Unuo|x

A Price-Stable Cryptocurrency with On-chain Upside and Downside Volatility Controls by Means of a Decentralized Bond Issuance System and Proof-of-Burn Mechanism

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Abstract. The price volatility of Bitcoin, Ether, and other cryptocurrencies is one of the biggest barriers to widespread adoption that cryptocurrencies face today. Secondly, the steady rise of decentralized and non-custodian exchanges is increasing demand for a trusted stable coin for traders to safely use. Unlike fiat currencies, today's cryptocurrencies do not have a central bank that implements monetary policy to keep purchasing power stable, meaning that changes in demand can induce massive fluctuations in price. If users cannot be sure that the purchasing power of their accounts will remain stable, they will never adopt a cryptocurrency as a medium of exchange over a price-stable alternative. Unuo|x is a fully decentralized system with on-chain volatility mechanisms so users can manage supplies of UNX, a price-stable cryptocurrency. When demand is low, then users are incentivized to issue bonds and decrease supply. When demand is high, then users are incentivized to mint new coins and increase supply. With no external point of failure or trusted third parties, users are not required to register and can thus stay anonymous. As long as a majority of UNX in circulation is controlled by stakeholders that are not cooperating to attack the stable coin, they'll use the provided stability mechanisms to control price volatility and outpace attackers.

While the development of the smart contract system is underway, this whitepaper is intended to merely start an initial conversation around the project. An additional paper will be published later on to clearly define a strategic roadmap.

Esperanto
Unuo {noun} \unu·o\
: Element, Unit, Unity

1. Foreword

The creation of money through credit expansion, known as the fiat monetary system, has brought about a new kind of debt slavery on a grand scale. Consumers, corporations, and governments have become highly dependent on central banks continuously churning out ever-greater amounts of credit and money, provided at ever-lower interest rates. In many countries, central banks have become the real centers of power, as their monetary policy decisions effectively determine economies and entire societies. Large injections of money are mainly a detriment to the working class, as their savings are usually tightly related to fiat, while the top 1% hedge their wealth through assets such as stocks, private equities, public equities, real estate or gold. Additionally, central banks wielding even more power as we transition towards a cashless civilization inflicts even greater risks on our freedoms.

2. Crypto volatility

A currency needs to be stable in order for people to use it. If users cannot be sure that the purchasing power of their accounts will remain stable over a longer period of time, they will never adopt a cryptocurrency as a medium of exchange over a price-stable alternative.

Today, the crypto community can only avoid Bitcoin and other crypto asset volatility shifts through collateralized stable coins. While some are decentralized by its nature and hold its collateral on-chain (DAI[1], Synth[2]), most are fully centralized holding its collateral in bank accounts (TetherUSD[3], TrueUSD[4], USDCoin[5]). These systems provide little to no transparency and are subject to third-party audits that can never be fully trusted, as the company ordering the audits (and paying for the service) is the same one issuing the USD pegged coin.

In 2018, a valid attempt at launching a stable coin with an algorithmic *central bank* has been made. The US-based project Basis[6] raised $133 million, confirming high demand for auditable and scalable stable coin solutions, was unfortunately forced to shut down[7] due to regulatory concerns and return raised funds to its investors. Moreover, decentralized finance or ‘DeFi’ has grown by 150% through 2019. Ethereum is the largest digital asset contributing to this new world of decentralized finance. At the end of 2019, the amount of locked-in ETH was approximately 2.5% of the entire supply, while in February 2020 the total USD value of ETH & ERC20 tokens locked in DeFi smart contracts surpassed $1 billion.[8]

[1] https://makerdao.com/en/whitepaper
[2] https://www.synthetix.io/uploads/synthetix_litepaper.pdf
[3] https://tether.to/wp-content/uploads/2016/06/TetherWhitePaper.pdf
[4] https://www.trusttoken.com/trueusd/
[5] https://www.centre.io/usdc
[6] https://www.basis.io/basis_whitepaper_en.pdf
[7] https://www.coindesk.com/basis-stablecoin-confirms-shutdown-blaming-regulatory-constraints
[8] https://pages.consensys.net/ethereum-decentralized-finance-report-alethio

With Ethereum's domination in DeFi, what the cryptocurrency market needs today is a trusted, fully decentralized stable coin built on Ethereum to be used by traders and dApp users alike. The coin's value may be initially pegged to the US Dollar but should be free to shift (in time) to its own stable exchange rate and be prone to US Dollar inflation. Volatility should be fully controlled transparently on-chain and in a decentralized manner by those who hold a stake in the stablecoin. Upside price shifts need to be controlled with an unrestricted auditable on-chain method of bringing new coins into circulation in exchange for established digital assets. Downside volatility should also be managed on-chain with a system that rewards investors for decreasing current supplies of the stablecoin. The effectiveness of upside and downside volatility controls may be less successful at first, but should increase as the stable coin grows in market cap and adoption.

3. Unuox & UNX

Unuo|x is the only stable coin system built on Ethereum with on-chain upside and downside volatility controls. Unuo|x has no centralized point of failure and volatility is managed autonomously by holders of the stable coin through its decentralized bond issuance system and proof-of-burn mechanism.

Before we go on to explain the details of Unuo|x and how it works, assume the following to be true: one (1) UNX is always worth the same; UNX can be freely traded like any other ERC20 token; Anyone with an Ethereum wallet can own, accept, and transfer UNX; UNX can be exchanged without any middleman; No individual person or company has control over Unuo|x; No government or authority can shut it down.

Upside price shifts are controlled with an unrestricted method of bringing new UNX into circulation through Proof-of-Burn, an effective method to prove on-chain real value has been transferred into Unuo|x. Downside volatility is controlled by an on-chain bonds issuance system rewarding investors with interest for decreasing UNX supply on the market.

4. Bonds Issuance (Downside volatility control)

In situations when market demand is low, a system to effectively decrease circulating supply can help regain price stability. Unuo|x provides a decentralized on-chain bond issuance system to control downside volatility that rewards those who invest long term in the stable coin.

Unuo|x Bonds (U-Bonds) are created in sets. Anyone can create a set of U-Bonds at any time by interacting with the provided smart contract. Each set of U-Bonds is defined by (a) face value, (b) maturity length, (c) number of bonds. The minimum face value is 100 UNX and can be increased by powers of 10. The minimum maturity length is 4 weeks and can be increased by 4-week increments. The amount of UNX held by the issuing account determines the maximum number of U-Bonds in a set, where the maximum size of a bond set can not be greater than 10% of the total supply of UNX. For example, if the issuer holds 10,050 UNX

and issues a set of bonds at 100 UNX each, the set will issue a maximum number of 100 U-Bonds or less. The issuer may also choose a lower number of bonds to be issued in the set.

Each new set of bonds is sold at a discount from their face value. The level of discount is determined during U-Bond auctions. After a new set of U-Bonds is created, the creator needs to make the first bid and purchase all issued bonds to activate the auction. The default minimum bid for a set of U-Bonds with 4-week maturity is set at 4% discount on the face value for all issued bonds. For each added 4-week increment, the initial discount is increased by 1% up to a possible total discount of 99%. The auction lasts for 10 days and is sold to the highest bidder. Anyone can place a new bid by calling the AuctionBid function. Bidding is done in 1% increments up to a maximum value of 100%. New bids made on the last day reset the timer, prolonging the auction for 24 hours since transaction time.

The default auction period is 10 days and increases by 1-day increments for each percent (1%) added to the total initial discount. The following formula applies:

$$10 + id = ap$$

id… InitialDiscount ap... AuctionPeriod

Unlike U.S. Treasury securities[9] such as Treasury bonds (T-bonds) or Treasury bills (T-bills), Unuo|x Bonds (U-Bonds) do not pay periodic interest at six-month intervals. The interest rate for U-Bonds is therefore determined through a combination of the total discounted value and the maturity length. U-Bonds are ERC20 backwards compatible tokens and can be freely traded on secondary markets until maturity.

5. Proof-of-Burn (Upside volatility control)

When demand for UNX is high driving the price above its usual stable value, anyone can bring new UNX into circulation by burning Ether through the Unuo|x burn smart contract and attempt to gain on the spread by selling it on an exchange, subsequently driving Unuo's value back to its usual point of stability. UNX being worth over its common value simply encourages more UNX to be created, increasing circulating UNX supply.

ETH is always burned at the latest UNX/ETH exchange rate. The effective exchange rate determines how many UNX a user receives for each ETH burned.

How it works:

1. Anyone can receive UNX by making a basic transaction to the Unuo|x burn contract;
2. The effective UNX/ETH exchange rate is used to calculate how much UNX needs to be returned to the transaction initiator;

[9] https://www.investopedia.com/articles/investing/073113/introduction-treasury-securities.asp

3. Received ETH is burned (i.e. locked forever at address 0x0).

Example:

1. A user makes a transaction of 10 ETH;
2. The current UNX/ETH exchange rate is 200;
3. The user receives 10 x 200 = 2000 UNX;
4. While the 10 ETH is burned in the process.

Use case:

1. The UNX/ETH exchange rate rises above the usual stable rate;
2. The valid effective UNX/ETH exchange rate in the Unuo|x burn contract is still equal to the usual stable rate, thus a price asynchronicity occurs opening an opportunity window for as long as the exchange rate on the market values UNX more;
3. By burning ETH for UNX, anyone can mint additional UNX and sell it for a higher price on the exchange, earn from the spread and bring the UNX price back to its usual stable rate.

Burned ETH can be verified anytime at address 0x0, while the creation process is fully transparent and auditable on Etherscan. Although the creation process is as simple as sending ETH to a smart contract address, most users will never need to create UNX as they will most likely acquire it on listing exchanges.

6. Burn Exchange Rate

Market value is information external to the blockchain. To obtain an exchange rate a system of honest Oracles must be in place. Unuo|x major stakeholders have the biggest incentive to safeguard price stability and are allowed to take on the responsibility of providing accurate exchange rates. We call these stakeholders Rate Providers.

Rate Providers stake their UNX to deliver the latest and most accurate UNX/ETH exchange rates. Received bids are scored based on the Rate Provider's Reputation level and UNX stake with the following formula:

$$SCORE_{RP} = \left(\frac{REPUTATION_{RP} \times STAKE_{UNX}}{1000} \right)^{15}$$

The Rate Cycle to calculate a new Effective Exchange Rate (EER) is every 40 blocks (approx. 10 minutes). A new EER is calculated by weighing every received rate against a Rate Provider's Score. The weighted average of all received bids is used to determine the new EER. This method combined with the above scoring system effectively mitigates

possible sybil attacks[10], where an attacker might create a large number of accounts to trick the system into thinking that several individual accounts are participating as Rate Providers. The main intention of such attacker is to temporarily increase the EER significantly above the actual UNX/ETH exchange rate to mint a larger amount of UNX through the Unuo|x burn smart contract without spending the required amount of ETH.

While the amount of UNX a Rate Provider decides to stake is never at risk, all bids are categorized as “Good” or “Bad”. Any bid that falls within a ±1% error threshold of the new EER is recorded as "Good". If the bid falls outside the error threshold, the bid is recorded as “Bad”. All Rate Providers start at Reputation level 0%, and can increase their reputation up to 100%. Reputation is calculated based on the ratio of “Good” vs. “Bad” bids a Rate Provider makes. By default, the counter for Good bids increases by 1, while the counter for Bad bids increases by 200.

Rate providers are rewarded with UNX every 40 blocks. The Annual Reward for Rate Providers who place bids in all 52,560 cycles is 7%. The reward for Rate Providers is calculated using the following formula:

$$REWARD_{UNX} = \frac{ANNUAL_{REWARD}}{52560} \times STAKE_{UNX} \times REPUTATION_{RP}$$

It is important to note that rewards are attributed to Rate Providers even when their bid falls outside the ±1% error threshold and becomes categorized as “Bad”. While this means inaccurate Rate Providers are rewarded, their Reputation levels will inevitably fall and decrease these payouts to the bare minimum or even 0.

To incentivise early participants this reward will start at 112%, halvening every 525,600 blocks (approx. 3 months) until it reaches 7%, at which point, the Annual Reward can only be changed by voting.

7. Interacting with Unuox

Unuo|x is built as a system of smart contracts deployed on the Ethereum blockchain. The smart contracts are designed to allow UNX holders to interact with the system and broadcast proposals to influence certain default values. For instance UNX holders can act as rate providers (see “4. Bonds Issuance”), but can also vote to increase or decrease certain values within the system like the default 4% base discount value for newly issued bond sets.

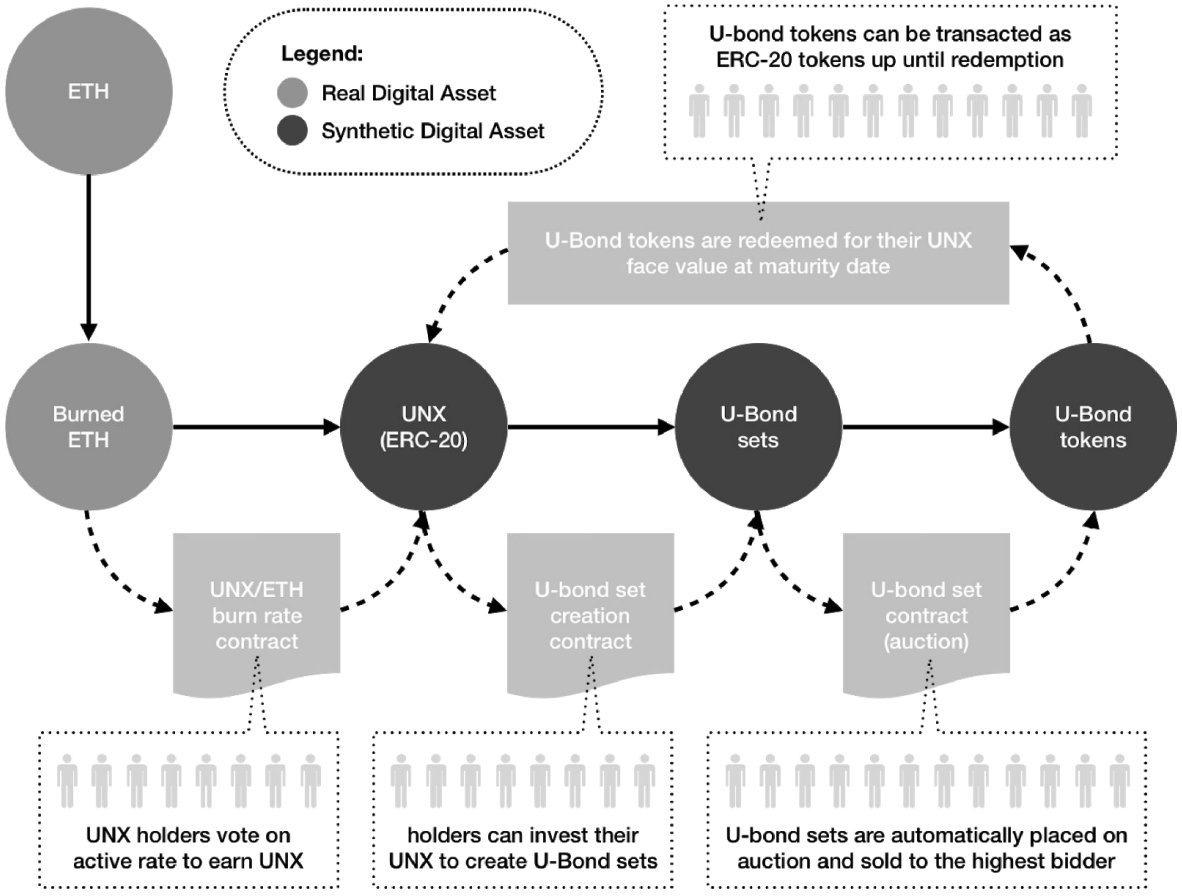
In its launch phase, a Graphic User Interface with Metamask[11] integration will be deployed to facilitate interactions with the decentralized Unuo|x system. While this particular graphic interface will offer users the basic information and capabilities to use the dApp, it will be

[10] https://en.wikipedia.org/wiki/Sybil_attack
[11] https://metamask.io/

subjected to the many shortcomings and limitations of any application which relies solely on the data provided directly by the Ethereum blockchain. When and if the popularity of Unuo|x, as a decentralized monetary system, earns enough trust by the wider crypto community, it is possible to predict it might attract developers to develop more centralized solutions on top of Unuo|x designed to deliver a better experience to various users of the system.

8. Smart Contract Architecture

The system of smart contracts is assembled and deployed so the creator holds no special right or access to it after all contracts are fully deployed on the Ethereum main network. This graphic representation presents a general overview of the main system elements, visually describing how users can interact with the system with ETH to create Synthetic Digital Assets[12] like the UNX currency, U-Bond sets and U-Bond tokens.



[12] https://medium.com/zenith-ventures/synthetic-assets-in-defi-use-cases-opportunities-19b11f57a776

9. Price Stability

Unuo|x is designed from the ground up as a fully decentralized stable cryptocurrency. Its stability, however, needs to be proven to the market and worked on by those who will adopt it early on and take it through its first growth stages. To initially maintain stability, chat rooms and forum threads might be needed for major stakeholders to verbally agree on certain courses of action. Unuo's stability is thus completely in the hands of those who choose to steer it through initial shallow waters.

Although UNX was not created to represent USD, EUR, GBP or any other fiat currency, it may hold its market price peg in relation to one or a combination of these fiat currencies. At the same time, Unuo's strength lies in its ability to detach its peg from any fiat currency and find stability on it's own, if the network of Rate Providers so chooses. This powerful feature enables UNX to potentially become a stable coin prone to future deflationary and inflationary policies of government controlled fiat currencies.

Some critics may argue that no currency can survive without critical market demand, and that national fiat currencies like USD, EUR, GBP maintain their demand also through the collection of taxes. While true at least in part, the vision of a world built on permissionless freedom and programmable money, a price stable crypto currency like UNX promises, might prove to outweigh the growing wealth disparity central banks and their policies impose on the people.

10. Censorship Resistance

Usually, systems fail to deliver on their censorship resistance premise because they rely on trusted 3rd parties to function. In a censorship-resistant system, there is no single party that can unilaterally (i) change existing rules, (ii) prevent a user from performing a specific operation, and (iii) block user accounts. Unuo|x follows the other hand, and is one of those systems, that after its deployment, has no central weak link.

With its network of Rate Providers UNX is a censorship resistant stable coin, and stands out from those crypto currencies that leverage centralized oracles to maintain its stability. The size and growth potential of UNX might become limited within certain jurisdictions, but if successfully adopted, most countries should be able to allow its conversion to fiat and other currencies legally, just like they do with other cryptocurrencies on the market today.

11. Conclusion

Unuo|x is a proposed system for a cryptocurrency offering mechanisms to achieve price stability without relying on 3rd party trust, but rather a decentralized network of invested users who are incentivized to contribute to price stability. Downside volatility is controlled through the issuance of U-Bond sets, then sold through a decentralized auction system to the

highest bidder, who in terms receives the purchase amount of U-Bonds - ERC20 backwards compatible tokens with a defined face UNX value and maturity date. U-Bonds, just like any other ERC-20 tokens, can be freely traded up until they are redeemed, creating an opportunity for a secondary market to form. The U-Bonds system has an inflationary effect on UNX allowing it to expand when participants 'long' Unuo. Upside volatility is maintained through a verifiable, decentralized issuance system that leverages Proof-of-Burn. Burning ETH proves actual value has been converted into UNX and discards the need for a reserve system that holds back the growth potential of collateralized stablecoins.

Like any new project, Unuo|x will require support to find its place amongst established stable coins and crypto assets. If you believe the world needs DeFi products like Unuo|x and would like to contribute to its success, do not hesitate to get in touch via email at ehhad.mirai@tutamail.com