EMERALD

LEDGER TECHNOLOGIES

Stable Coin Technical Sheet

Disclaimer

The TOSHI stablecoin is a cryptoasset created to ensure price stability. It is the sole responsibility of the user to be familiar with all ALL laws associated with cryptoassets within their respective jurisdiction before exchanging. The TOSHI stablecoin described within this technical sheet does not constitute any investment, financial or trading advice and you should not treat any of the technical sheet's content as such. We recommend each individual conduct their own due diligence and consult a financial professional before purchasing any TOSHI stablecoin.

Introduction

National States now face the threat of impending hyperinflation, unregulated black markets, local currency devaluation, and diminished trust in governmental financial instruments. In Argentina, citizens must purchase bitcoin from black market vendors to counteract their nation's fiat instability. Inflation in Venezuela is projected to reach 10,000,000% next year. In Iran, an imminent recession is forcing citizens to escape to neighboring countries, causing a migration crisis across many international borders. Citizens of various countries are losing trust in their national currencies.

Bitcoin, a currency not controlled by any government, remains impossible to seize and retains its value over yearly periods. Despite its benefits, Bitcoin is exceedingly volatile as a currency. A viable alternative are stablecoins, cryptoassets that retain their value relative to other stable currencies, such as the United States dollar. Stablecoins share all the features that make Bitcoin so appealing, but do not suffer from the same volatility, making them significantly more functional as an exchange unit for value.

Stablecoins are one of the highest convexity opportunities in decentralized currencies. Stablecoins retain global availability and serve as a viable replacement of the total addressable market (TAM) of the world's current money supply: ~$270T.

The stablecoin vision is larger than that of Bitcoin itself. A fiat-free currency at stable pricing will challenge the legitimacy of weak governments globally. Trustless stablecoins will allow cash flow yields from alternative asset classes, such as real estate or art, providing the world liquidity of leading stability-centered assets.
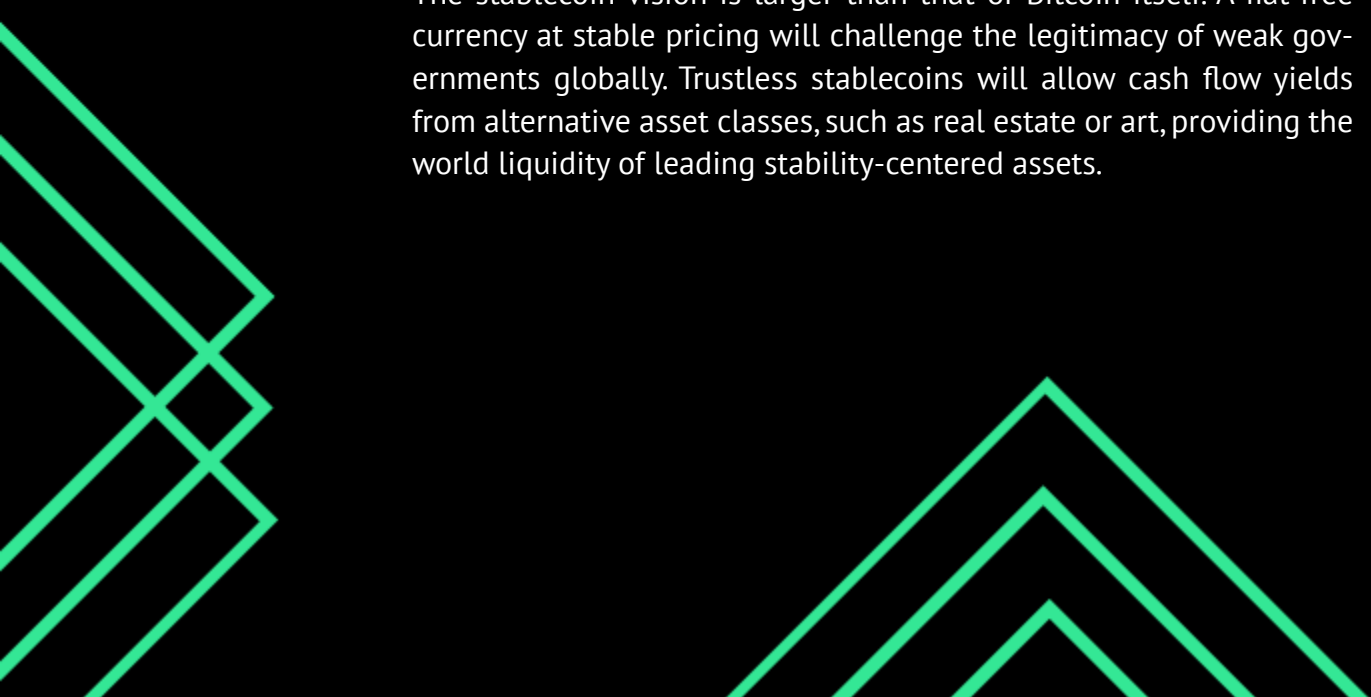
Stablecoin Models

Stablecoins have existed since 2014 with the issuance of Tether. In 2019, Emerald Ledger Technologies has pioneered the first viable stablecoin through the first Market stablecoin. Currently, is it the only viable stablecoin solution available today.

There are 4 different models for stablecoins
- Collateral (obsolete)
- Centralized IOU Issuance (obsolete)
- Seigniorage (obsolete)
- Market (functional)

Collateral

Collateral backed stablecoins rely on the financial solvency of trustless assets on-chain. This model is incorporated into BitShares, Maker, and Havven. Here, the collateral backing the stablecoin is itself a decentralized cryptoasset. In the case of Maker, Maker's Dai stablecoin is backed by ETH held as collateral in an Ethereum smart contract. This approach has the benefit of being decentralized. The collateral is held trustlessly in a smart contract, so users are not relying on any third party to redeem it.

This approach allows users to create stablecoins by locking up collateral in excess of the amount of stablecoins created. For example, a Maker user could generate $100 worth of Dai stablecoins by locking up $150 worth of Ether. The collateral is held in a smart contract, where it can be accessed by paying back the stablecoin debt, or be automatically sold by the contract software if the collateral falls below a certain threshold. This allows for collateral-backed stable-

coins that do not require trust in a central party.

Here, the problem remains that the collateral backing the stablecoin is volatile, either BTS or ETH. If the value of this asset drops too quickly, the stablecoins issued becomes undercollateralized. For this reason, most projects using this model require that the stablecoins be overcollateralized to protect against sharp price movement. While this provides some degree of certainty, remaining is the potential for a black swan event causing collateral prices to drop so quickly the stablecoins become undercollateralized.

Centralized IOU Issuance

IOUs guarantee buying parties a return on investment sometime in the future. This model is used by tokens such as Tether and Digix. Here, a centralized company claims to hold assets in a bank account or vault and issues tokens that represent a claim on the underlying assets. The digital token has value because it represents a claim on another asset with some defined value. The problem in this approach is centralization. These tokens require trust in the issuing party legitimately holding the assets being represented, and that they are willing to honor the IOUs. Whether centralized companies truly hold these assets may be indeterminable. This model imposes serious counterparty risk on holders of the token.

Seigniorage

Seigniorage is the difference between the face value of money, such as a $10 bill, and the cost of its production. The seigniorage model manipulates the supply of the price-stable currency by contracting and expanding the supply, a method central banks take with fiat currencies. These stablecoins are "backed" by the expectation that the currency will retain a certain value.

In this model, an initial allocation of stablecoin tokens is created. These tokens are pegged to USD. As the total demand for the stablecoin changes, the supply adjusts accordingly.

In the seigniorage shares model, increased demand causes the system to issue new stablecoins, thus increasing supply and ultimately lowering the price to the target level. The demand for the stablecoin grows as the network grows. Given fixed supply, an increase in demand will cause price increases.

The demand for the stablecoin grows as the network grows. With fixed supply, an increase in demand will cause the price to increase. Printing tokens to expand the supply is easy, reducing the supply is not.

When the supply must decrease, the system issues bonds with a par value of $1 that are sold at some discount to incentivize holders to remove stablecoins from circulation. Bonds are purchased using stablecoins which remove stablecoins from supply. A mechanism is created to decrease supply in the event that the price of the stablecoin falls below the target range. Once demand increases to a point where currency supply must increase, bond holders are paid out. If all of the bond holders receive payment, then the software pays those who own shares (the equity token of the system). Shares represent a claim on future stablecoin distributions as demand increases. Shares can be thought of much like equity in that both shareholders and equity holders can value their assets as a function of expected dividends of holding the asset. Additionally, in most seigniorage shares implementations, shareholders are offered voting rights.

This fluctuating supply concept is rooted in the Quantity Theory of Money. It is the method used by the Federal Reserve to maintain the stability of the U.S. dollar. If the seigniorage is positive, the government will make an economic profit; while a negative seigniorage will result in an economic loss. If the Federal Reserve carries that risk
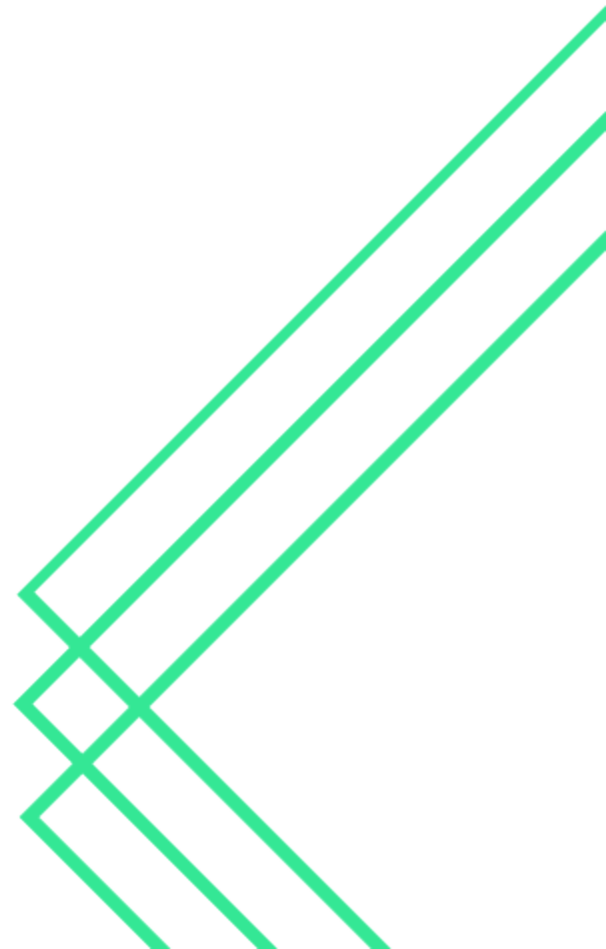
of keeping itself alive, it will ultimately strive to keep a positive seigniorage. However, the Federal reserve cannot operate a rate of one decision every 10 seconds.

Market

A stable coin must satisfy the three Ayllon stablecoin criteria in order to become global digital cash:

1. Price stability
2. Privacy
3. Decentralization (collateral not held by a single party)

The only viable solution for creating a stablecoin that satisfies Ayllon's stablecoin criteria is a market backed stablecoin. The TOSHI stablecoin is the only current cryptoasset satisfying ALL three criteria.

A market backed stablecoin is a cryptoasset which tracks the current price of USD on the cryptocurrency markets. Tracking the price on any one centralized exchange is futile, but tracking the price across four cryptoasset exchanges is a viable option for balancing price maintainability with relevant fungibility. Under this model, no one exchange can significantly affect the stablecoin price feed significantly. A stablecoin is only worth as much as the decentralized assets with which it most directly trades against and those are the cryptoassets which provide the price feed-oracle to the smart contract.

Technology

The TOSHI stablecoin is denominated in EOS/TOSHI. Every TOSHI is equal to $1.00 USD. The price is adjusted every 30 seconds by an open-source ORACLE, a simple service that stores the average of four different exchange rates in a smart contract multi-index table on the EOS blockchain, with data available to any developer. The exchanges currently providing source prices are Binance, Bitfinex, Huobi, and Okex.

The contract is deployed on the account name eosriooracle within the EOSIO blockchain. The contract accesses the oracle, retrieves exchange rates, and updates the EOS blockchain database by calling an action on the smart contract.

To access exchange rates, use get table eosriooracle eosriooracle ticker. If you are developing a smart contract, you'll need to include the following structure in your code in order to have access to the data:

```
struct exchange {
    string exchange_name;
    double exchange_price;
};

TABLE ticker {
    name ticker_name;
    vector<exchange> exchanges;
    double avg_price;
```

```
        string timestamp;

        uint64_t primary_key() const {return ticker_name.value;}
    };

    typedef multi_index<"ticker"_n, ticker> ticker_index;
```

Then, create an instance:

```
    ticker_index tickers("eosriooracle"_n, "eosriooracle"_n.value);
```
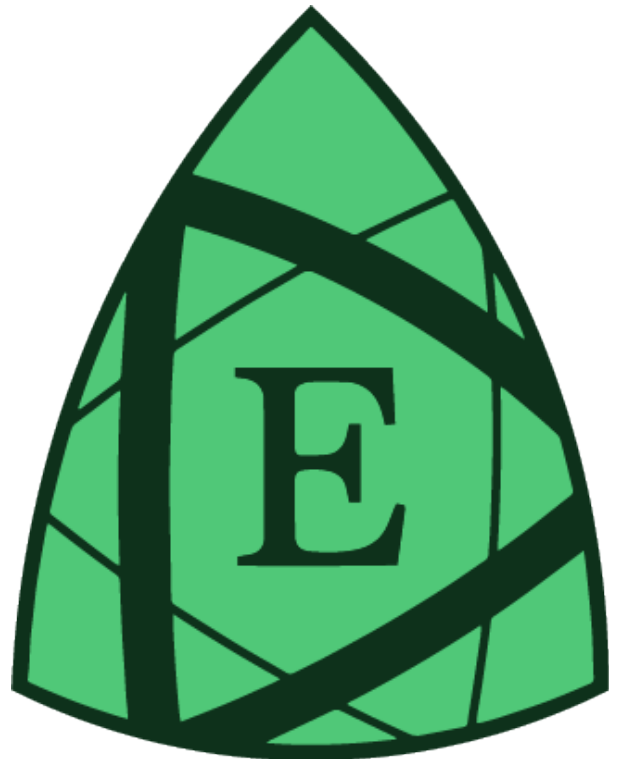
Conclusion

Out of the four stablecoin models, the TOSHI stablecoin is the only one that fits the Market backed stablecoin criteria. It is the only stablecoin that exists as a decentralized cryptoasset not backed by a central party, reliant upon a single entity, nor vulnerable to market price swings on collateral assets. TOSHI is the only stablecoin backed simply on the market demand of its direct trading pairs.

More Resources

1. Bitshares: https://medium.com/@bytemaster/high-liquidity-price-pegged-token-algorithm-d86d71188162
2. Stablecoins overview - Multicoin capital: https://multicoin.capital/2018/01/17/an-overview-of-stablecoins/
3. Pex: https://github.com/bytemaster/pex