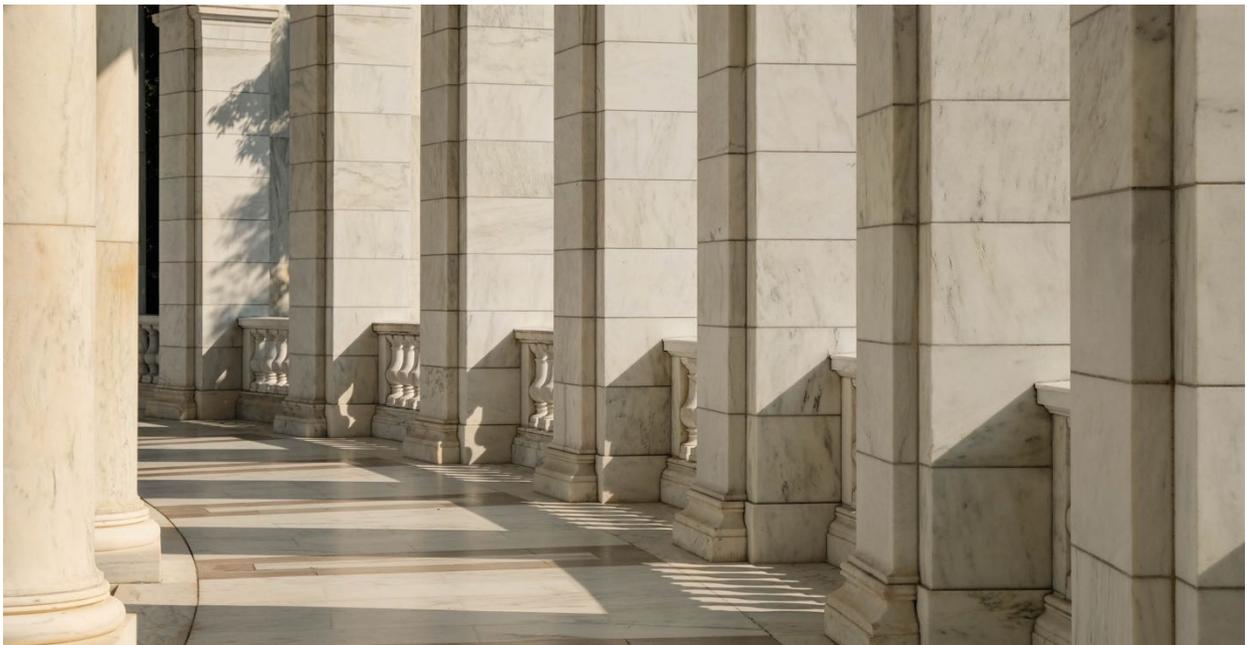


July 11, 2023

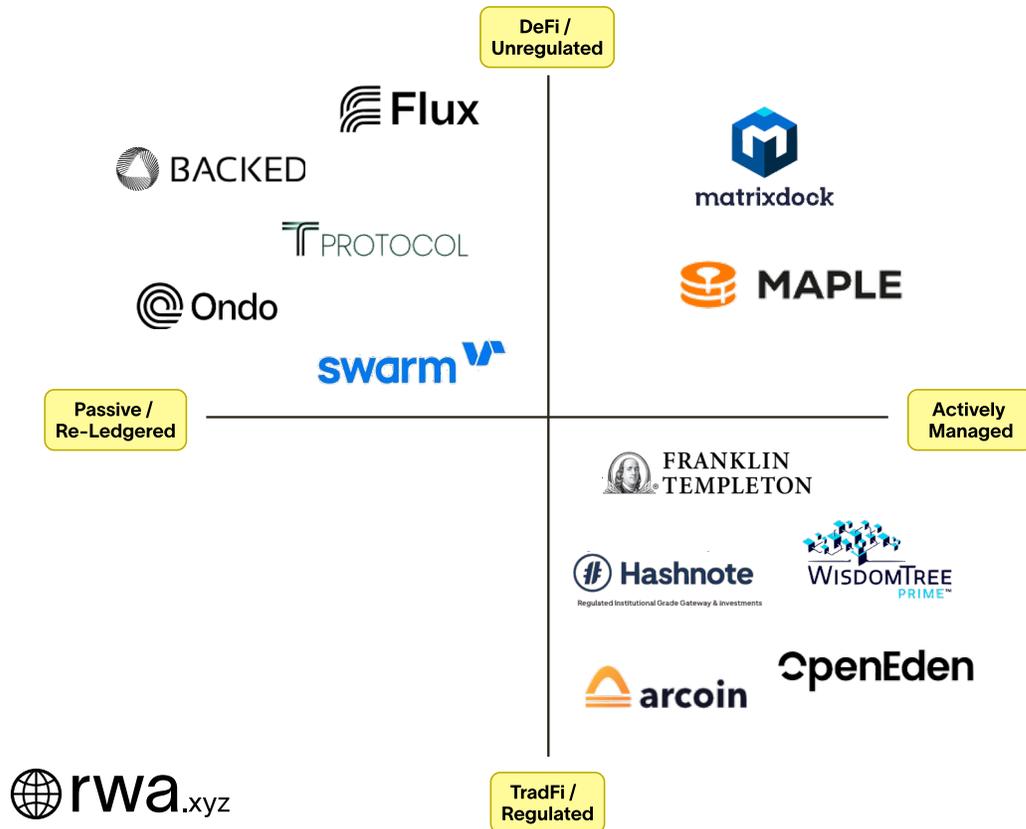
An Allocator's Guide to Tokenized Treasuries



This report dives deep into 11 tokenized treasury products offered by companies ranging from \$1.5T+ asset managers including Franklin Templeton, to young upstarts like OpenEden. For each, we survey their different mechanisms and important nuances to help investors understand this nascent product.

Written by,
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The Tokenized Treasuries
Market Landscape 2023



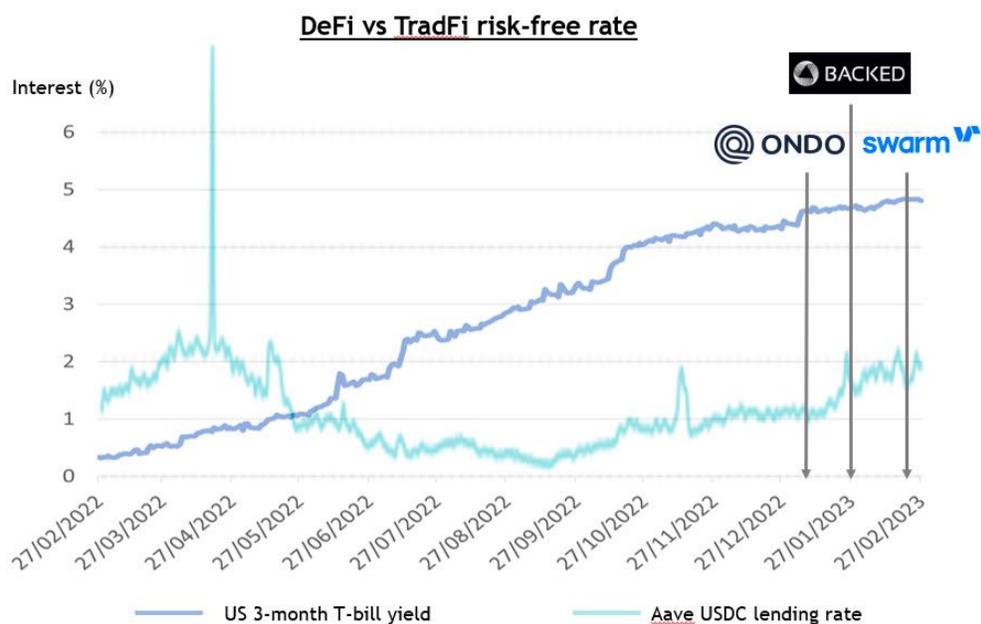
Most public attention is on the speculative nature of digital assets. Little is known that the underlying technology of blockchain is now used for custodying, trading and settling more than \$300M worth of US Treasuries. Crypto asset allocators should supplement this guide with their decision-making processes, while traditional finance investors and service providers should find this guide informative about the financial applications and market traction of blockchain technology.

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Table of Contents

Introduction: A Tale of Two Worlds.....	5
Actively Managed Products.....	10
Franklin Templeton \$FOBXX / \$BENJI under '40 Act	10
Arca Labs ArCoin under '40 Act	13
WisdomTree Prime \$WTSYX under '40 Act	17
OpenEden \$TBILL Vault with an active manager	20
Maple Finance Cash Management Pool	24
Hashnote Short Duration Yield Fund	29
Matrixdock \$STBT	32
Reledgered Products	38
Ondo Finance \$OUSG as ETFs (SHV)	39
Backed bIBTA and bIB01 as ETFs (IBTA and IB01)	43
Swarm Markets TBONDS01 and TBONDS13 as ETFs	47
Conclusion.....	50
Principle 1: Principal Protection	51
Principle 2: Yield Maximization	52
Principle 3: Convenience	54

Introduction: A Tale of Two Worlds

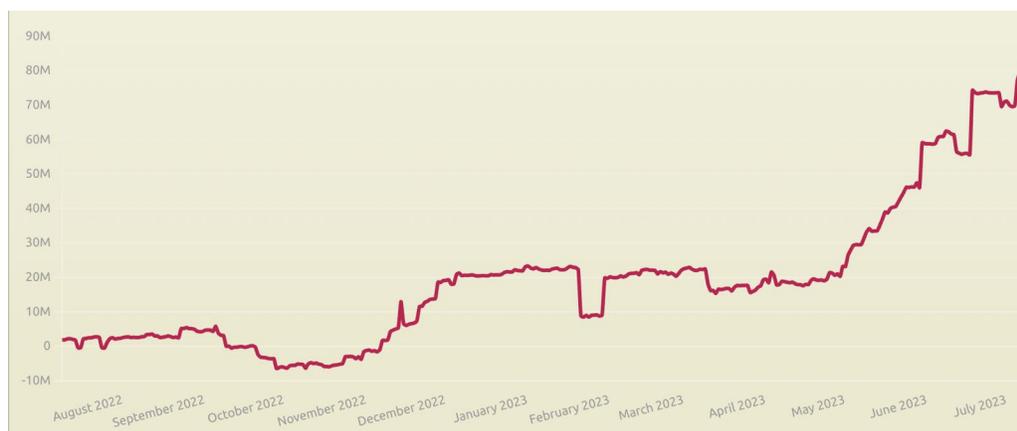


Source: 'Unlocking the 150b Stablecoin Opportunity'

The entire macroeconomic backdrop has shifted. The risk-free rate of return from US Government Treasuries is now over 4%, meaning most of the Zero Interest Rate Phenomenon asset bubble has now retreated. It also meant that comparable yield sources from Decentralized Finance ("DeFi"), mostly driven by demand for leverage, has now declined lower than the 'real world' risk-free rate. This naturally attracts investors to shift their exposure from crypto assets into US Treasuries.

A case in point is that the largest DeFi protocol, MakerDAO, makes almost the entirety of its revenue from lending to Real World borrowers, from purchasing US Treasuries to supply-chain financing.

MakerDAO Revenue



Source: Makerburn.com

Given that tokenized US Treasuries have now reached \$500M+ in total value (see: <https://app.rwa.xyz/treasuries>), this product category deserves a close examination.

Tokenization of US Treasuries can address two issues:

1. For crypto-natives, access to new products that are not cryptocurrencies
2. For incumbent issuers, access to new buyers

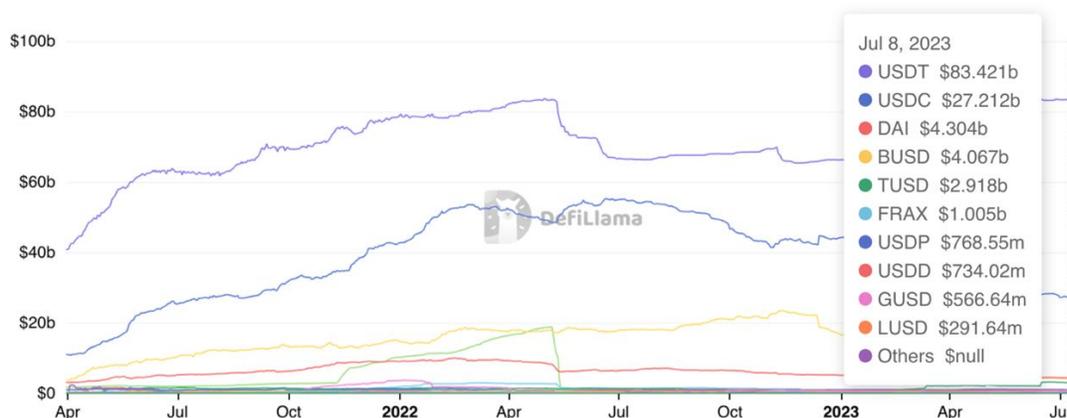
For Crypto-Natives, Access to New Products

First, one of the most astounding figures in crypto is the number of outstanding stablecoins, especially the high count of Tether USDT and Circle USDC. Under a high-rate environment, holders receive no yield at all, effectively paying an opportunity cost that they otherwise could have earned from deploying into other risk-free assets.

Bringing US Treasury yields (i.e., the "risk-free rate") to the blockchain ('on-chain') might [offer](#) a good option for stablecoin holders to earn yield, while remaining 'on-ramped' with their funds on the blockchain.

The other existing alternatives, including lending on DeFi protocols such as Aave and Compound, all offer lower rates than the true risk-free rate.

Stablecoin Market Caps



Source: [DefiLlama](#)

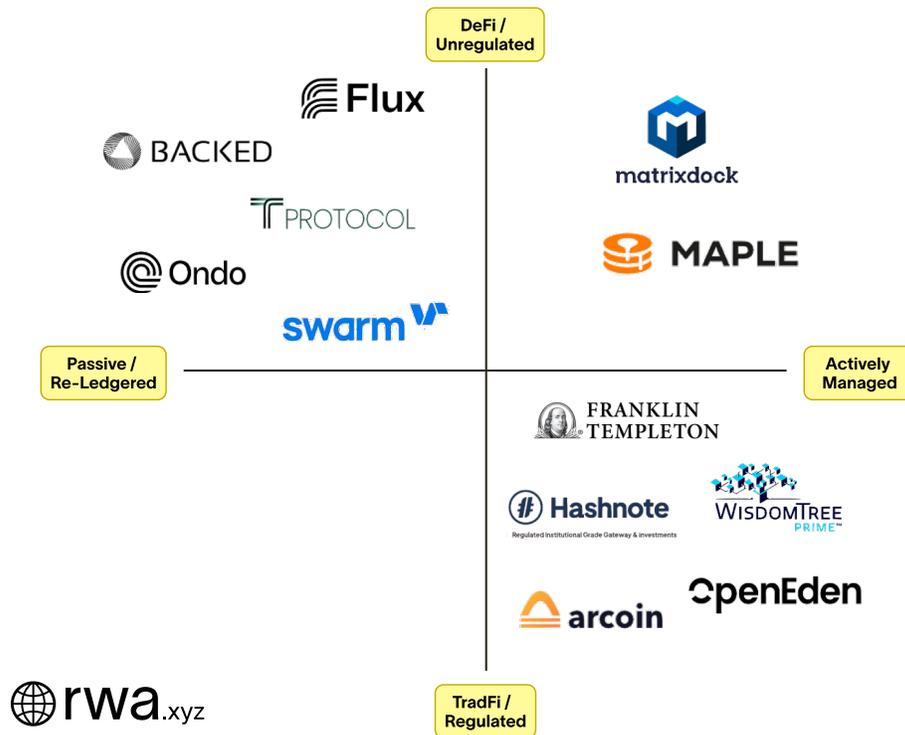
For Incumbent Issuers, Access to New Buyers

For large and established asset managers such as Franklin Templeton and WisdomTree, tokenization represents opening new distribution channels to gain access to new groups of customers who prefer to hold their assets in a digital form on the blockchain, rather than with their traditional brokerage or bank accounts. Many institutions adopt the view that "[crypto is here to stay](#)," as seen by the [wave](#) of spot Bitcoin ETF applications at the time of writing.

Some institutions even see tokenized treasuries as just the first product in a pipeline of tokenized fund products, as Arca called them, 'Blockchain Transferred Funds (BTFs)'. Tokenization can help streamline efficiency, similar to the paradigm shift of Exchange Traded Funds (ETFs). For them, tokenized treasuries are their 'Beachhead Market'.

Tokenization of assets or funds naturally intersects traditional legal structuring with blockchain technological considerations. Given the permissionless nature of DeFi, it also makes regulatory obligations and transfer of funds trickier.

In the span of six (6) months, we have seen more than ten (10) companies offering tokenized US Treasuries products.



At first glance to most investors, these products may appear similar to one other, but each offers unique risk and return profiles. Given the nascency and recent emergence of tokenized US Treasuries products and lack of industry standards, we decided to produce a comprehensive guide to help stakeholders navigate the shifting product landscape.

We have focused on ten (10) companies, divided into two categories: **Actively Managed** and **Reledgered**.

- **Actively Managed:** US Treasury products where the company assigns a portfolio manager to actively manage an underlying portfolio of assets.
- **Reledgered:** US Treasury products that simply represent or aim to mirror a financial instrument e.g., a publicly listed ETF that is not natively on a blockchain (i.e., 'off-chain').

For each product, we provide a background, flow of funds, target market, traction, and additional commentary for each.

After an overview of the various products, we compare each based on three principles, which we believe are useful criteria in evaluating the suitability of the various products for certain investors:

1. Principal Protection
2. Yield Maximization
3. Convenience

We believe that these axioms are useful criteria for asset allocators to investigate which product is the right fit.

Let's get into the first tokenized treasuries product on our list: BENJI by Franklin Templeton...

Note: This is not an exhaustive list of T-bill protocols. Other new players include [PV01](#), [Stream Protocol](#), [Cytus Finance](#), etc.

Actively Managed Products

#1

Franklin Templeton

\$FOBXX / \$BENJI under '40 Act



Background

Franklin Templeton is a global asset manager with American roots and \$1.3T+ AUM. It has always been at the forefront of digital assets adoption. Its executives [believe](#) that blockchain has the potential to revolutionize the financial services industry. Franklin Templeton has had a couple important product launches the past few years: [Separately Managed Account](#) (SMA) through Eaglebrook Advisors' platform; [blockchain-focused venture capital fund](#); and a [blockchain-focused private equity fund](#). They have spun out their [own](#) Twitter account. More recently, Franklin Templeton made headlines when it launched its [Franklin OnChain US Government Money Fund](#) (FOBXX) on the [Stellar](#) and [Polygon](#) blockchain networks.

Flow of Funds

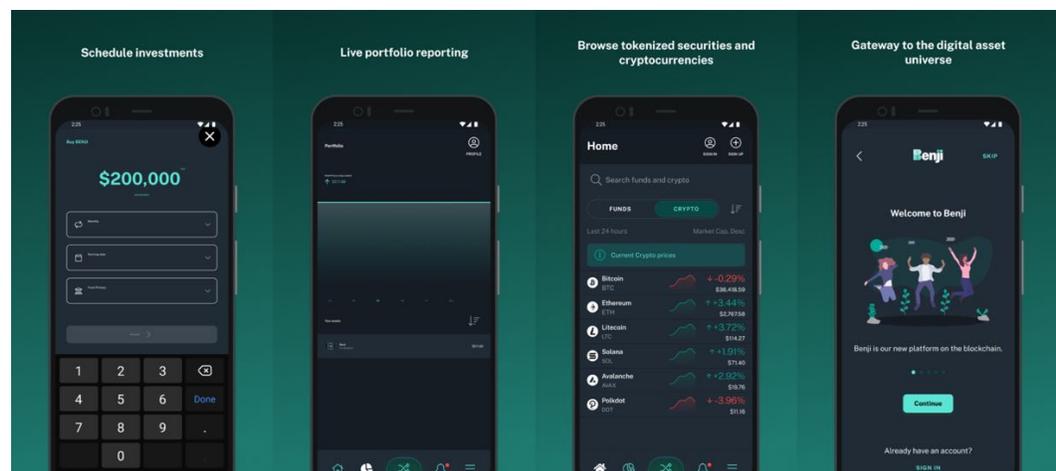
FOBXX is a Government Money Market Fund, registered under the Investment Company Act of 1940. It invests at least 99.5% of its total assets in government securities, cash and repurchase agreements collateralized fully by government securities or cash. Like many other money market funds, it aims to maintain a stable \$1 share price.

So where is the blockchain? Franklin Templeton maintains an internal ledger of record as a regulated Transfer Agent. On top of that, they also use Stellar and Polygon to process transactions and record share ownership, as a secondary ledger of record. Shares in FOBXX are also represented as 'BENJI' tokens.

Investors can purchase BENJI tokens by downloading a mobile application, from Apple Store and Google Play, called '[Benji Investments](#)'. The application is also developed by Franklin Templeton.

Target Market

The initial target market for BENJI is US investors, from retail to institutions. Compared to the other tokenized treasuries products covered in this writing, Franklin Templeton offers one of the most regulated products out there, providing comfort for investors. However, investors should be aware that you cannot purchase BENJI with stablecoins. And in the meantime, your purchased BENJI tokens will sit idle without much utility/leverage on it. Franklin Templeton distributes the yield from the underlying US treasuries to BENJI holders, which are shareholders of the FOBXX fund, on the BENJI mobile application.



Source: [Benji Investments](#)

Investors fund their account by transferring USD fiat via ACH or wire transfer. US investors with plenty of options to access this asset class, via Fidelity, Charles Schwab or Robinhood. It remains to be seen if US retail investors would find the Benji Investments mobile application convenient and attractive.

Traction

As of April, FOBXX has [surpassed](#) \$270M in assets under management. Stellar Foundation has also chipped in about \$20M of its own capital, as Blockworks [reported](#). These data can be verified by any semiannual [Regulatory Documents](#).

Commentary

Franklin Templeton is an asset management giant as a heavily regulated entity. Its service providers, from auditors, custodians to payment agents etc. are publicly disclosed. As a regulated entity, they also must fulfill the following obligations:

- Mandatory Reporting
- Annual Audited Financials
- Semi-Annual Reports
- Trade Confirmations
- Monthly Statements of Account
- Daily NAV
- SEC Filings on Material Events
- Investment Company Act of 1940 Requirements
- Assets Held in Trust
- Independent Auditor
- Independent Administrator
- Independent Board of Trustees
- Periodic Financial Reporting

Amongst all other products, BENJI stands at the top in terms of investor protection and transparency. Nonetheless, users can only access the products by downloading the mobile application. This might cause inconvenience particularly for corporate and institutional users.

In the future, we look forward to some interesting ways for Franklin to enable Peer-to-Peer transfer functionality of BENJI tokens. Whitelisted parties might be able to set up pools, or use these BENJI tokens as trading collateral, similar to what Arca (see below) declared in its original vision when it launched its product.

BENJI mobile application's vision to be a fully-fledged consumer fintech application is interesting and we shall follow its traction closely.

#2

Arca Labs

ArCoin under '40 Act



Background

[Arca](#) is a financial institution in the United States in the digital assets space. Its innovation division, Arca Labs, has launched the first public '40 Act Fund with its shares as digital asset securities back in [2020](#). This product is under the broader platform of 'Blockchain Transferred Fund' (BTF), where shares are represented as tokens on a blockchain and can be stored in digital wallets in a self-custody manner. For more information, please refer to Arca's [publication](#): 'Blockchain Transferred Funds (BTFs): The New Frontier for Investment Funds'.

[ArCoin](#), as the product is called, is a digital representation of shares of the Arca US Treasury Fund. One ArCoin share is issued and priced at the Net Asset Value of the Fund. Shares are issued as ERC-20 digital asset securities on the Ethereum Blockchain. And they are minted (created) upon successful subscription to the Arca US Treasury Fund. ArCoins are issued as digital asset securities, meaning they are uncertificated securities with a digital copy of the Fund's shareholder register viewable on the Ethereum blockchain. However, like Franklin Templeton's FOBXX, the ultimate record ownership of ArCoin is maintained by the Transfer Agent, which is regulated by the SEC and operated by Securitize.

The Transfer Agent's records constitute the official shareholder records of the Fund and govern the record ownership of ArCoins in all circumstances. While ArCoins follow the ERC20 smart contract standard, they also implement a permissioning layer on top: 'DS Protocol'. It allows the issuer to freeze, revoke and

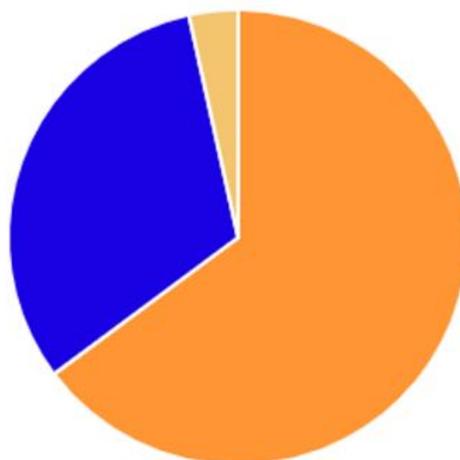
redistribute lost or compromised tokens. DS Protocol is developed by Securitize and [stands](#) for 'Digital Securities Protocol.'

The underlying fund has a mandate to hold a minimum of 80% of its portfolio of US Treasury Securities with a maximum average portfolio duration of zero to eight years and a dollar-weighted average portfolio maturity of between zero and five years, and a maximum of 20% in cash, cash equivalents and investment-grade fixed income securities.

While the mandated maximum average portfolio duration is quite long from zero to eight years, the actual portfolio holdings is much smaller. This makes use of the higher rates in the shorter end of the rate curve.

ARCA U.S. TREASURY FUND

Portfolio Holdings



CUSIP	Security Description	Term	% Portfolio
912796CS6	United States Treasury Bill	6 Month	64.79%
912796ZR3	United States Treasury Bill	6 Month	31.77%
316175504	Money Market	0 Month	3.44%

Portfolio Holdings as of 6/1/2023 4pm ET

From ArCoin website

Flow of Funds

Investors can subscribe to the Fund by going through the onboarding process with Securitize. Arca accepts USD fiat receipt with ACH/Wire. Subscriptions are available daily at NAV while redemptions are available monthly at NAV. While the total expense ratio is 0.75%, there are no redemption nor issuance fees. Do note that redemption is open for the first 15 business days of each month. On the last day Arca tallies up counts of tokens in a Securitize-controlled wallet. Redemption will be fulfilled according to the 5% (SEC limit) of monthly outstanding shares. The NAV is then struck that evening, while payment will be initiated the next day.

Target Market

Investors (both US and non-US) who have been onboarded by Securitize's KYC/AML process, or who already possess a Securitize ID, can purchase.

As readers that follow institutional adoption of digital assets might know already, Securitize has also worked with [KKR](#) and [Hamilton Lane](#) to tokenize their funds. If an investor has already possessed a Securitize ID, they can purchase ArCoin without additional verification. This offering is open to retail and accredited/qualified investors alike. However, do note that Arca only accepts funding via USD fiat, which might prove tricky for international investors that have to resort to SWIFT transfer.

Traction

As of May 31, 2023, based on information provided by ArCoin, the Fund had a net asset value of \$378,826.09.

Source: [ArCoin](#)

Commentary

ArCoin follows a similar regulatory structure compared to Franklin Templeton's. Hence, they both face the same regulatory obligations and transparency requirements.

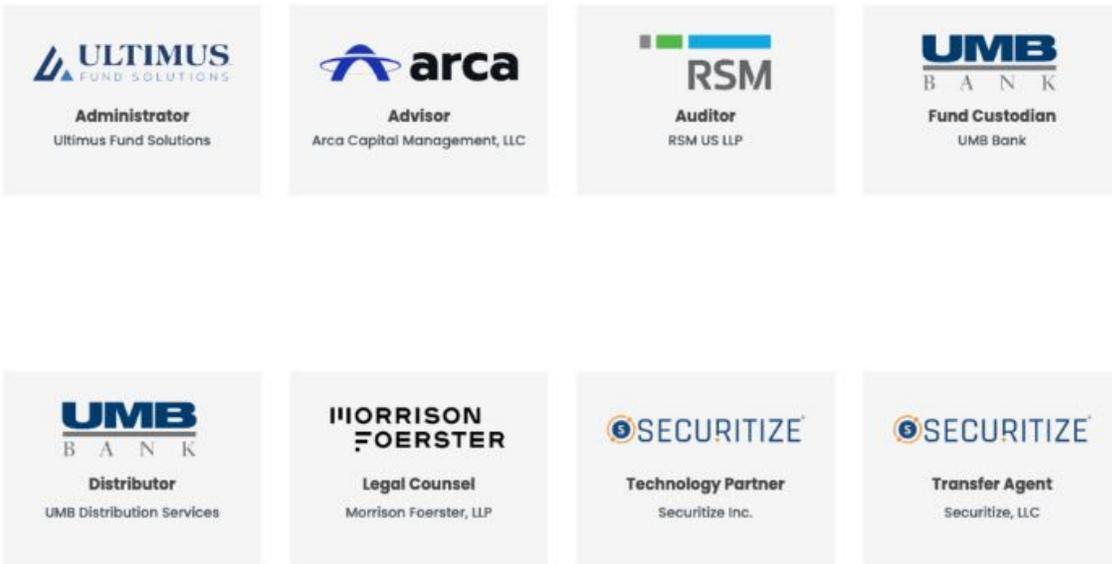
For example, ArCoin publicly discloses their custodians and service providers on their [website](#), as seen below.

ARCOIN CUSTODY

Partnering with leading custodians to lay the groundwork for the digital securities industry.



Supported by leading institutions to offer this innovative digital product.



Arca has also developed a suite of products called [Blockchain Transferred Funds](#) (BTFs), seeking to challenge the fund management industry in the [same way](#) that Exchange Traded Funds (ETFs) did. It will be interesting to observe what they will launch next.

#3

WisdomTree Prime

\$WTSYX under '40 Act



Background

WisdomTree Investments, Inc. (NASDAQ: WETF) is an exchange-traded fund ("ETF") and exchange-traded product ("ETP") sponsor and asset manager. It is a publicly listed company on NASDAQ and manages around \$80B AUM globally.

WisdomTree [announced](#) in January 2022 that they will launch a new direct to consumer fintech offering. The product is called '[WisdomTree Prime](#)'. The goal is to offer US investors, initially, access to a curated list of investment opportunities across asset classes, from government debt to commodities. The products will be blockchain-native. The shares in funds will be represented as tokens on the blockchain.

In December, the SEC approved WisdomTree's announced collection of 10 digital funds. Like Franklin Templeton's and Arca's offerings, these funds are '40 Act products. Another similarity is that the transfer agent keeps the primary record of share ownership for the fund in its own books-and-records. And the transfer agent also keeps a secondary record of the shares on either the Stellar or Ethereum blockchains.

See below a list of products mentioned in the [announcement](#):

- WisdomTree Short-Term Treasury Digital Fund (WTSYX)*

- WisdomTree 3-7 Year Treasury Digital Fund*
- WisdomTree 7-10 Year Treasury Digital Fund*
- WisdomTree Long Term Treasury Digital Fund*
- WisdomTree Floating Rate Treasury Digital Fund*
- WisdomTree TIPS Digital Fund*
- WisdomTree 500 Digital Fund*
- WisdomTree Technology and Innovation 100 Digital Fund
- WisdomTree Short-Duration Income Digital Fund
- WisdomTree S&P 500 Twitter Sentiment Digital Fund

The relevant US-treasuries products are the followings:

Short Term Government

- Short-Term Treasury Digital Fund (WTSYX)
- Floating Rate Treasury Digital Fund (FLTXX)

Government

- 3-7 Year Treasury Digital Fund (WTTSX)
- 7-10 Year Treasury Digital Fund (WTSTX)
- Long-Term Treasury Digital Fund (WTLGX)

Interest Rate Strategies

- TIPS Digital Fund (TIPSX)

Compared to other product offerings, WisdomTree Prime's are unique as it offers a range of treasuries product along the rate curve.

For example, Floating Rate Treasury Digital Fund (FLTXX) offers exposure to the Solactive US Treasury Floating Rate Bond Index. This measures the performance of floating-rate notes (FRNs). Another example is TIPSX. It is the first tokenized fund that offers exposure to an index designed to measure the performance of inflation-protected securities (TIPS).

Target Market

According to WisdomTree, WisdomTree Prime does not target the institutional crypto investors that other products mentioned in this article might target. Instead, it targets US self-directed retail investors.

As [announced](#), Stride and Galileo are their Payments Partners. Users can pre-fund their Prime account via an ACH transfer, and proceeds are then custodied at State Street. Further, the WisdomTree Prime Visa debit card will initially be available as a virtual card that can be used with Apple Pay, Google Pay and Samsung Pay, with a physical debit card to be released shortly after.

Traction

According to their official [website](#), Short-Term Treasury Digital Fund (WTSYX) has around \$1M of assets under management. Note that the product is still in beta and not available to a wider audience yet.

Commentary

It is admirable that WisdomTree is [committed](#) to crypto as the next evolution of ETFs. This is a signal that 'TradFi' is indeed coming to crypto.

In terms of transparency, investor protection and regulatory obligations, WisdomTree sits at the top with Franklin Templeton and Arca's offerings. WisdomTree works with institutional partners such as Securrency Transfers, Inc. and State Street Bank and Trust Company for these products. These counterparties are either regulated or affiliated with heavily regulated entities. In addition, there are no management fees initially for most of the tokenized fund products.

Similar to Franklin Templeton, WisdomTree requires investors to download a dedicated mobile application to access these products. Lastly, it'd be interesting to observe WisdomTree Prime's card capabilities.

#4

OpenEden

\$TBILL Vault with an active manager



Background

[OpenEden](#) Labs is a blockchain technology company [founded](#) by former Gemini executives. They developed the TBILL Vault for the Token Issuer, the first smart contract vault that allows the minting and redemption of TBILL tokens 24/7 on-chain. The Vault provides investors with direct exposure to a pool of short-dated T-Bills through the Vault's TBILL token, which is backed 1:1 by the T-Bills as well as USD Coin (USDC) and US Dollar (USD) reserves.

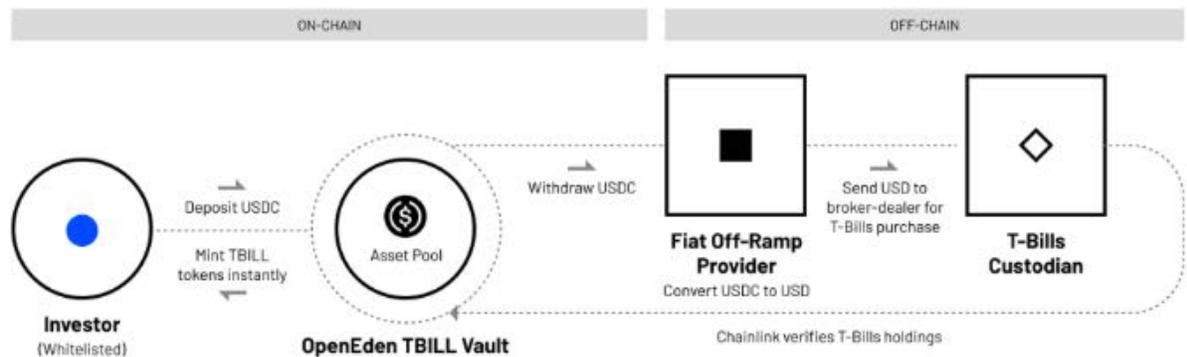
TBILL holders will receive a return on their capital that reflects the returns provided by the underlying T-Bills assets held by the Vault. At any given time, the Vault will hold a portfolio of T-Bills, USDC, and USD in designated on-chain and off-chain venues.

The Vault itself aims to provide the highest possible level of income generation while maintaining on-chain liquidity and maximum safety of principal. Given these requirements, the Vault will be managed according to the following metrics:

- Target portfolio composition: A pool of short-dated US Treasury securities
- Target weighted-average maturity of portfolio: 3 to 6 months
- Target on-chain USDC reserve: Maximum ~5%
- Target utilization rate: Minimum ~95%

Do note that the utilization rate is not always at 100%. This is to allow for quicker redemption as underlying treasury securities and fiat takes 1-2 business days to settle.

Flow of Funds



First, TBILL token holders have a legal contractual right to redeem an amount equivalent to the redemption price per token multiplied by the number of tokens set to be redeemed. TBILL is a prospectus-based token where a Private Placement Memorandum outlines the rights and interests of investors that hold such tokens. The Issuer of TBILL token is Hill Lights International Ltd (“HLI”), a professional fund established under the British Virgin Islands’ Securities and Investment Business Act 2010.

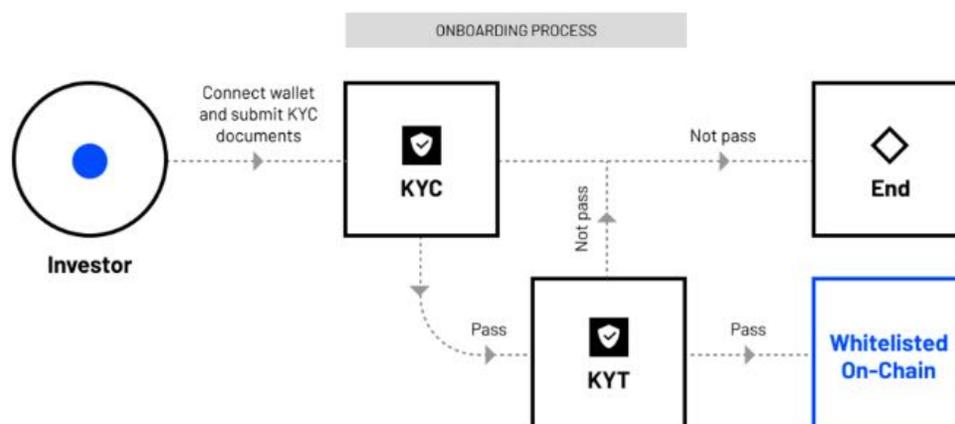
Second, The Token Issuer holds T-Bills via a bankruptcy-remote and wholly owned Special Purpose Vehicle (SPV), OpenEden Cayman Limited (“OCL”) with segregated accounts in regulated and qualified custodians.

Third, Adam Eve Capital Pte Ltd (“AECPL”), the investment manager of OCL, is a registered fund management company regulated by the Monetary Authority of Singapore under the Jurisdiction of the Republic of Singapore. AECPL has an investment mandate to manage the treasury portfolio with a 3–6 month duration. The relationship between OCL and AECPL is governed by the investment management agreement between the two.

Note that currently under promotion period, all fees are waived. After it ends, the following fee components may apply to users of the OpenEden TBILL Vault:

- Transaction Fee of 5 basis points (of the notional investment position) or \$50, whichever is higher during subscription.
- Management Fee of up to 30 basis points annualized, accrued daily.

Target Market



Source: OpenEden's [docs](#)

OpenEden's VAULT accepts USDC, but not fiat transfer. Hence, it naturally targets more crypto-native institutional/corporate investors. Further, Token Issuer can only offer TBILL tokens to non-US "Professional Investors" as defined under the British Virgin Islands' Securities and Investment Business Act 2010 ("SIBA") and US "Accredited Investors" within the meaning of Rule 501(a) of Regulation D promulgated under the Securities Act.

Commentary

OpenEden openly discloses its counterparties and service providers. This level of additional level of transparency is commendable:

- Swissquote (T-Bills custodian and execution broker of the SPV)
- Circle/Coinbase (fiat on/off-ramp between USDC and USD)
- Refinitiv (market data)
- KPMG (tax advisor)
- Elliptic (blockchain compliance)
- Harneys (legal counsel)
- Protege Fund Services (fund administrator)
- TJ Assurance Partners PAC (fund auditor)
- Verichains (smart contract audit)

On another hand, OpenEden also provides the specific holdings being managed, down to CUSIP level. OpenEden also provides a daily custodian statement, monthly NAV report by Fund Administrator and monthly attestation report by Fund Auditor.

Overview Portfolio **Report**

Portfolio Statement
Overview of U.S. Treasury Bills portfolio

Portfolio Statement as of 20230627.pdf

Portfolio Statement as of 20230626.pdf

Portfolio Statement as of 20230623.pdf

Portfolio Statement as of 20230622.pdf

Portfolio Statement as of 20230621.pdf

Portfolio Statement as of 20230620.pdf

NAV Report

TBILL Monthly NAV Report May 2023.pdf

Attestation Report

TBILL Monthly Attestation Report May 2023.pdf

Overview **Portfolio** Report

AS OF 28/05/2023

Holdings

U.S. Treasury Bills

Estimated Yield
5.33%

Weighted Average Maturity
0.36

ISSUER	CUSIP	MATURITY DATE	YTM	PRINCIPAL AMOUNT	MARKET VALUE
US TREASURY 0% 03.08.2023	US912796Y379	02/08/2023	5.23%	404,400.00	400,647.17
US TREASURY 0% 22.08.2023	US912797GH40	21/08/2023	5.27%	431,000.00	425,828.00
US TREASURY 0% 29.08.2023	US912797GJ06	28/08/2023	5.32%	385,300.00	380,252.57
US TREASURY 0% 05.09.2023	US912797GR22	04/09/2023	5.16%	406,100.00	400,552.67
US TREASURY 0% 19.09.2023	US912797GT87	18/09/2023	5.31%	493,800.00	485,899.20
US TREASURY 0% 05.10.2023	US912796YJ21	04/10/2023	5.30%	509,700.00	500,423.46

#5

Maple Finance

Cash Management Pool



MAPLE

Background

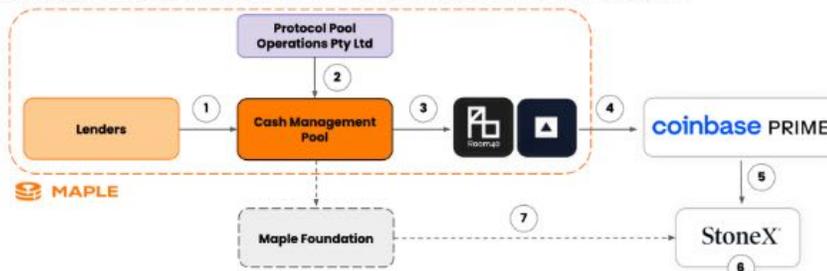
Maple Finance is an institutional lending platform built with blockchain technology, with \$2 billion in loan originations to date.

Maple launched the Cash Management Pool in May 2023, offering a treasury management solution for stablecoin holders to remain on-chain and earn conservative yield sourced exclusively from US treasury bills.

Flow of Funds

ILLUSTRATIVE FLOW OF FUNDS

Borrower draws down USDC from Maple pool, converts to USD, and transparently allocates risk to U.S. Treasury bills.



1. Lenders supply USDC into the Pool and receive LP tokens in exchange.
2. Protocol Pool Operations Pty Ltd acts as Delegate and is responsible for administrative management of the Pool.
3. The Pool issues a USDC loan to R40-TI LLC's Fireblocks wallet.
4. The proceeds are immediately sent to R40-TI LLC's Coinbase Prime account. R40-TI LLC has engaged Coinbase Prime to hold USDC, convert USDC to USD, and wire funds to a broker dealer account.
5. R40-TI LLC has engaged StoneX, a SEC and FINRA regulated broker dealer for prime brokerage services to custody and trade assets.
6. Using its StoneX account, R40-TI LLC executes trades, clears, and custodies the Pool's assets.
7. Maple Foundation, a third party Cayman domiciled entity, acts as Security Agent under the Master Loan and Security Agreement. Maple Foundation is party to Account Control Agreements for R40-TI LLC accounts, where it has "read-only" access to custodial accounts with clear step-in rights upon an event of default.

Compared to Releveraged products, Maple's product is more actively managed and engages an external manager to manage the cash and holdings in the pool. This is similar to OpenEden, Hashnote, Matrixdock.

Like Maple's existing lending pools, the Cash Management Pool is structured as a portfolio of on-chain loans. R40-T1 LLC, a bankruptcy remote SPV established by Room40 Capital, is the sole borrower and pays an interest rate equal to the 4-week US Treasury bill rate, less a spread. The borrower's use of proceeds is restricted to taking a long position on US Treasury bills and reverse repurchase agreements fully collateralized by US Treasury bills.

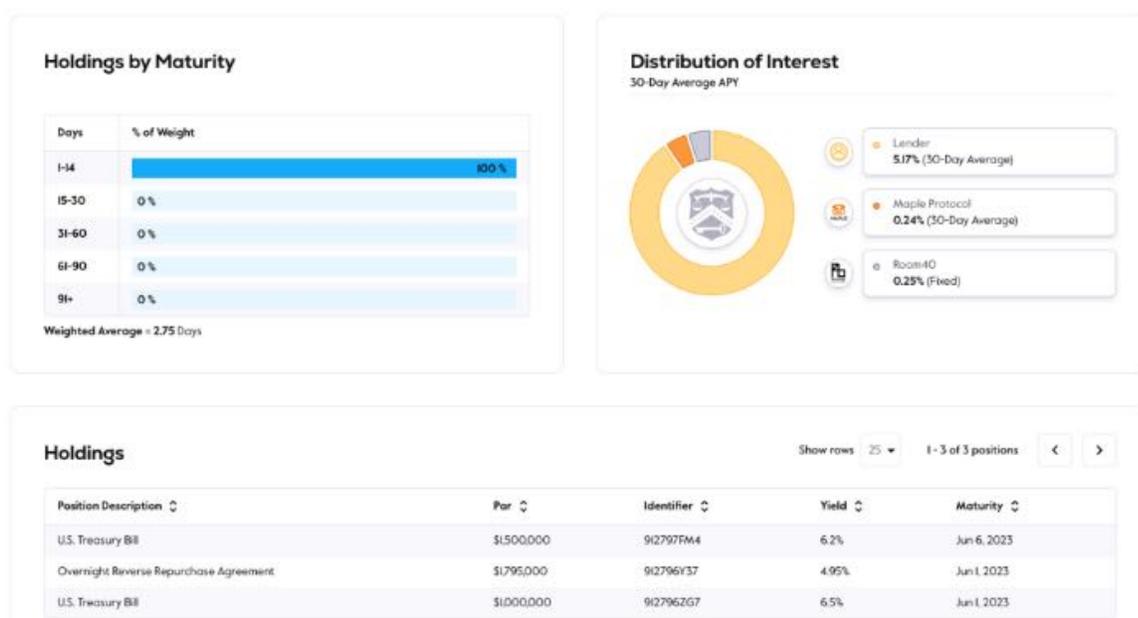
Below is a step-by-step guide of the flow of funds with counterparties and legal agreements involved:

- 1) Lenders supply USDC into an on-chain smart contract 'Cash Management Pool' and receives ERC-20 LP tokens in return
 - a) They agree to abide by the Cash Management Pool Terms & Conditions and the Terms of Use for the web app as a condition precedent to deposit
 - b) Pursuant to the Master Loan Agreement, the target APY to Lenders equals the 4-week US Treasury bill rate as reported by the US Department of the Treasury, minus fees and expenses totaling 50bps (annualized)
- 2) Protocol Pool Operations Pty Ltd acts as Delegate and administrative management of the Pool
 - a) The Delegate signs the Master Loan Agreement with the Borrower on behalf of the Pool
 - b) The Delegate receives 25 bps from the fees and expenses as an administrative agent
- 3) The Pool issues a USDC loan to the Borrower, a 'R40-T1 LLCs' Fireblocks wallet
 - a) R40-T1 LLC is a Delaware SPV established by Room40 Capital, an institutional investment fund focused on crypto multi-strategy hedge fund
 - b) The Borrower signs the Master Loan Agreement to borrow from the pool
 - c) The Borrower borrows at the current 4-week US Treasury bill rate as reported by the US Department of the Treasury, less fees and expenses totaling 25 bps 50 bps (Borrower fees)

- d) In addition to 25bps Borrower fees, The Borrower receives 25 bps as a management fee, and the Maple protocol charges 25 bps fees which are deducted from Lender's net APY
- 4) The proceeds from USDC loan are immediately sent to R40-T1 LLC's Coinbase Prime account and converted to USD
 - a) R40-T1 LLC has engaged Coinbase Prime wire funds to a broker dealer account
- 5) The USD is sent to R40-T1 LLC has engaged StoneX, a SEC and FINRA regulated broker dealer
 - a) BNP Paribas is the banking partner and custodian for the StoneX prime brokerage account
 - b) R40-T1 LLC executes trades, clears, and custodies the Pool's assets
- 6) Maple Foundation, a third party Cayman domiciled entity, acts as Security Agent under the Master Loan and Security Agreement
 - a) Maple Foundation is party to Account Control Agreements for R40-T1 LLC accounts at Coinbase Prime and StoneX
 - b) It has "read-only" access to custodial accounts with clear step-in rights upon an event of default.

Note that the rate that lenders receive, and borrowers pay is based on the 4-week US Treasury bill rate. The weighted average maturity of the portfolio is capped at 30 days, although the borrower may deploy into shorter duration

assets such as 1-14 days T-Bills and overnight and overnight repo



The holdings and their respective identifiers are displayed on the Maple webapp with data pulled from StoneX’s prime brokerage account. Similar to the comment we made about OpenEden, Maple can increase their transparency and trustlessness by either directly connecting to StoneX’s APIs or uploading auditor’s reports.

Target Market

This offering is open to all accredited non-US persons that can satisfy all KYC and AML screening obligations, subject to TRM Labs’ for screening of blacklisted wallet addresses.

Traction

\$17M based on Maple Finance dashboard.

Commentary

Note that portfolio management for Maple’s Cash Management Pool product is outsourced to R40-11 LLC, a SPV established by Room40 Capital. The borrower takes a fully secured loan from the pool, and it pledges T-Bills and Reverse Repo at a 1:1 ratio as collateral against the loan. The loan is between the Pool and the

Borrower, governed in accordance with the Master Loan Agreement. The Lender separately abides by the Cash Management Pool Terms & Conditions and the Terms of Use for the web app as a condition precedent to deposit.

Investors should note that one of the former borrowers on Maple, Orthogonal Trading, defaulted on an unsecured loan in a separate, unrelated pool. Maple's Foundation stepped in as a Security Agent to appoint a liquidator for Orthogonal which is currently in progress. According to Maple, The Cash Management Pool is completely ring-fenced from credit risk in other pools on the platform.

#6

Hashnote

Short Duration Yield Fund



Regulated Institutional Grade Gateway & Investments

Background

Hashnote is a regulated investment management platform for DeFi. It is backed with US \$5mn of investment from Cumberland Labs, an early-stage blockchain incubator launched by the partners of principal trading firm DRW and its crypto-asset arm, Cumberland.

Hashnote has launched a series of investment vehicles to offer investors RWA yield, options strategies on cryptocurrencies, and money market products composed with DeFi options, with investor protection under regulations and permissioned logic that fulfills KYC/AML obligations. One of the products is called 'Short Duration Yield Fund'. It offers investors exposure to short-term US Treasury instruments. The fund invests into T-bills, repo and reverse repo.

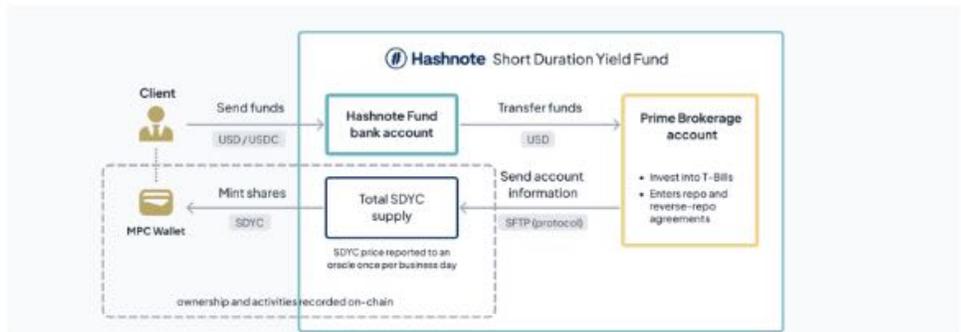
Flow of Funds

OVERVIEW

Short Duration Yield Fund generates yield by investing US Dollars into **U.S. Treasuries** and enters into repurchase (**repo**) and reverse repurchase (**reverse-repo**) agreements.

Ownership of this fund is reflected on a blockchain via a permissioned ERC-20 style smart contract.

The amount of shares (**Short Duration Yield Coin**) a client receives represents their ownership in the fund.



- 1) Investors are onboarded after undergoing KYC/AML checks by Hashnote
- 2) Investors subscribes to Hashnote fund
 - a) Wire fiat to Hashnote Fund bank account
 - b) Or send USDC to Hashnote Fund MPC
- 3) Hashnote transfers the principal fund into the dedicated Prime Brokerage account (Marex)
 - a) Hashnote issues Short Duration Yield Coin (SDYC) to the client's wallet
 - b) The amount of SDYC issued is equivalent to the client's proportional share of the Prime Brokerage account's Net Asset Value (NAV)
- 4) Investors redeem with SDYC
 - a) SDYC tokens are burned
 - b) USD fiat transfer takes 2-3 days to process OR
 - c) Investors can also choose to receive USDC instead
 - d) Hashnote fund takes 10% of upside, as processed by the ERC20 smart contract

Hashnote also works with a list of professional service providers:

- Fund Admin: NAV Consulting
- Banking partner: Customers Bank (both US and Cayman)
- Prime Broker: Marex
- Custodian: BNY Mellon
- Audit partner, Cohen & Co
- Additional KYC/AML provider (Cayman): Lymon

Traction

To be seen.

Target Market

For US investors, Hashnote is a US Commodity Pool Operator regulated by the CFTC. For non-US investors, Hashnote is a regulated fund manager under CIMA in Cayman.

Products are offered via a traditional fund structure with registration exemption (CFTC 4.13, SEC Reg D). Hence, the current threshold is only for accredited investors with a minimum ticket size of \$25k. For non-US investors, the minimum ticket size is \$100k.

Commentary

SDYC is just one out of a suite of products that Hashnote offers. Hashnote plans to launch a series of products around proprietary option vaults and diverse strategy offering which includes yield, cash management, hedging and exposure strategies.

We also learn that on top of SDYC, there are other option vaults (e.g., 'SDYC+') that offer additional yield. In those vaults, smart contracts govern the activities of the strategy (creation of strikes, run a competitive auction and manage the collateral and settlement process) contracts are visible on Etherscan for transparency. Since those vaults offer exposure to products beyond mere US Treasuries, they are beyond the scope of our analysis.

#7

Matrixdock

\$STBT



matrixdock

Background

[Matrixdock](#) is the asset management arm of [Matrixport](#), an Asia-based blockchain financial services firm that has raised more than \$100M in [venture funding](#). Matrixdock has built a tokenized treasuries product called Short Term Treasury Bill (STBT). It aims to be backed by the underlying assets of T-bills maturing within six months and reverse repurchase agreements (Reverse Repo) collateralized by US Treasury securities.

Similar to Backed, it is not available to US investors. Matrixdock's website blocks US site visitors. Also, there are no official announcements on any public social media at all about STBT, apart from a small [coverage](#) on Matrixport's newsletter.



You are not allowed to access the website or to purchase STBT as you are resident or located in a restricted jurisdiction

Taken from the newsletter, we understand that STBT is an ERC-1400 standard token on Ethereum mainnet. [ERC-1400](#) is a type of [Security Token Standard](#) that offers greater compliance, control and recovery mechanism over the permissionless ERC20 token standard.

STBT tokens are only transferrable to account-holders pre-approved via KYC/AML whitelisting mechanism. STBT's smart contracts are audited by BlockSec and Zelic, as reports are uploaded on the 'STBT-contracts' [repo](#) on GitHub.

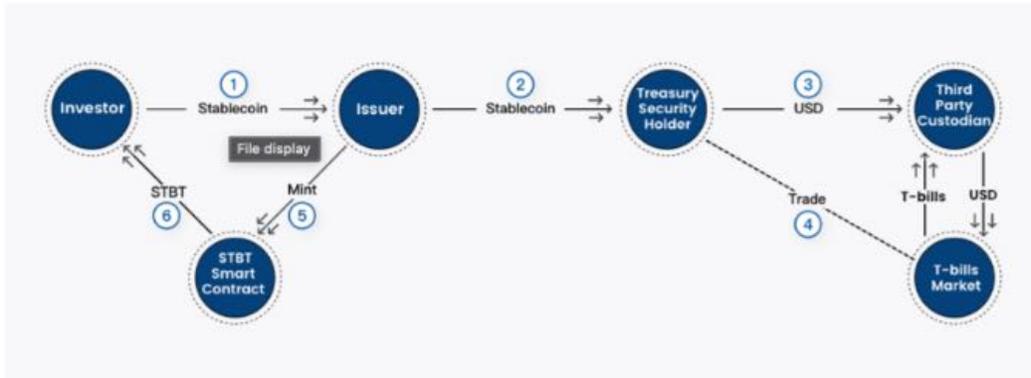
Flow of Funds



Source: [Matrixdock: STBT Project Newsletter](#)

From materials obtained by RWA.xyz, Matrixdock has set up an offshore purpose trust, which is the issuer of STBT. This trust is managed by Appleby, a Bermudan-based offshore law firm. According to the materials, the only purpose of the trust is 'to hold STBT issuer shares and support the issuers' activities. This trust owns the STBT issuer, which owns the STBT Asset Account Holder. The enforcer of the trust is Hamilton Services Limited. We have tried to obtain more information on the enforcer but to no avail.

STBT Mint Flow Chart:



Source: Matrixdock whitepaper

Investors can mint/issue STBT via two ways:

- 1) Submit request through Matrixport's application
 - a) This requires a user to pre-fund their Matrixport accounts
 - b) underlying T-bills will be subscribed up to 3 business days given the operational process
- 2) Communicate with Matrixdock sales representatives to set up a Telegram channel
 - a) Formulate and execute an Over-The-Counter (OTC) Agreement
 - b) Investors transfer USDC/USDT/DAI from whitelisted address to Matrixdock's dedicated recipient address
- 3) Whitelisted investors can purchase STBT on Curve (discussed later in this newsletter)

The workflow diagram above shows that the Issuer would transfer stablecoins to the 'Treasury Security Holder', which offramps stablecoins into fiat USD for 'Third Party Custodian' to purchase underlying treasury securities. It is not disclosed who the 'Treasury Security Holder' nor the 'Third Party Custodian' is. This is a contrast compared to other protocols that are more crypto-native, e.g., Ondo Finance or OpenEden, which provides transparency on all levels of counterparty interactions.

TRANSPARENCY AND TRUST

The funds deposited into a Matrixdock account ("Account") and used to mint STBT Tokens are primarily used to invest in reverse repurchase agreements collateralized by U.S. Treasury securities and U.S. Treasury securities maturing within six (6) months (the "Underlying Assets").

The fees are completely transparent. In addition, the Underlying Assets are held with a third party custodian, and applied as collateral to secure the STBT Tokens.

Account-holders are able to view all historical transaction records relating to the minting, burning, and rebase of STBT at <https://etherscan.io> at any time. In addition, we will also upload certain Underlying Assets reporting documents for review on the Matrixdock Platform.



On-chain Activities

PROOF OF ASSETS

NETWORK: 72,377,688.48201274 STBT

oken Contract

Name	Hash	Update time
Daily_Asset_Statement_05_24.pdf	3e56ed29b09e7b297b25988446dab43fd2eb0fd3e74aa68f2459749fbbd9f04	2023-05-25 22:45:11
Daily_Asset_Statement_05_23.pdf	cd1e98684cd101d76eac23b067e6c923bc0531cf7ffa86e88d7d4bf6c6a8206	2023-05-24 04:51:11
Daily_Asset_Statement_05_22.pdf	a253aec0ec3c22240674127bd474a5b411d342a162f83647ef86b8664730675	2023-05-24 04:44:11
Daily_Asset_Statement_05_19.pdf	ab53bbdc1c3e32f8584b89140112f399f9507897c938d782c881291eba40a21f	2023-05-22 00:10:11
Daily_Asset_Statement_05_18.pdf	5e61aa14ffc4eef2848459b224f72ef01d9c9d50384ef43b997929cae1e27ba4	2023-05-21 22:29:11
Daily_Asset_Statement_05_17.pdf	1663a9511ca97ef9c398c72870e7c08039805d4f30b2141cc796a9f9caf0157c	2023-05-18 22:13:11
Daily_Asset_Statement_05_16.pdf	3b1bcdfd79db65f0f520656edf1ec8481874a6edc68e4ad9bf73bd70cd907c29	2023-05-18 21:45:11
Daily_Asset_Statement_05_15.pdf	ffad4e051a95fd7e5a6758b1a88e6be356df3702ce6aff8b391a5b32c7fa9050b	2023-05-16 22:37:11
Daily_Asset_Statement_05_12.pdf	ed3cae022bca0fbae9f8c2eca5784fceb122746b3b1136c3ab58254599238d0	2023-05-16 03:04:11
Daily_Asset_Statement_05_11.pdf	5bbdb6bbfe73f2da4c68ad490964da4b1022b50ca08db6f8d33a321310e3c02b	2023-05-15 23:15:11

[Load More](#)

Nonetheless, there are daily asset statements available on Matrixdock's investor portals. However, these reports are only available to current investors, not to prospective investors.

As we have commented on OpenEden and Maple, it would certainly boost confidence among investors if such reports were directly generated by regulated securities custodians and verified independently by auditors. At the moment, it is unclear what the management strategy of the manager is, with no clarity on the underlying CUSIPs that the manager holds.

Target Market

To be eligible to mint, obtain, use or redeem STBT tokens, users must:

- have an account that is in good standing with Matrixdock (via Matrixport's mobile application)
- meet STBT token accreditation requirements
- not be a citizen or resident of any jurisdiction in which offers and sales of STBT tokens are not authorized, including but not limited to the United States, the United Kingdom, Hong Kong and Singapore (the [complete list](#) is on Matrixport's website)

Specifically, the definition of accredited investor depends on the country of residence of the user. If the jurisdiction of a particular user does not have any definition of Accredited Investor, Matrixport would follow its own threshold:

- For individual investor: US \$ 1 million net asset, excluding fair market value of primary residence; or US \$ 200,000 income for the preceding two years
- for institutional investor: US \$7 million net asset;

Excluded most developed markets except continental Europe (including Switzerland), MENA, India and the Caribbean offshore jurisdictions.

Traction

On-chain analytics ([RWA.xyz](#) and [Dune](#)) has tracked that over \$70M worth of STBT has been minted.

This roughly translates to over \$70M worth of liquidity held and deployed by the Issuer. It is important to note that the relevant parties are not regulated and thus, their holdings are not independently verified.

Commentary

On the one hand, investors should note that the structure of Matrixdock's offering is mostly offshore and there might not be sufficient publicly available information for investors to conduct due diligence.

On the other hand, Matrixdock has designed a rebasing mechanism for its tokenized treasury token, STBT. Given that this is unique to Matrixdock and rebasing is confusing for most investors, this deserves a closer look.

From the whitepaper, we understand that the total STBT supply is equivalent to the NAV of underlying asset portfolio, which is a sum of:

- US T-bills (a maturity of 6 months or less)
- Reverse repo
- Cash

The expiry date for each T-bill corresponds to the day that its par value will be realized. The STBT rebased interest is calculated by referring to Bloomberg's 3pm NY time closing price (using the "BGN" source on Bloomberg Terminal's "HP" function) (the "Fair Market Value" or "FMV") and comparing it to the previous day's FMV.

Hence, the Daily Interest Distributed via rebasing is the NAV of the current day minus the NAV of the last rebase day minus expenses. Expenses including T-bill Custodian Fee, Reverse Repo Brokerage Fee and Matrixdock Service Fee (0.1% APY). The all-inclusive expenses are estimated to be approximately 0.3% APY, subject to periodical adjustment.

If there is a new T-bills transaction, the intraday price movement (the price movement between marked price and settled price) will not be included into interest rebasing on the transaction settlement day as the corresponding STBT were not minted yet. The intraday price movement will be rolled over and distributed together when we rebase the interest on the next day after the settlement day.

Reledged Products

All three companies, Ondo Finance, Backed Finance and Swarm Markets are *reledgering* BlackRock/iShares Short Treasury Bond ETF. Ondo purchases from the US issuer on NASDAQ (CUSIP: [464288679](#)) while Backed and Swarm purchases from the Irish issuer/UCITS (ISIN: [IE00BGSF1X88](#)).

#8

Ondo Finance

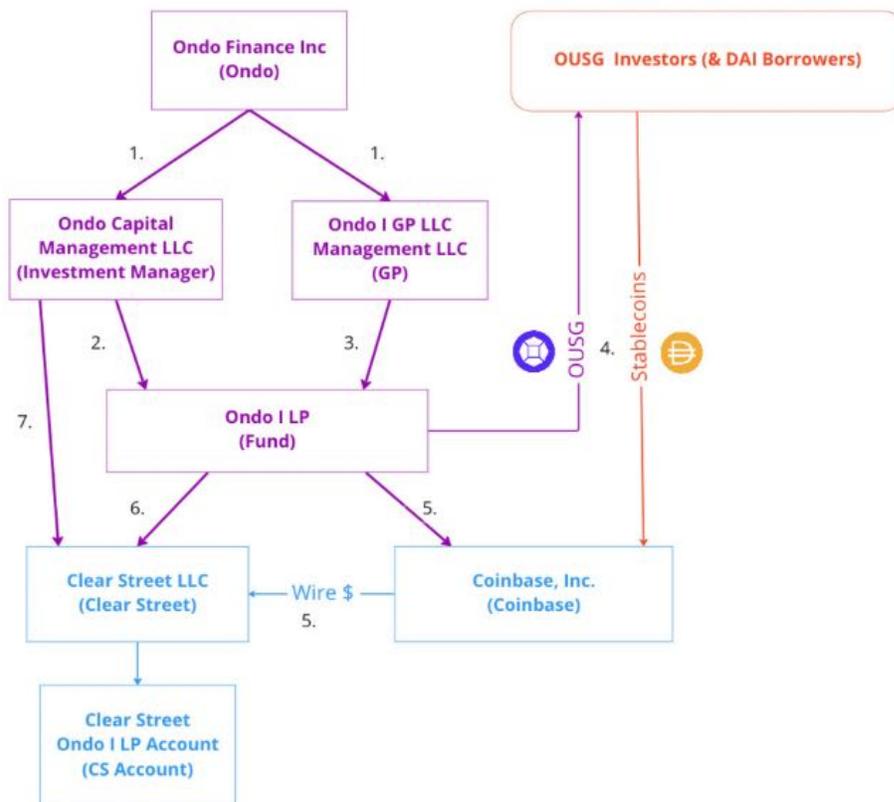
\$OUSG as ETFs (SHV)



Ondo Finance was founded in 2021, initially set to build structured products on top of decentralized exchanges. Most notably, it [raised](#) its \$20M Series A from Founders Fund and Pantera Capital. Since then, they pivoted into building a technology arm that develops decentralized finance technology and an asset management arm that creates and manages tokenized funds.

In January 2023, it launched the industry's first series of tokenized funds that exclusively invests into several Exchange-Traded Funds (ETFs). Specifically, the US Government Bond Fund (OUSG) invests exclusively in short term US treasuries, initially via the Blackrock US Treasuries ETF (SHV).

Flow of Funds



Source: MIP119 <https://forum.makerdao.com/t/mip119-onboard-dai-funds-to-the-flux-finance-dai-lending-pool/19885>

Ondo has adopted a traditional fund structure, similar to Hashnote’s offerings. First, Ondo Finance wholly owns the Investment Manager and GP. The Investment Manager is responsible for the purchase and sale of ETFs. The GP acts as the General Partner of the Fund.

OUSG Investors have to pass KYC/AML screening and sign the fund subscription documents (also including Limited Partnership Agreement and Private Placement Memorandum). Afterwards, they transfer USDC/DAI to the Fund’s Coinbase Prime account.

The Fund has engaged Clear Street for prime brokerage services and utilizes Clear Street to hold and trade assets. As explained by Ondo on MakerDAO’s community form, ‘The Fund accounts at Coinbase are only permitted to send US

dollar wire transfers to the Fund's accounts at Clear Street. The Clear Street account wires are sent and received through its bank, BMO Harris, while Coinbase wires are sent and received through its bank, Silvergate Bank. It is not possible for the Fund to "fat finger" a wire to another account. In order to get another account approved to receive a wire transfer, the Fund would have to first receive a wire transfer from that bank account to the Fund's Coinbase account, and then work with a Coinbase representative to configure the bank as a trusted withdrawal destination.'

After subscription, OUSG limited partnership interests are issued as tokens on the Ethereum blockchain. OUSG tokens are indeed security tokens with rights and obligations outlined in the PPM. OUSG can be minted (i.e. subscribed to) and redeemed on any US business day (excluding federal holidays). Subscriptions and redemptions are processed based on the next daily NAV as calculated by the fund administrator, NAV Consulting, Inc. Ondo anticipates redemptions to take up to 2-3 business days to settle (for an investor to receive their stablecoins/USD) if the fund does not have sufficient stablecoins or USD on hand to service the redemption immediately, as it takes two business days to access dollars and then stablecoins from the sale of the ETFs.

The OUSG fund only invests in one asset: [Blackrock/iShares Short Treasury Bond ETF \(SHV\)](#), with a small quantity of stablecoins and cash to fulfill subscriptions and redemptions. SHV is a NASDAQ-listed ETF with \$19 billion in assets and averages \$300 million in daily trading volume. SHV seeks to track the investment results of an index composed of US Treasury bonds with remaining maturities one year or less. In other words, Ondo does not actively manage a portfolio of Treasury holdings. Instead, it 'outsources' management to SHV, which is in turned managed by BlackRock/iShares.

Target Market

Given that OUSG token are indeed security tokens, they are offered under SEC's Reg D exemption which requires:

- Verification of Accredited Investor status under Rule 501(a) promulgated under the Securities Act of 1933

- For individuals: \$1MM in assets or \$200k+ in annual income for the past two years
- For entities: \$5MM+ in assets
- Self-attestation of Qualified Purchaser status under Section 2(a)(51) of the Investment Company Act of 1940

Traction

\$100M in holdings with [attestations](#) (Account Statement, Balance Sheet, and Trial Balance) from the fund administrator (NAV Consulting) available via Ondo's OUSG [website](#)

Commentary

Ondo's OUSG as a standalone product aimed at US institutional investors. They use a traditional fund structure and work with professional service providers e.g. Coinbase Custody for custody of stablecoins, Coinbase Prime for USDC to USD off-ramp, Clear Street for prime brokerage and custodian of SHV, NAV Consulting as the fund administrator and Richey May as the tax advisor and auditor.

Ondo has also developed the Flux Protocol, a permissionless decentralized finance protocol that allows OUSG holders to borrow against their holdings. For more details on Flux, see Section 'Axiom 3: Convenience'.

#9

Backed

bIBTA and bIB01 as ETFs (IBTA and IB01)



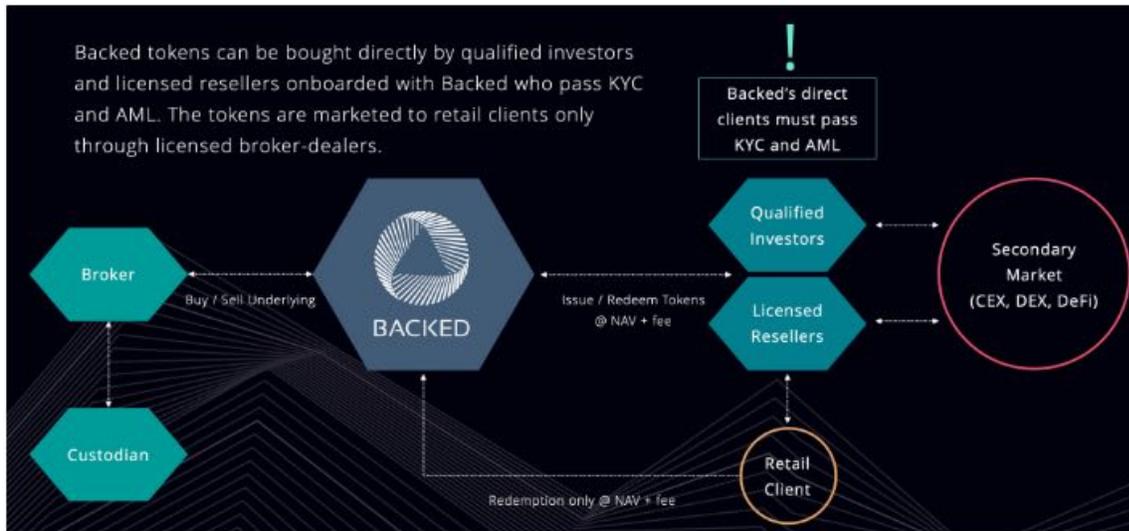
Backed is a start-up based in Zug, Switzerland that is bringing real-world assets to blockchain rails. Backed issues ERC-20 tokens that track the value of real-world assets, such as stocks or ETFs. Tokens are freely transferable across wallets, are fully collateralized by the underlying assets, and are issued in compliance with the Swiss DLT act.

They have launched two products: bIBTA and bIB01. Both are structured products that reflect their underlying assets: IBTA and IB01 ETFs. IBTA is an iShares ETF that offers exposure to Treasury Bonds from 1 to 3 years. IB01 is an iShares ETF that offers exposure to Treasury Bonds from 0 to 1 year.

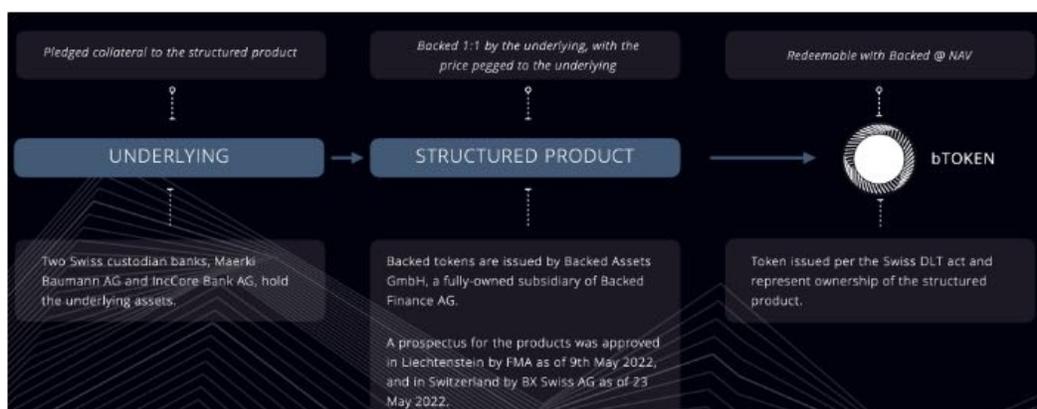
Flow of Funds

Note that Backed's structure is slightly more complicated than the other ones. Nonetheless, the underlying assets are the same as Ondo's and Swarm Markets' (iShares ETF).

After an investor onboarding process, an investor purchases Backed tokens directly from Backed. The Backed tokens are 'ledgered-based securities' under [the Swiss DLT bill](#). They are tokenized by the technology provider Backed Finance AG. The actual issuer of the assets is Backed Assets GmbH, a Swiss SPV fully owned as a subsidiary of Backed Finance AG.



Investors purchase Baked tokens with USDC by sending USDC to an on-chain wallet controlled by the Issuer. The Issuer then sends the USDC to their designated market-makers e.g. B2C2, BCB, Flow Traders for off-ramping USDC to USD. The USD proceeds are held at custody at Maerki Baumann & Co. AG, a Swiss private bank based in Zurich. The custodian is then instructed to purchase the underlying securities. A bIBTA buy order would mean a purchase of iShares \$ Treasury Bond 1-3yr UCITS ETF. A bIB01 would mean a purchase of iShares \$ Treasury Bond 0-1yr UCITS ETF. The underlying ETFs are then held at the custodian and pledged as collateral of the structured products.



Each token represents shares of the underlying structure products. In the event of bankruptcy or liquidation of the Issuer, [Security Agent Services Ltd](#), steps in as

the Security Agent. Both bIBTA and bIB01 have obtained Swiss ISIN. At the moment, there are no periodic attestations publicly available, unlike Ondo.

A quick summary table below:

Issuer	Backed Assets GmbH	Backed Assets GmbH
ISIN	CH1173294229	CH1173294260
Ticker Symbol	bIBTA	bIB01
Token	ERC-20	ERC-20
Smart Contract Address	0x52d134c6DB5889FaD3542A09eAf7Aa90C0fdf9E4	0xCA30c93B02514f86d5C86a6e375E3A330B435Fb5
Underlying	iShares \$ Treasury Bond 1-3yr UCITS ETF	iShares \$ Treasury Bond 0-1yr UCITS ETF
Underlying ISIN	IE00BYXPSP02	IE00BGSF1X88
Underlying Ticker	IBTA	IB01

Target Market

First, Backed only directly offers its products to non-US investors, specifically [qualified investors](#) according to Swiss definition and licensed resellers/broker-dealers in the EU. As mentioned, a [prospectus for the structured product](#) has been filed and approved in Liechtenstein by FMA as of 9th May 2022, and in Switzerland by BX Swiss AG as of 23 May 2023. This allows EU retail investors to access Backed tokens via licensed and onboarded resellers.

Second, Backed has explicitly communicated that it does not allow US investors access to its products.

If you visit Backed's product website from the US, you see the following screen:



Sorry... Access restricted

It seems like you are trying to access the Backed Assets website from a restricted country. Please note that Backed Assets and its products are not available for US citizens, US residents, or anyone otherwise taxable in the United States.

Their marketing and sales materials and prospectuses filed in the European Union also reiterates that 'Backed DOES NOT sell its tokens to US Persons or for the account or benefit of US Persons, and tokens are not marketed, offered, or solicited in the US or in any other prohibited jurisdiction.'

Traction

\$8M for bIB01 and \$1M for bIBTA

Commentary

Backed the tokenizer has decided not to adopt a 'whitelist' approach. Instead, the tokens are freely transferable. The legal basis is that these tokens are bearer assets under the Swiss DLT bill. It is technically possible that US investors might get hold of such tokens, even if Backed the Issuer does not service US investors at all. Nonetheless, US investors and investors from countries that Backed does not service (including sanctioned jurisdictions) cannot redeem the tokens for the underlying or for cash value. Stokr, a security token marketplace, has [written](#) on the legal controversy surrounding such design.

From our conversation with Backed, we learned that their aspiration is to offer the 'Circle tokens of securities', specifically targeting emerging markets investors who otherwise have difficult access to assets in the developed world. The tokens themselves can be transferred permissionless. But Backed only works with regulated and onboarded investors/entities from a selected list of jurisdictions.

This decision opens up a wider design space and allows DeFi protocols to build on top of Backed tokens. There has been no legal precedence that might inform the legal risk of such arrangement.

#10

Swarm Markets

TBONDS01 and TBONDS13 as ETFs



Background

Part of the Swarm Markets team have been previously involved in creating the Swarm Network, an ICO that [raised](#) \$5.5M in 2017. According to Swarm Markets, The Swarm Network is a DAO that builds open-source issuance technology and is independent.

On the other hand, the team behind Swarm Markets also build Swarm Capital, and intend both as for-profit companies, that cover regulatory services for customers around transactions, issuance, and secondary trading. This infrastructure is also open to SRC20 tokens built on top of the Swarm Network.

Early this year, Swarm Markets launched their tokenized stocks (Tesla and Apple shares) and bonds products. For the purpose of this article, we focus on their TBONDS01 and TBONDS13 offerings.

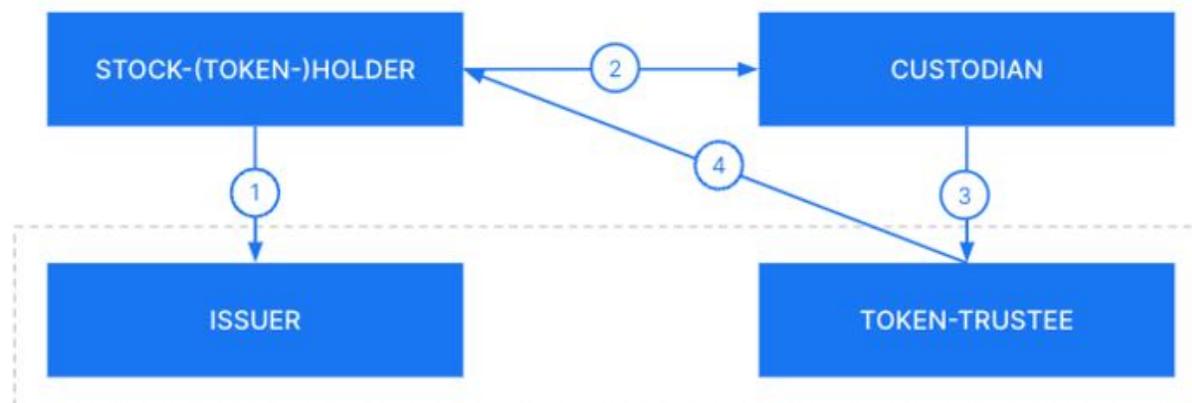
Note that these are exactly the same as Backed's offerings. Both Backed and Swarm Markets are reledgering iShares 0-1y Treasury Bond UCITS ETF (IB01) & iShares 1-3y Treasury Bond UCITS ETF (IBTA).

Swarm takes a regulated approach and classifies these offerings as uncertificated ledger-based securities using the SX-1411 Token Standards on Ethereum and Polygon mainnet, under the German financial regulations BaFin. In terms of regulatory licensing requirements, the platform Swarm Markets is a subsidiary to Swarm Capital. And Swarm Capital is deemed to have been granted

the authorization required [according to section 64y](#) of the [German Banking Act \(Kreditwesengesetz – "KWG"\)](#) for conducting the following businesses:

- Commission Business / Principal Broking Services (section 1 para. 1 sentence 2 no. 4 KWG)
- Trading on own account (section 1 para. 1a sentence 2 no. 4 lit b-c KWG)
- Crypto Custodian (section 1 para. 1a sentence 2 no. 6 KWG)
- Swarm Capital GmbH Branch Office Berlin has submitted applications to [German Federal Financial Supervisory Authority \(Bundesanstalt für Finanzdienstleistungsaufsicht / BaFin\)](#) under GZ: GIT2-K5000-157380-2020/0001

Flow of Funds



Source: SwarmX's [docs](#)

The tokens are deemed as 'Stock Certificate Token', which are not bearer assets and cannot be permissionlessly transferred, unlike Backed.

According to the [prospectus](#), 'The Stock Certificate Tokens constitute unsubordinated obligations of the Custodian to deliver, at the request of the Tokenholder as forwarded by the Token-Trustee, the Specific Underlying to the Tokenholder and rank pari-passu with each and all other current and future unsubordinated obligations of the Custodian.'

The Issuer of the current tokenized ETFs is SwarmX, a subsidiary to Swarm Markets, which is dedicated to that purpose. As seen above, the tokens have the status of being depository receipts that are not on the balance sheet of SwarmX.

Therefore, they are insolvency protected and users can simply request the Trustee to hand them out, who would have the obligation to comply.

The statutory auditor of the Issuer is Ausborn & Partner mbB, Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft, Barmbeker Markt 42, 22081 Hamburg. The Custodian is ATG Azimut Treuhandgesellschaft mbH, Neuer Wall 44, 20354 Hamburg. And the Token Trustee is Deloitte GmbH, München.

Investors can purchase these tokens with USDC by going on [Swarm's UI](#), connect their wallet on Polygon and execute the trades. The trade router would first route the trade via their on-chain marketplace 'dOTC'. Then, if there are not sufficient bids or asks on dOTC, the trade will be routed via the primary markets.

Assets	Offering	At price ↕	Minimum buy	Expires at (Asia/Dubai time)	
Ⓢ → Ⓢ	5 USDC	0.005 AAPL / USDC	No minimum	June 01, 2025 17:32	Buy USDC
Ⓢ → Ⓢ	916.41 TBONDS13	5.25 USDC / TBONDS13	No minimum	June 12, 2023 19:30	Buy TBONDS13
Ⓢ → Ⓢ	0.19004 TBONDS13	28.152 USDC / TBONDS13	No minimum	May 27, 2025 15:35	Buy TBONDS13
Ⓢ → Ⓢ	39.46 TBONDS01	105.08 USDC / TBONDS01	No minimum	June 12, 2023 19:30	Buy TBONDS01
📈 → Ⓢ	35.67 AAPL	180.96 USDC / AAPL	No minimum	June 12, 2023 19:30	Buy AAPL
📈 → Ⓢ	0.09645 TSLA	235 USDC / TSLA	No minimum	May 27, 2025 15:35	Buy TSLA
📈 → Ⓢ	17.681 TSLA	244.4 USDC / TSLA	No minimum	June 12, 2023 19:30	Buy TSLA

Issuance/Minting of new tokens are subject to the banking funding hours. Taken from the [documentation](#), the minting process is monitored by a Token-Trustee and is a step-by-step process where the delivery of the respective underlying assets into an account maintained by the Issuer with a Custodian triggers the minting and issue of Stock Certificate Tokens: (i) the Stockholder is instructed to transfer the underlying assets to the Custodian; (ii) the Custodian confirms receipt of the assets in an account of the Issuer held by the Custodian to the

Token-Trustee, and (iii) the Token Trustee forwards the Stock Certificate Tokens it has received from the Issuer to a Wallet specified by the Stockholder (Wallet).

For redemption, requests can be placed by the Tokenholder directly in a Smart Contract with the procedure being further explained in detail on the webpage of the Issuer and in the Terms and Conditions. Redemption requests are executed regularly, at a minimum once a month or more often whenever there are redemption requests corresponding to redemption amounts exceeding €100,000.

Target Market

Swarm Markets offerings initially are currently limited to residents of Liechtenstein and Germany only. According to Swarm Markets, it is possible that they can service investors from other jurisdictions relying on reverse solicitation. However, the specifics for that are unclear.

Traction

\$8k for TBONDS01 and \$8k for TBONDS13

Commentary

Given Swarm's current UI setup and user workflow, it seems that they target European retail investors more than institutional investors.

Swarm has taken a different regulatory approach. Their Stock Certificate Tokens are treated as depository receipts, offering more investor protection compared to CFDs or structured products as depository receipts further reduce counterparty risks.

Conclusion

In examining how effective a product is with respect to principal protections, one can focus on questions such as the following:

Principle 1: Principal Protection

Investors should examine the levels of counterparties and relevant risks involved:

- Issuer: the entity minting and transferring tokens (shares) to the investor
 - Is it just a technology provider?
 - Is it a SPV?
 - Is it a regulated fund manager?
- Technology providers: provide calculation of fees, accepts subscription and redemptions on-chain with stablecoins
 - To what extent do the subscription, fund management and redemption process happen on the blockchain?
 - Are the relevant smart contracts audited by third-party auditors?
- Fund manager: manage a portfolio of Treasury holdings, cash and repo securities for investors to fulfill a particular investment goal
 - Is it a regulated entity?
 - Does it have a track record of treasury management?
- Fund administrator: provide accounting and reporting of the Net Asset Value (NAV) of the portfolio
 - Is it an experienced fund administrator?
 - Does it provide period reporting to investors?
- Regulated custodian: holds the portfolio in a segregated account on behalf of the fund manager/investors
 - Is the custodian best in class?
 - Does the custodian offer transparency into its holdings for the fund manager?
- Compliance counsel: structure the relevant product offering compliant to local and relevant securities and investment regulations
 - Is there any compliance risk that the product might be an unregistered securities offering?
 - Is there any compliance risk that the counterparties involved might contravene any particular financial regulations?

Franklin Templeton, WisdomTree Prime, Arca, OpenEden and Swarm Markets are among the most regulated offerings to varying degrees.

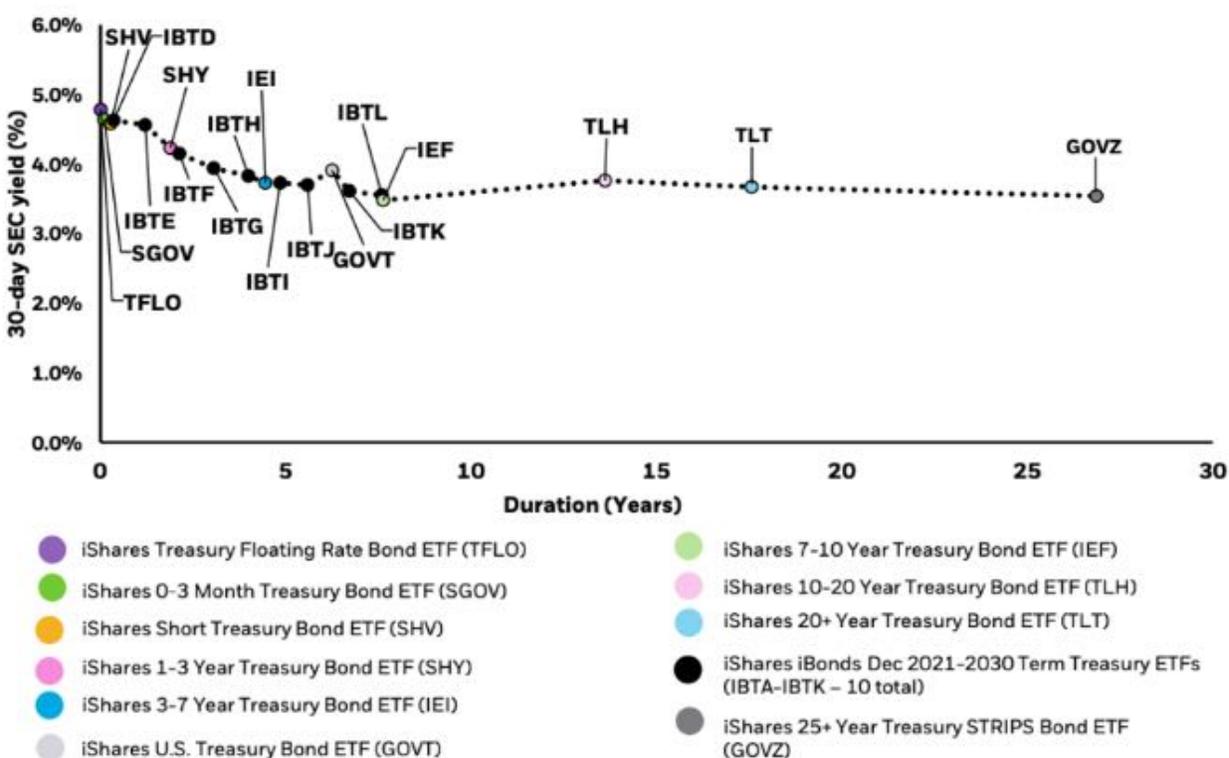
On the other hand, investors have to rely on Matrixdock and Maple as investment managers to fulfill their obligations to manage the portfolio. Investors should also consider if the structured offerings are in well-understood jurisdictions either in battle-tested offshore jurisdictions, or onshore jurisdictions.

Principle 2: Yield Maximization

Investors should pick products which optimize their net-fee yield. This can be done in two ways.

First, investors should consider their exposure to any particular segments of the yield curve.

Yield curve of iShares U.S. Treasury bond ETFs



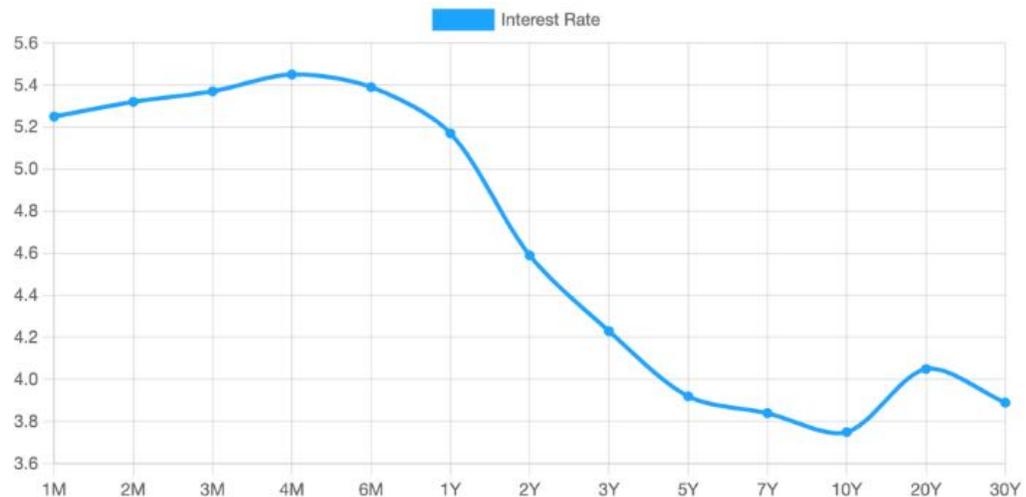
BlackRock Solutions, as of 3/31/2023. Effective duration denominated in years. **Past performance does not guarantee future results. For standardized performance, please see the chart below.**

Source: 'Treasury Bonds Product Brief'

Investors might have a position on how the yield curve might evolve. Depending on their liability and cash position, they might also have a duration preference.

The types of treasuries products might affect how investors gain exposure to a particular segment of the yield curve. For Actively Managed products e.g. Franklin Templeton, Arca, WisdomTree Prime, OpenEden, Maple, Hashnote, Matrixdock, investors rely on the preference, execution and the ability of fund managers to manage their portfolio and optimize exposure. For Reledgered products e.g. Ondo, Backed and Swarm, they all outsource portfolio management to the managers of the underlying ETFs: BlackRock/iShares. Investors can directly review and judge their past performances from their official websites.

The shape of the current yield curve suggests higher rates on the shorter end and lower rates on the longer end.



Source: [USTreasuryYieldCurve](#)

This explains why most products have holdings that are between 1 month to 6 months T-Bills. Some products even hold overnight reverse repo and repo securities.

Another reason to deliberate between Actively Managed or Reledgered is that the underlying liquidity is different. Actively Managed products have direct access to Treasury markets, which trade \$100B+ a day. Reledgered products rely on the liquidity of the ETFs, which trade \$500M a day. This might or might not be relevant depending on how scalable the treasury products become. If one

releverged product reaches billions in value and suffers from a daily outflow that reaches hundreds of millions, that product might contribute to a significant amount of the daily volume and suffer from price/liquidity risk. Nevertheless, given that the underlying ETFs are issued by iShares, they might intervene and offer better execution pricing in those scenarios. Picking between Actively Managed for direct bond exposure and purchasing Releverged products for ETF exposure will remain a debate in the foreseeable future. For more, Ondo, with its Releverged product, has written a [blog](#) dedicated to this matter.

Some might argue that Actively Managed product fees might be cheaper than Releverged because Releverged products add a layer of ETF fees. This is not entirely true. Currently, Actively Managed and Releverged products have similar fees, ranging from 30 to 75 basis points. Actively Managed products simply blended portfolio management costs into their fees. In the future, it is possible that Actively Managed products have room to squeeze their pricing to undercut Releverged products. But that day has not arrived yet.

Principle 3: Convenience

Investors should also think about the convenience of products. Do they only offer the products to a particular class of investors? How easy is the subscription/redemption process? Can the tokenized treasury products be used somewhere else, either as a collateral for trading purposes or in DeFi?

US only or Rest of World?

While Franklin Templeton, Arca, WisdomTree Prime offer the most investor protection (due to their '40 Act fund setup), non-US investors would find it difficult to access their products. Arca's ArCoin is available globally but requires a fiat bank wire (i.e. SWIFT for non-US) for funding. Franklin Templeton and WisdomTree Prime's products are exclusively only available on their respective mobile applications for US users only.

Other products, such as OpenEden, Maple, Hashnote, Matrixdock, Ondo follow a more well-established offshore fund structure. Accredited Investors and

Institutional Investors with past investment history in Cayman-domiciled funds would be more familiar with these products.

OpenEden TBILL token issuer is a registered professional fund in the British Virgin Islands and holds a portfolio of short-dated Treasury Bills via a bankruptcy remote and wholly owned special purpose vehicle that is managed by a registered fund management company in Singapore. while Matrixdock benefits from the Asian market coverage from Matrixport. Asian investors might be more familiar with these products.

Backed and Swarm follow Swiss and German regulations respectively. European investors might be more familiar with these products.

Used as an Investment or Payment?

The promise of tokenization is composability. Investors should also consider: are the tokenized treasury tokens strictly a receipt of their investment holdings, or can it also be used as a payment token/collateral?

Arca's ArCoin was the first tokenized treasury product that explicitly aimed to be used as a collateral for trading. After launching OUSG, Ondo also [launched](#) Ondo Money Market Fund ([OMMF](#)). It tokenizes US government money market fund and 'airdrops' interests to OMMF holders daily in the form of new tokens. It is minted and redeemed for exactly \$1 on any business day. Ondo aims to target OMMF to be used in 'as a dollar or stablecoin replacement for settlement and collateral, particularly in the OTC trading and lending space'.

On the other hand, while the utility of tokens/investments on Franklin Templeton's BENJI and WisdomTree Prime's mobile applications are limited, they can offer cross-margining for retail users in the future. The exact roadmap and timeline are not public. So it remains to be seen if this is a possibility.

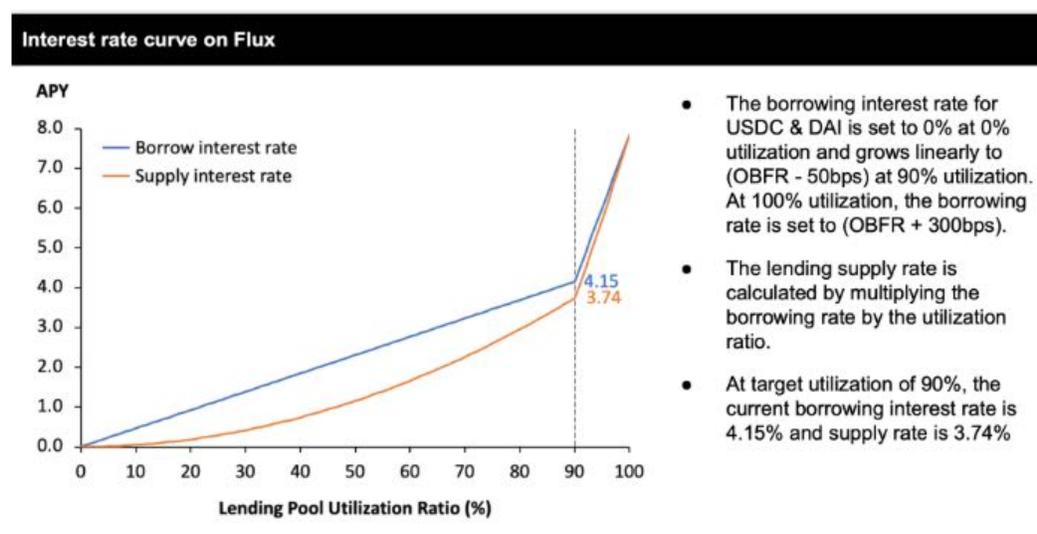
DeFi composability

Another side of composability is DeFi composability, the ability for DeFi protocols to build on top of these tokenized treasury products. Below are some highlights:

Ondo: Lever up on OUSG via Flux Protocol

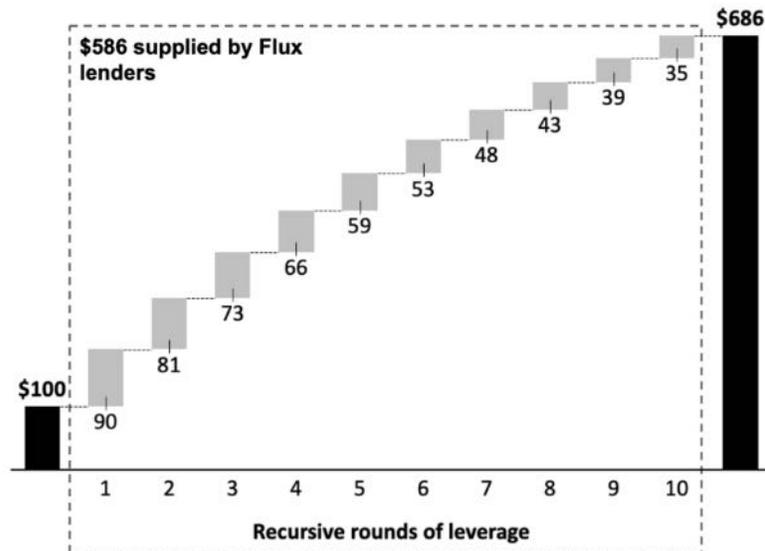
Flux Finance is a protocol developed by Ondo Finance. The protocol is a fork of [Compound V2](#) with additional functionality to support both permissionless (e.g. USDC) and permissioned (e.g. [OUSG](#)) tokens. Like Compound, Flux enables overcollateralized lending and borrowing in a peer-to-pool (p2pool) model. While OUSG is only available to Accredited Investors and Qualified Purchasers who pass KYC/AML tests, Flux offers stablecoin holders permissionless access to yield, barring blacklisted wallet addresses.

Borrowers on Flux pledge [Ondo Finance's OUSG](#) and borrow USDC, USDT, DAI. They use the proceeds to purchase more OUSG. On the other hand, lenders receive meaningful yield from the borrowers. As Ondo themselves explained, 'Flux is a repo market that exclusively accepts short-term Treasuries as collateral for stablecoin-based loans.'



In line with Compound, the borrow and lend rates on Flux pools follow a utilization curve. The curve is designed such that it is always profitable for borrowers (in aggregate) to borrow amounts such that the utilization rate is at the kink.

Ondo Investors Recursively Lever Using Flux



Example: an OUSG investor with \$100 of OSUG in collateral on Flux borrows \$586 on Flux after 10 rounds of recursive leverage at 90% Loan-to-Value (LTV ratio). Liquidation occurs if the LTV exceeds 92%.

By recursively borrowing on Flux, OUSG can obtain a levered treasury rate, way above the 'vanilla' ~4% they receive from the ETF itself.

By using a Compound-like lending model, Ondo has effectively designed a way to bypass some portion of the OUSG yield to permissionless stablecoin lenders. OUSG investors who face no obligations to KYC their lenders' source of funds would find this design very appealing.

Backed: Trade on Uniswap; Vault on Ribbon; Collateral on Angle

Since Backed has not limited the transfer functions on its tokenized ETF tokens, it is [technically possible](#) to trade the tokens on a permissionless decentralized exchange (DEX) like Uniswap. While the pool has since been taken down from Uniswap's UI, the contracts are still on Ethereum mainnet and can be accessed by developers.

Ribbon Finance, a structured product DeFi protocol, launched their 'Ribbon Earn USDC V2' vault building on top of Backed's IB01 \$ Treasury Bond 0–1yr tokens. According to their [tweets](#), the vault 'generates yield by purchasing Backed's

bIB01: IB01 \$ Treasury Bond 0–1yr tokens with an average YTM of 4.64%' and 'purchases ETH exotic options to get exposure to short-term volatility in the market'.

Angle Finance, a overcollateralized decentralized Euro stablecoin, [adds](#) bIB01 as a collateral that users can borrow agEUR from.

Matrixdock: Put your STBT into Curve and Wrap them via TProtocol

There is a STBT/3CRV pool on Curve Finance, a DEX similar to Uniswap. STBT holders can deposit STBT and DAI/USDC/USDT into the pool. In return, depositors earn yield from the underlying T-bill yields (via STBT rebasing) and CRV tokens ([Curve.fi](#)'s utility token) as liquidity provider (LP) rewards.

When other investors (whitelisted by STBT issuers) exchange tokens on [Curve.fi](#), they pay transaction fees and the associated fees are distributed amongst the liquidity providers. As trading volume increases, the associated fees increase.

[The STBT/3CRV pool](#) now rewards liquidity providers (LPs) with an APY of up to 10%. The additional yield comes from Curve's Gauge Controller. The Curve DAO has voted on a proposal which gives the pool more CRV emission rewards.

Currency reserves	
 STBT \$0.9989  	6,768,294.34256 (52.05%)
 DAI \$0.9989  	2,413,217.78614 (18.56%)
 USDC \$0.9997  	2,351,481.46805 (18.09%)
 USDT \$0.9998  	1,472,249.63176 (11.33%)
USD total	\$12,994,531.47 

Daily USD volume: **\$0**
Liquidity utilization: **0%** ⓘ

Fee: **0.04%**
DAO fee: **0.02%** ⓘ

Virtual price: **1.0071** ⓘ

Pool Parameters
A: **500** ⓘ

There are currently close to \$12M of stablecoins locked up in the pool. While it is interesting that Matrixdock has put a permissioned STBT token on a permissionless DEX, depositors might actually lose on the opportunity cost of their stablecoin deposits in the pool, especially when trading volume is close to zero.

Another DeFi integration is with TProtocol, a permissionless DeFi protocol. There is not much publicly available, except its [documentation](#). The protocol aims to bring short-term US Treasury securities yield into the DeFi ecosystem.

Users can mint TBT with USDC without any KYC/AML permissioning. TProtocol will use the received USDC to purchase sTBT from their 'partner', which is hypothesized to be Matrixdock. This purchasing process will usually take 3 business days, so TProtocol will receive the corresponding sTBT after 3 days of receiving users' funds. TBT works in the same way as Matrixdock's sTBT: it is rebasing. However, TBT is permissionless and does not have any whitelisting limitations on transfer. wTBT is a wrapped non-rebasing token of TBT. Thala Labs, a DeFi protocol on Aptos, has [planned](#) to support wTBT as a collateral type on Thala Labs to mint their decentralized Aptos-native stablecoin \$MOD.

It remains to be seen if TProtocol and its partners that purchase the underlying Treasuries would be compliant with the relevant securities and fund management regulations.

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