Crypto Bonds
Stablebonds

by David Taylor & Anthon Taylor



etherfuse

Archived copy · cryp2nova.com

Abstract

Within existing financial systems, crippling limitations exist in access and opportunity. This reality drives two outcomes: a lack of faith in existing centralized and authoritarian institutions, and the animation of a young, ambitious, dynamic collective that experiments with a new form of money. This new form of money is one that they'd hoped would enable them to transact, trade, and engage in commerce without a centralized intermediary whose incentives were at odds with their own, namely: the provision of financial services that primarily - if not exclusively - served their interests.

Although many are flawed in myriad ways, several of these newly-issued currencies show early signs of utility, development, and fervent adoption. This dynamic creates wealth, loss, and turmoil, as large economic bubbles repeatedly form and burst. Financial regulators and Institutions create new regulations and processes in an attempt to control the monetary environment and mitigate, or eliminate, the occurrences of similar future financial crises.

One might think this is a story about 2014 with Bitcoin and Mt. Gox, 2018 with Ethereum's ICO bubble, or 2022 with Solana and FTX. However, it is the story of the early US colonists' experimentation with paper money in 1690 - 1720 and the "Mississippi Bubble." It is also the story of the Axial Age, where new coins and currencies dominated and mass leverage was required by Alexander. This created, in turn, an up-only, growth-at-all-cost mindset. Alexander leveraged this model to conquer, and subsequently lose, the Persian Empire.

What is happening now has happened before. With every technological and financial revolution, there are novel financial tools that are invented to facilitate the adoption, trust, and development of a community.

The cryptocurrency community has attempted to use currencies and coins to build a new world, leading to the similar outcomes as those who came before. The resulting landscape is in the midst of a technological revolution, and like Carlota Perez has said, "Each technological revolution has led to the massive replacement of one set of technologies by another, either by outright substitution or through the modernization of existing equipment, processes and ways of operation. Each involved profound changes in people, organizations and skills in a sort of habit-breaking hurricane. Each led to an explosive period in the financial markets."

Cryptocurrency can be the future of money; we could be in the middle of a technological revolution. Unfortunately, the technologists that are driving this revolution have not applied many of the lessons contained in previous revolutions; absent are the appropriate systems and tools to develop the trust, networks, utilities, and intuitions behind the technology that mass adoption requires. The international adoption of cryptocurrency as the standard transaction medium necessarily requires these elements as prerequisite.

We can look at history to guide us in creating financial tools on the blockchain that will create supporters, not users; citizens, not opportunists; and attract those willing to put in the necessary effort to carry this new technology across the chasm.

[1] https://en.wikipedia.org/wiki/Mt._Gox

[2] https://www.gemini.com/cryptopedia/initial-coin-offering-explained-ethereum-ico#section-initial-coin-offerings-on-ethereum

[3] https://www.nytimes.com/2022/11/10/technology/ftx-binance-crypto-explained.html

[4] Homer Sylla, The History of Interest Rates, pg 271

[5] David Graeber, Debt, pg, 229

[6] Carlota Perez, Technological Revolutions and Financial Capital pg, 32

[7] https://www.researchgate.net/figure/Technology-adoption-lifecycle-by-Moore-taking-the-gap-in-between-into-account_fig2_242012197

Archived copy · cryp2nova.com

History shows us that mons was needed to defend a young nation, rentes to develop a country, consols to utilize debt. History has also shown us that bonds have been an effective tool to incentivise both sovereign governments and individuals to participate in the early stages of a new currency's development and adoption.
In fact, history shows us that bonds have been proven to be an effective tool in the development of nations. Thus, it follows that should bonds be applied to cryptocurrency, they will continue to demonstrate their ability to develop new systems and technologies, and ultimately, to drive adoption.

The blockchain has unlocked the ability to tokenize assets. Tokenization is the representation of an asset or a utility on the blockchain. Through tokenization, Etherfuse has combined the utility of bonds with the utility and promise of cryptocurrency, and in so doing, has developed novel financial instruments. In the immediate future and In the coming years we will release these instruments on the blockchain in accordance with existing and future applicable regulatory frameworks. These instruments will incentivise a new set of supporters and adopters, thereby advancing cryptocurrency's technology and adoption lifecycle.

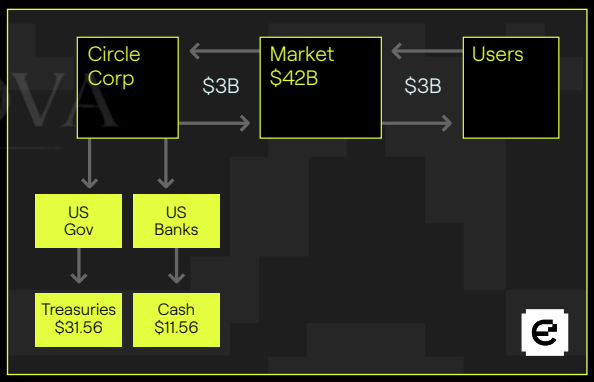
In this paper we focus on a novel cryptocurrency instrument which we call Stablebonds; this is a subset of a novel class of blockchain-based financial instruments called Crypto Bonds. These new offerings draw upon the lessons learned across centuries of financial cycles to drive crypto and blockchain into the future.

Foundational Information
Stablecoins

There are a three primary types of stablecoins: fiat-backed, cryptocurrency-backed, and algorithmic. We will focus on fiat-backed stablecoins because there is anecdotal evidence to suggest this type provides the most utility and lowest barrier to entry. A fiat-backed stablecoin is a centralized cryptographic token that ensures each token remains redeemable for its fiat anchor; for example, $1 USD.

To detail both how stablecoins work and the value created through bonds, consider the business model of Circle's USDC. USDC is arguably the most secure, compliant, transparent, stable, and trustworthy stablecoin. The ability of USDC to hold its peg to the US dollar over a long period of time and through varied market conditions has led to a boom in demand for USDC.

The business model for USDC is straightforward: as demand grows for USDC, Circle sells a token for $1 and offers to provide that same value back when any users require cash. We will use Circle's November 2022 report to detail how the company manages that cash.



[8] Homer Sylla, The History of Interest Rates, pg 72

[9] Homer Sylla, The History of Interest Rates, pg 116

[10] Homer Sylla, The History of Interest Rates, pg 189

[11] https://www.gemini.com/cryptopedia/what-is-tokenization-definition-crypto-token

[12] https://www.notboring.co/i/64972384/what-are-stablecoins

[13] Nothing herein is an investment recommendation or advice; the reader must analyze the information presented and draw his or her own conclusions.

[14] https://coinmarketcap.com/currencies/usd-coin

[15] https://coinmarketcap.com/currencies/usd-coin

[16] https://www.centre.io/hubfs/USDC%202022-Circle%20Examination%20Report%20November%202022.pdf

Archived copy · cryp2nova.com

To back every token with a dollar, Circle maintains four times the current trading volume in multiple bank accounts and puts the rest in safe treasuries that have high liquidity. At the time of the report, Circle held $11.5 billion in cash in US banks and $31.5 billion in US Treasury Securities. These treasuries earn Circle an unassailable 2 - 3 % interest per annum, or $620 Million a year.

The global cryptocurrency community uses USDC as a store of value and to access its utility in pair trading, lending platforms, and fungibility. However, almost all of the economic value created by the community's use of USDC is captured by Circle. Further, Circle creates this economic value via a nearly risk-free mechanism: the purchase of US Treasury Securities. The purchase of Treasuries are the primary fundraising vehicle — outside of taxes — for the US government. US Treasuries sold by the US support US interests.

Problem

One of crypto's ambitions is to become the future of finance. As the world continues to normalize the use of crypto through remittances and payments, the citizens of those localities will create value through that usage. Most users — especially the unbanked — will look for a safe store of value for their money. They will undoubtedly adopt stablecoins and most likely choose those that offer the highest level of safety, compliance, security, transparency, stability and trust. In short: they will choose the stablecoin that offers the highest likelihood of redeeming that stablecoin for its fiat peg (for example, 1 USDC for $1 USD). When a user purchases 1 USDC, they accept the risk and exposure to the US banking system. In this case, the US provides the resources to hold and manage the cash needed by the stablecoin provider, despite the fact that the US is not participating in the cryptocurrency economy directly.

By storing USD-pegged stablecoins on-chain in a cryptographically secure wallet, a user's savings will predominantly benefit the United States and the corporate entities that back these stablecoins. Importantly: the US will benefit from users' holdings whether those users are in the US or not, and whether they are US citizens or not. Thus: the value that citizens of other countries create through storing their money in USD-backed stablecoins is not fully captured by their country, locality, or personal finances.
More work is needed to ensure that the monetary vehicle that many future citizens will use proportionally benefits the regions of those people. As John Connally famously said, "the dollar is our currency, but your problem." This statement is just as applicable to USD-backed stablecoins.

Solution

Etherfuse will fix this inequitable capture of created value through a novel class of cryptocurency called "Stablebonds." Stablebonds enable improved utility while simultaneously enabling the same community that creates the value to capture it. Stated simply: for communities and nations looking to capture more value from their sovereign investments, Stablebonds provide a better store of value than stablecoins denominated in a foreign currency. A community's financial activities should benefit itself, minimize risks inherent in the banking system, and improve access for all citizens of that nation to safe financial vehicles that increase wealth.

Stablebonds

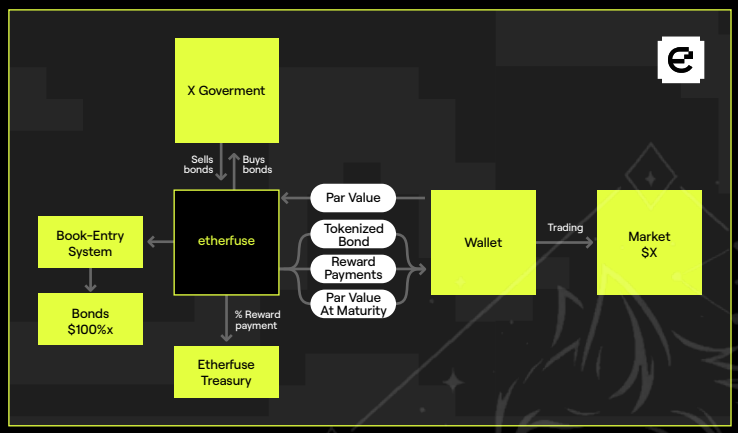
We propose that a Stablebond is a tokenized version of a physical bond issued by a sovereign nation (or other sovereign entity). Etherfuse has developed the technology and protocols to enable this type of novel tokenization. Etherfuse will purchase and hold bonds, issue Stablebond

[17] https://www.cnbc.com/2023/03/11/crypto-firm-circle-reveals-3point3-bln-exposure-to-silicon-valley-bank.html

[18] https://www.reuters.com/markets/europe/global-markets-view-asia-graphic-2022-09-26

Archived copy · cryp2nova.com

tokens for each bond held, and destroy Stablebond tokens upon maturity of the underlying physical bond and final interest payment. As interest is paid and bonds reach maturity by the sovereign nation issuing the bond, Etherfuse distributes those funds as tokenized equivalents (for example, $MXNT) to the wallet holders of their Etherfuse Stablebonds.



A core tenet of the blockchain is the use of cryptographically secure algorithms to remove intermediaries and their associated risks from a transaction. Stablebond technology enables the removal of the risk of a sovereign nation's banking system; the remaining risk is associated with the actions of a sovereign nation through regulation and sanctions. Said more precisely: this approach represents a significant improvement on the current fiat-pegged store-of-value options on the blockchain today because it reduces, or eliminates, the risk exposure to a nation's banking system. A portion of the market cap and it's peg are no longer being held in the currency and bank of that locality. To achieve this, Etherfuse maintains only a book-entry system of bonds to accomplish this bank-decoupling. The decoupling critical because linking fiat-pegged crypto markets to bank systems has historically been shown to contribute to a debt default.

Stablebonds provide several major advantages and benefits that enable a locality to create and capture value:

- They enable increased liquidity through fractional bond ownership;
- They enable increased fungibility through marketed trading pairs on Decentralized Finance, or DeFi, exchanges;
- They provide access to a worldwide market (e.g., through those trading pairs);
- They improve safe, interest-bearing opportunities for the residents of a locality;
- They increase marketable access, and therefore potential demand for a locality's assets.

Stablebond technology will increase global financial inclusion because 3rd-party intermediaries, such as banks, will no longer be necessary to access sophisticated financial products. A simple decentralized wallet will suffice.

Access to Bonds

In the United States, only 1.3% of households own a bond. Those meager numbers are likely lower in emerging markets where access to traditional financial tools is significantly less abundant. Etherfuse Stablebonds eliminate many barriers to ownership. In fact, there is only one requirement to participate in the Stablebond marketplace: a mobile device or a simple hardware crypto wallet. In summary: removing barriers and creating access to bonds will enable a nation to improve its primary revenue-creation vehicle and share those investment benefits with its population.

Fractionalization of Par Value

In order to increase access to bonds, Stablebonds will enable the fractionalization of bonds. Fractionalization is critical to driving adoption because it drives the cost of market entry to a nominal level. A low cost will enable

[19] https://bitcoin.org/bitcoin.pdf

[20] https://www.esm.europa.eu/sites/default/files/wp_22.pdf

[21] https://www.marketwatch.com/story/the-number-of-americans-that-directly-own-bonds-fell-even-further-in-2016-2017-10-25

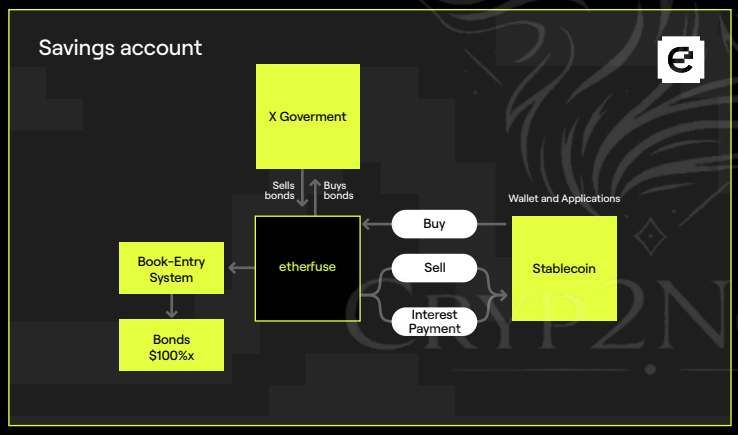
[22] https://www.worldbank.org/en/results/2021/04/09/expanding-financial-access-for-mexico-s-poor-and-supporting-economic-sustainabilit

Archived copy · cryp2nova.com

lower-income populations to access a stable store of value and a source of value creation. Today, the minimum price one can purchase a US treasury for is $100 USD. Fractionalizing Stabletokens that represent $0.01USD of that same bond will enable those in emerging markets to own bonds in these safe stores and creators of value. Etherfuse manages and automates the fractionalization of equity for these Stablebonds and routes interest payments proportional to token ownership directly to the wallet of the holder.

Safe Interest Opportunities on the Blockchain

Crypto users can generate yield on their assets in multiple ways. One way is by providing liquidity to marketed trading pairs on Decentralized Finance exchanges. This method exposes the user to new types of risk, for example: impermanent loss, token risk, and counterparty risk. Another way to earn yield is through interest on a stablecoin through on-chain loans (or another collateralization of assets).



Etherfuse will provide a novel way to generate yield on-chain by providing a Stablebond program that wallet providers or Web3 application developers can utilize to create interest-bearing, safe, low-risk, and intuitive access to bond markets.

Bond Offering Mechanism

In the Etherfuse ecosystem, bond offerings are created with specific mints and metadata that fully specify the bond mechanics (i.e. features) currently implemented by Etherfuse. These Stablebond mechanics are implemented via on-chain smart contracts. Each Stablebond offering is accompanied by an initial funding period that permits users to purchase the Stablebond tokens minted for that bond. Once the funding period closes, bonds begin accumulating interest, and the minting or purchasing of that Stablebond is disabled. Any unsold Stablebond tokens are held in treasury to maturity by Etherfuse.

Types of Bonds

While we intend to support all bond types, Etherfuse currently supports two types of bonds:

Coupon Bonds: Periodic interest payments will be delivered to the Stablebond Holder at a frequency coded into the bond specifications.

Zero-Coupon Bonds: These bonds are issued at a discount and do not pay periodic interest, but the bondholder receives the face value of the bond upon maturity.

Etherfuse Bond Token (EBT)

The Etherfuse Bond Token, or EBT, is a specialized Solana-based (SPL) token with an interest-bearing token extension as defined in the Token-2022 standard. It allows holders to observe the accrued interest on their holdings. The total number of tokens minted depends on the Bond Collection's stipulated supply and market demand. Etherfuse maintains the mint authority and executes minting based on the characteristics of the Bond Collection and whether the funding period is open.

[23] https://www.treasurydirect.gov/marketable-securities/buying-a-marketable-security/#:~:text=All%20Treasury%20marketable%20securities%20require%20a%20minimum%20bid%20of%20%24100.

[24] https://help.coinbase.com/en/coinbase/trading-and-funding/advanced-trade/defi-investment-risks

Archived copy · cryp2nova.com

KYC Integration

Etherfuse prioritizes regulatory compliance. Users will connect to the Etherfuse platform using their wallets. For new users, an intuitive KYC (Know Your Customer) procedure will be initiated. Successful completion of KYC updates the Etherfuse program, which grants users the capability to participate in bond offerings. Note: KYC is not mandatory for secondary market purchases but is essential for purchasing Stablecoins during a mint bonds or for collecting rewards.

Bond Payment Structure

The initial payments for Stablebond EBT minting are directed to the Bond Collection's funding account Solana Program-Derived Address (PDA). Subsequently, the designated bond admin transfers the funds to the appropriate soverign for the 1:1 bond purchases. Interest payments are credited to the EBT Holder's program interest payment account at intervals specified by the Bond Collection. Upon maturity, the underlying bond's principal is moved to the principal account, which is then available to those that hold EBT minted from of the Bond Collection.

Fund Collection Mechanisms

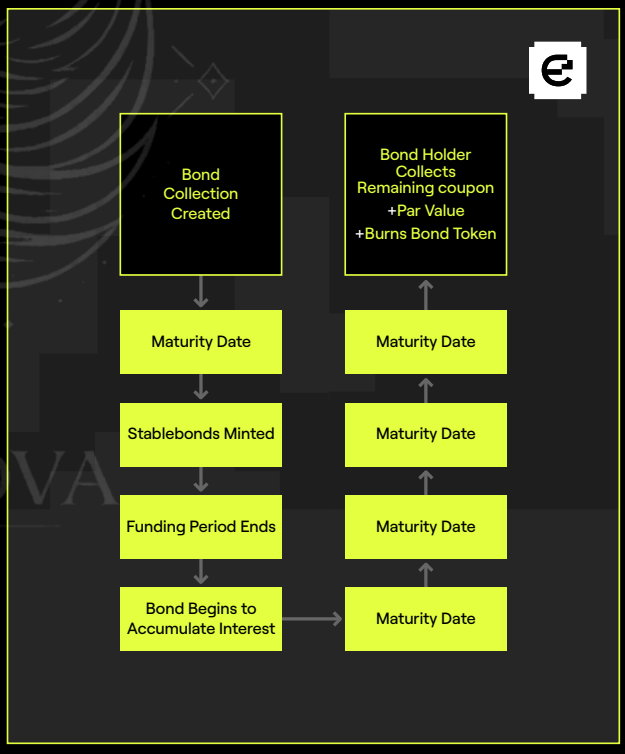
Upon Maturity
Upon a bond's maturity, a user may redeem the par value (plus coupon, if applicable) via the Etherfuse web client. One a bond is redeemed, the associated EBT are burned and users receive an equivalent amount in the stablecoin assoicated with the applicable bond.

Before Maturity
Liquidity and Flexibility in the Solana Ecosystem

One objective of Stablebonds is to enhance liquidity within the Solana ecosystem. This is achieved by giving users alternative avenues to exchange their bond tokens, should they desire to liquidate them before maturity. This flexibility enables DeFi activities, allows for enhanced capital efficiency, and caters to the diverse financial needs of the community.

However, for users who prefer a more traditional approach, Etherfuse offers the option to collect interest via the Etherfuse program prior to maturity. In such cases, when a user requests an interest payment, the associated EBT are burned and replaced with a newly-minted NFT that captures the interest collected and the remaining amount owed to the Etherfuse (the Stablebond holder). To collect subsequent interest, users can repeat this process. Upon maturity, collecting par value will burn the NFT(s) and the user will receive the remaining coupon plus the par value of the bond in the for of a fia-pegged token. If you do not wish to convert your Stablebond to an NFT, you can simply hold the tokens and redeem the bond upon maturity to collect the coupon and par value.

Bond Lifecycle Diagram



Archived copy · cryp2nova.com

Mexico

To make the value creation opportunities of Stablebonds more intuitive and concrete, we can consider the following scenario in a specific sovereign nation: Mexico. This analysis will describe how the deployment of Mexican Stabebonds impacts that bond's market dynamics. Specifically, we project the following scenario in the Mexican market assuming Stablebonds:

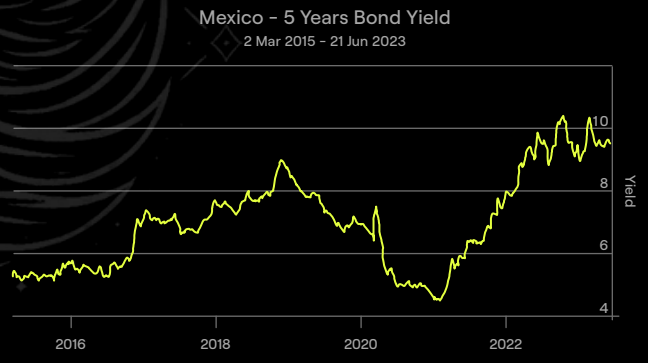
- Double the private ownership of Mexican government bonds from 2% to 4%,
- Exist in an interest-bearing environment between .5 - 2%, and
- Exact a trading fee of 2%.

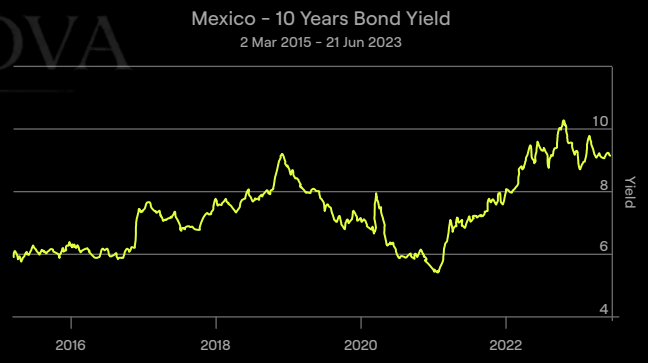
Mexico is the second biggest bond market in LATAM, behind only Brazil. Further, this market is one of the most liquid in Latin America with $623B USD in outstanding debt. The market has an average daily trading value of $200MM USD, most of which is driven by institutions, governments and foreign investors, i.e., not retail investors or individuals. In fact, only 2% of bond holders are Mexican residents; this percentage is similar to that of the United States. Per our assumptions above, we conservatively estimate the rate of individual ownership will double from 2% to 4% by providing additional access and liquidity to the Mexican bond market via Etherfuse Stablebonds.

On June 16th, 2023, Fitch (the industry-standard bond-rating agency) reaffirmed their improved rating of Mexico's bond notes, citing their confidence in the stability of Mexican bonds. From 2004 - 2014, Mexico's government bonds have had a cumulative return of 128% for 1-5 year MBONOS and 165% for 5 - 10 year MBONOS.



In recent history Mexican bonds have continued to perform well in the global market. Mexico's bonds have a five-year correlation of 0.50-0.58 to the U.S. Treasury bonds represent a strong option for diversification for any investor.





[25] https://www.finanzaspublicas.hacienda.gob.mx/work/models/Finanzas_Publicas/docs/ori/Ingles/Guides/21-08-02_PPT_Government_Securities.pdf

[26] https://www.spglobal.com/spdji/en/documents/education/practice-essentials-mexicos-bond-market-an-introduction.pdf

[27] https://expansion.mx/economia/2023/06/16/fitch-perspectiva-estable-calificacion-crediticia-mexico

[28] https://www.eleconomista.com.mx/economia/Ratificacion-de-calificacion-soberana-permitira-a-Mexico-acceder-favorablemente-a-los-mercado-SHCP-20230616-0054.html

[29] https://www.eleconomista.com.mx/economia/Fitch-mantiene-la-calificacion-de-Mexico-en-BBB--con-perspectiva-estable-20230616-0052.html

[30] http://www.worldgovernmentbonds.com/bond-historical-data/mexico/10-years/

[31] https://www.spglobal.com/spdji/en/documents/education/practice-essentials-mexicos-bond-market-an-introduction.pdf

Archived copy · cryp2nova.com

Given our assumption of an improvement of 2% in residential holders brought to the Mexican bond market through the adoption of this technology, the issuer of a Stablebond could expect a recurring $4MM a year in trading fees in the secondary market and $1.2MM in interest fees yearly from only residential investors, using the YIFR and WTR formulas referenced in the appendix. Assuming that Stablebonds could capture 2% of the $623B Mexican bond market, the issuer could expect $124MM in revenue.

To take the technologies in this paper and provide a concrete example, we've focused only on the Mexican bond market. Further, we've assumed a very conservative increase of 2% in citizens and residents as owners of bonds, despite the fact that foreign investment and other investor categories represent larger growth verticals for Mexican bonds. However, the issuer of a Stablebond is not limited to a specific country or bond type. This new technology can open up opportunities worldwide by leveraging a financial tool with centuries of proven value creation.

Conclusion

By transforming the mechanics of traditional bonds and adapting them into crypto products, we can bring more equitability into how the world transacts. We can provide an alternative to how crypto works today and create tools that benefit the interest of people and their communities. Bonds have been a proven financial product and tool for centuries to build nations and communities. More importantly, they have been an effective tool when trust is low, as they have the appropriate incentives to inspire the needed commitment to work towards a common goal. A bondholder is an investor and owner. Stablebonds remove the exposure and risk of a nation's banking system while improving the locality that issues the bonds. The liquidity Etherfuse provides through the pegging of the asset enables the user to capture some of the value they've created through earned interest while retaining the ability to engage in commerce. Stablebonds bring accountability, visibility, and stability on-chain while improving access to proven financial tools to anyone worldwide. Stablebonds push forward the vision of decentralization and security without increasing user costs and barriers. This product will bring needed stability and mapping of real-world assets to the blockchain and represent a huge step forward to a more equitable future on the blockchain.

CRYP2NOVA

[32] https://www.finanzaspublicas.hacienda.gob.mx/work/models/Finanzas_Publicas/docs/ori/Ingles/Guides/21-08-02_PPT_Government_Securities.pdf

Archived copy · cryp2nova.com

Appendix A. Constants & Variables

Mexico Outstanding Domestic Debt Securities, MODDS: 623B USD
Mexico Average Yearly Issued Debt, MAYID: 3.5B USD
Mexico Daily Trading Volume, MDTV: 146MM USD
Stablebond Average Interest Fee, SAIF: 2%
Market Capture, MC: 2%
Stablebond Average Trading Fee, SATF: 1%
Assumed Increase in Users from Stablebonds, AIUS: 2%
Yearly Trading Revenue, YTR: MDTV * AIUS * SATF * 365 = 10.658MM
Yearly Interest Fee Revenue, YIFR: MAYID * SAIF * MC = 1.2MM

Disclaimer

This document shall not be interpreted as a solicitation of funds or resources by Etherfuse.

In this regard, the activities currently being carried out by Etherfuse are not any of those reserved for companies that must obtain a registration, authorization or concession from the financial authorities.

CRYP2NOVA

[33] https://www.finanzaspublicas.hacienda.gob.mx/work/models/Finanzas_Publicas/docs/ori/Ingles/Guides/21-08-02_PPT_Government_Securities.pdf

[34] https://www.finanzaspublicas.hacienda.gob.mx/work/models/Finanzas_Publicas/docs/ori/Ingles/Guides/21-08-02_PPT_Government_Securities.pdf

[35] https://www.spglobal.com/spdji/en/documents/education/practice-essentials-mexicos-bond-market-an-introduction.pdf

Archived copy · cryp2nova.com



Cryp2Nova

Archived copy · cryp2nova.com