Euros.

⁴Initially, the Celo native asset, and longer-term through a basket of cryptoassets via cross-chain decentralized exchanges once available

⁵future versions of the protocol could be based on amount at stake and length of time remaining in their stake.

⁶For example, with Greece and the Euro, or with dollarization in Uruguay

⁷If the demand for the new stable coin is high enough, it could potentially cause a contraction in demand for existing stable coins, reducing the value associated with the complementary assets of those existing coins, and increasing uncertainty around long-term demand of the existing coins.