



The Growth Potential of Non-USD Stablecoins



Introduction

Developments in the digital assets space are often triggered by the emergence of a new piece of technology. The distributed ledger, the proof-of-work consensus mechanism, the smart contract, zero-knowledge (ZK) proofs; these are all zero-to-one shifts that originate in protocol labs and are typically difficult to understand comprehensively without a degree in cryptography. Other developments are more casual, combining new technical approaches with existing solutions to improve the rails the market runs on. These are often infrastructure-related, and while it's easy to dismiss them as unexciting, the sector would be unable to move forward without this work being done. Unfortunately, investing in infrastructure can be more difficult than investing in de novo innovations. It's not difficult to identify when a new technology represents a leap forward for the industry, nor is it difficult to recognize when a new technology can support a use case. But, it is very difficult to know when the market is ready to adopt and integrate an innovation into its existing operations. As we've seen several times in crypto, too early can be worse than too late. (See: Real world asset tokenization; crypto prime brokers.)

In this paper, we will explore a use case for crypto that not only checks all the technological prerequisites, but also has a clear product-market fit: the non-USD stablecoin. The market cap for all non-USD stable coins currently rounds to roughly zero; USD stablecoins make up more than 99.3%¹ of the market cap of all fiat-linked stablecoins. We will also examine several key use cases for non-USD stablecoins and make the case this is a sector that should have a role in the future of crypto. Lastly, we will explore potential reasons for the lack of development thus far in the non-USD stablecoin space and explore catalysts that could change the status quo.

Definitions

In this report, we will use the term “stablecoin,” or “stable,” as shorthand for any digital asset pegged to a fiat currency. This excludes products like WBTC (wrapped BTC) or stETH (staked ETH); while these could be argued to fit into the definition of a stable (when mint-redeem lines are working properly, 1 WBTC = 1 BTC), it is just not the product we are talking about here.

We will also consider all types of stables here; we will not differentiate between fiat-backed stables like USDC, collateral-backed stables like DAI, or algorithmic stables like UST. There exists a wealth of knowledge and taxonomies, but the only distinction we focus on in this piece is dollar versus non-dollar stablecoins.

The Current Status of Non-USD Stablecoins

According to CoinGecko's rankings, the top 12 stablecoins by market capitalization are linked to USD. The first non-USD linked stablecoin, Euro Tether (EURT) is the 13th largest. It's not until five spots lower that we find the first non-USD, non-EUR linked stablecoin, xSGD.²

In total, USD stablecoins represent around 99.3% of all stablecoin issuance.³ Across centralized exchanges, USD stables account for a similar share of the volume; as of writing, the daily trading volume for USD stables across all exchanges is roughly \$58 billion⁴; in stark contrast, the volume for non-USD stables is \$60 million, which nearly amounts to a rounding error of 0.1% compared to the USD stablecoin volume⁵.

Typically, non-USD stables have been too small for centralized exchanges to list. The most notable listing is EUROCC on Coinbase and Bitstamp, among others. In DeFi, the numbers are similar.

¹Based on all fiat-backed stablecoins, as of May 17, 2023 (Source: DeFiLlama)

²Source: CoinGecko

³Based on total stablecoin market cap of \$131.04 billion as of April 27, 2023 (Source: DeFiLlama)

⁴Based on daily trading volume reported as of April 27, 2023 (Source: CoinGecko)

⁵Based on daily trading volume reported as of April 27, 2023 (Source: CoinGecko)

Table 1

Coin	Pegged Currency	Market Cap (\$USD)	Stablecoin Issuer
EURT	EUR	\$225,904,547	Tether
EURS	EUR	\$136,440,749	Stasis
XSGD	SGD	\$66,169,918	StraitsX
EUROC	EUR	\$53,181,901	Circle
TRYB	Lira	\$33,100,251	Tryb Group
AGEUR	EUR	\$20,509,404	Angle Protocol
CEUR	EUR	\$17,750,176	Celo
GYEN	JPY	\$16,970,472	GMO-Z
DCHF	CHF	\$9,889,519	Sygnum
EURE	EUR	\$8,459,331	Monerium
IDRT	IDR	\$7,992,346	Rupiah Token
XIDR	IDR	\$6,441,459	StraitsX

Table 1 Note: Market caps shown as of April 25, 2023. “Not Available” market caps indicate that circulating supply and market cap was not officially verified by CoinMarketCap or CoinGecko.

On Uniswap V3, there is approximately \$768 million of TVL for the top 5 USD stables, while the TVL for the top 5 non-USD stables is just \$9 million.⁶ Similarly, there is around \$1.54 billion of TVL for the top 5 USD stables on Curve, while the TVL for the top 5 non-USD stables is just \$35 million.⁷ Put simply, crypto is still a U.S. dollar world (at least for the time being). It’s a dollar world in TradFi as well, though to a lesser extent. The IMF reports that around 58% of the world’s allocated reserves are in USD.⁸ If activity in crypto is going to mirror TradFi, we would still expect to see dollar domination; but we would expect to see it around 58%, not 99.3%.

With that said, let us take a look at the current state of non-USD stables. Table 1 shows some of the largest non-USD stables currently in circulation⁹; Appendix A shows a more extensive list.

The Regulatory Environment

One of the primary use cases of stablecoins is the movement of capital, and capital movement happens to be one of the most regulated activities imaginable. Therefore, it’s impossible to talk about stablecoins without discussing the regulatory environment. Without well-designed and clear regulation, this space cannot grow properly.

The conversation has to start in the U.S., because of the significance of the dollar in the global economy and the predominance of USD stablecoins. In April of 2023, Republicans in the U.S. House of Representatives released a discussion draft which would create a definition of “payment stablecoins”, broadly defined as stablecoins which are backed one-to-one by cash or cash equivalents and would create a process for issuers to register. This draft was followed by another, written by Democrats in the U.S. House of Representatives, with a stronger focus on consumer protection. Both bills place a moratorium on algorithmic stablecoins.

⁶TVL for Uniswap V3 as of April 25, 2023. Total TVL is \$2.85 billion. Top 5 USD stables are (in descending order): USDC, DAI, USDT, FRAX, LUSD. Top 5 non-USD stables are (in descending order): XSGD, AGEUR, XCAD, CEUR, EURT. (Source: DeFiLlama)

⁷TVL for Curve DEX as of April 25, 2023. Total TVL is \$4.44 billion. Top 5 USD stables are (in descending order): FRAX, USDC, USDT, DAI, ALUSD. Top 5 non-USD stables are (in descending order): EURS, EURT, AGEUR, EURE, SEUR. (Source: DeFiLlama)

⁸According to the IMF Currency Composition of Official Foreign Exchange Reserves (COFER) data for Q4 2022 (Source: IMF)

⁹Rankings and market cap based on data reported on CoinMarketCap, CoinGecko, and DeFiLlama as of April 25, 2023

Clarity in the U.S. is hard to come by, but very much needed and frequently requested by the industry. In February of 2023, the SEC issued a Wells notice to Paxos, saying that Paxos should have registered BUSD as a security. At the same time, the Commodity Futures Trading Commission has asserted that BUSD and other asset-backed stablecoins such as USDT and USDC are commodities falling under its enforcement jurisdiction. Having clarity from lawmakers on the applicable regulatory framework for stablecoins would be valuable for market participants.

This uncertainty in the U.S. could lead to the growth of stablecoins outside the U.S. It would be possible to have a USD stablecoin operate outside the U.S., but it would still be dependent on U.S. regulations as they depend on correspondent banks in the U.S. On the other hand, a stablecoin of another currency could exist without touching the U.S. and could even thrive if regulators in other jurisdictions provide more clarity around stablecoins, as Japan and the United Kingdom have done. There is a particularly interesting niche in countries such as Hong Kong and the UAE, where the currencies themselves are pegged to the USD.

The Use Cases for Non-USD Stablecoins

“Payment stablecoins and open, public blockchains are poised to play a foundational role in reducing the costs and complexities of cross-border payments and remittances. Reimagining FX as a primitive that exists on-chain can democratise access to it and allow global economies to be further integrated.”

- Joao Reginatto, VP of Product Management, Circle

Before we go too much further, it must be asked: Why do we care? What are the use cases that are enabled if non-USD stables proliferate? The use cases are straightforward, and they are not niche cases by any means; to the contrary, these are potentially massive markets which are currently being largely ignored by crypto. We divide the use cases into three categories.

FX Trading

Ever since the concept of wrapping an asset on the blockchain came about, many TradFi businesses have excitedly looked forward to the day when equities are tokenized and can be traded on a Layer 1, either enterprise or public.

There are several benefits of moving this activity on-chain: interoperability, expanding the trading day to 24/7, T-0 settlement, and cost reduction. But there are still significant hurdles, particularly on the regulatory and custody fronts, before this can come about for equity trading. However, FX is ready today. A Metamask wallet connected to Uniswap can already trade EUR/USD; or at least the on-chain analogue, EUROCC/USDC. Centralized exchanges can add non-USD stables as well and pick up an entire new asset class's worth of volumes. It is no small prize; the Bank for International Settlements estimates that turnover in global FX markets recently reached \$7.5 trillion per day.¹⁰ Bringing even a small percentage of that volume onto crypto rails would be an enormous boost to volumes.

“The convergence of cryptocurrencies and traditional foreign exchange markets is inevitable, as faster, better, and cheaper solutions always win in the long term... this intersection can significantly enhance market liquidity and drive crypto adoption for one of the largest addressable markets in the world.”

- David Bonanno, Chief Strategy Officer at Bullish

The benefits of bringing FX trading to crypto rails are numerous. AMMs are an intriguing model for FX pairs; given the minimal impact of impermanent loss compared to more volatile cryptocurrency pairs, FX is likely the best application of AMM technology (for a view on the magnitude of impermanent loss in FX, please see Appendix B). Getting yield, even low yields, for stablecoin FX liquidity provided to a pool could be a use case that brings more users into crypto. When it comes to market access, many crypto users may not have access to traditional FX trading, but the playing field could be leveled via crypto platforms. T-0 settlement, 24/7 trading, and on-chain interoperability only add to the appeal of stablecoin-based FX trading.

¹⁰Turnover in April 2022 (Source: BIS Quarterly Review, published December 5, 2022)



Remittance

Moving money across borders is difficult. There are some regulatory reasons for this, but for the most part it's attributable to the clunkiness of a legacy banking system which emerged in separate localities at different points in time. It's not a fringe problem: every year, almost \$790 billion moves over remittance rails.¹¹ There is also a good deal of concentration. Notable remittance corridors include U.S. to Mexico, U.S. to India, and U.S. to China.¹² Other large concentrations (that do not involve the U.S.) include UAE to India, Saudi Arabia to India, and Kuwait to India.¹³

In Southeast Asia, the Philippines, which is a major remittance recipient country, sees large flows coming from the UAE and Saudi Arabia as well.

This concentration means that the legacy system for remittance is disruptive; any crypto rail which solves, for example, USD to MXN, has a total addressable market of \$60 billion annually.¹⁴

Table 2 below shows the ranking of countries receiving the highest remittances in 2022 according to the Global Knowledge Partnership on Migration and Development and the World Bank:¹⁵

Table 2

Rank	Recipient Country	Remittance Inflows in 2022 (\$USD)
1	India	\$100 Billion
2	Mexico	\$60.3 Billion
3	China	\$51 Billion
4	Philippines	\$38 Billion
5	Egypt	\$32.3 Billion
6	Pakistan	\$29 Billion
7	France	\$28.5 Billion
8	Bangladesh	\$21 Billion
9	Nigeria	\$20.9 Billion
10	Vietnam	\$19 Billion

For more than a decade, India has been the largest remittance beneficiary, and in 2022, with an estimated \$100 billion in remittances received, India reached an all-time high, attributed to migrant Indians switching from jobs in Gulf countries to higher-skilled jobs in high-income countries – notably the U.S., UK, and Singapore.¹⁶

Legacy businesses extract massive rents from remittance. Western Union, the 172-year-old company that is the largest remittance player in the world, saw \$4.5 billion in revenue in 2022, and it expects to see remittance volumes remaining resilient in 2023.¹⁷

According to the International Monetary Fund, in the legacy system, a typical remittance transaction may look something like this:

1. The sender pays the remittance to the sending agent using cash, check, money order, credit card, debit card, or a debit instruction sent by e-mail, phone, or through the Internet.
2. The sending agency instructs its paying agent in the recipient's country to deliver the remittance.
3. The paying agent makes the payment to the beneficiary.

In most cases, there is no real-time fund transfer for settlement between agents. The costs of remittance transaction include a fee charged by the sending agent, typically paid by the sender, and a currency-conversion fee for delivery of local currency to the beneficiary in another country. For smaller transactions, remittance fees typically average 10 percent, but can be as high as 15 to 20 percent of the principal in lower volume corridors.¹⁸

¹¹2021 Global Remittance flow: \$781 billion; 2022 flow: \$794 billion (Source: World Economic Forum)

¹²Source: Global Migration Data Analysis Centre

¹³Based on remittance flows worldwide in 2017 (Source: Pew Research Center)

¹⁴2022 remittance data in USD (Source: Global Migration Data Analysis Centre)

¹⁵2022 remittance estimates (Source: KNOMAD – World Bank)

¹⁶2022 remittance estimates (Source: KNOMAD – World Bank)

¹⁷Western Union 2022 full year financial results (Source: Western union)

¹⁸Source: IMF

On the other hand, using crypto rails, a remittance is simpler, and requires three transactions. We will use USD to MXN as an example.

1. Via bank wire, mint USD stable from USD.
2. Via CEX, DEX, or OTC, convert USD stable to MXN stable.
3. Redeem MXN stable for MXN wire.

Once stables are more integrated with financial systems, steps one and three become purely optional.

The savings here come from the improvement in competitiveness for step two, the FX conversion. Limited competition means that banks and money transmitters are typically able to charge exorbitant spreads on the conversion. Moving this transaction to crypto rails will allow open competition to bring the spread down significantly, potentially to a matter of basis points.

- A paper from Uniswap Research noted that, all-in, a conversion of 500 USD to EURO using DeFi rails would cost about \$7, compared to \$28 with a bank or \$19 with a money transfer operator.
- Executing this transaction on a centralized exchange would allow buyers to match directly with sellers; alternatively, liquidity providers would naturally keep the spreads tight, using their own mint/redeem capabilities to arbitrage prices close to fair value.
- OTC desks which have access to both crypto mint/redeem functionality as well as to institutional liquidity on FX NDFs could facilitate large stable-to-stable trades.

Many crypto players recognize the tremendous opportunity to disrupt the remittance space using crypto rails. One notable example is Circle's partnership with TBD, Block's crypto-focused subsidiary, announced in September 2022.¹⁹

TBD, which was initially launched as a platform for developers to interface directly with crypto, is working with Circle to develop infrastructure that gives developers and wallet providers the ability to engage directly with native protocols that power stablecoins, including the ramps between fiat and crypto. To achieve the partnership's first milestone, TBD will support cross-border remittances and digital wallets that hold stables. By building the on- and off-ramps between fiat and stables, Circle and TBD are answering one of crypto's last-mile problems: how do you get in and out of crypto?²⁰

Native Currency Trading

The final use case is almost so trivial that it feels obvious, and yet, because it is not the current state of the market, it requires attention. As of now, crypto trades almost exclusively in USD denominations. This means that for anyone living outside of the U.S., they have the added step (and added risk) of introducing USD into their workflow. For example, a Singaporean may have both salary and expenses denominated in SGD. However, in order to participate in crypto markets, particularly decentralized markets, this user would have first had to convert his or her SGD into USD.

Liquidity is likely to stay focused in USD. Developing an independent ETH-SGD market would likely be inefficient; however, by developing robust liquidity in USD-stable vs SGD-stable, SGD-based liquidity can be easily bootstrapped using aggregation platforms like 1inch. Similarly, local non-US exchanges can launch trading venues using a native (i.e., non-US) stable, and liquidity providers can enable it easily off the back of more-liquid USD-based liquidity.

Obstacles to Non-USD Stablecoin Usage

For each of the use cases discussed above, there are no technological developments necessary. Stablecoin issuers like Circle and Paxos have clearly demonstrated the ability and best practices to issue stablecoins in which the market feels confident parking billions of dollars; there's no fundamental blocker to stop other issuers from doing the same in other jurisdictions. In fact, many have done so

¹⁹Circle's New Partnership with Block's TBD Should Provide Broad Access to Stablecoins (Source: Ark Invest)

²⁰Circle's New Partnership with Block's TBD Should Provide Broad Access to Stablecoins (Source: Ark Invest)

already (see Appendix A). In this section, we will explore some of the obstacles to non-USD stable usage, and for each blocker, we will explore one or more catalysts that might change the status quo.

Regulatory

The first blocker that we see to greater adoption of non-USD stables is regulatory in nature. In many cases, law-makers and regulators are still discussing a framework for stablecoins. Most stablecoins generally are not viewed as securities under U.S. law, though two stablecoins are the subject of pending SEC enforcement activity. It's also difficult to label swap from fiat to a stable. In the U.S., Circle has a money transmitter or equivalent license in applicable states, and is registered with Fincen, while Paxos is regulated by the NYDFS; both Circle and Paxos are also regulated in Singapore.

Ironically, the currencies for which a stable would be the most groundbreaking are exactly the currencies which are the most challenging for regulatory reasons. Controlling a currency becomes exponentially harder when the banking rails are replaced by blockchain rails. For that reason, a stable for CNH, INR, or KRW would seriously challenge the applicable local jurisdictions' monetary policy, and thus may be more likely to be blocked by regulators before it even comes out of the ideation phase. This results in one of the ironies of stablecoins: the currencies that would get the most use will likely be the last to see reputable stablecoin issuance.

However, in the next year, we are expecting to see a series of regulatory catalysts which could spur the growth of non-USD stablecoin usage:

- In Japan, the FSA passed a framework in June 2022, which is due to go into effect in June 2023. In addition to defining stablecoins, the bill asserts that only banks and trusts can issue stables. This June, we expect to see a race among banking players, partnering with crypto-native virtual currency exchanges, to issue the leading JPY stable.

- In October of 2022, Singapore's MAS put out a consultation paper requesting feedback on stablecoin policy. Their response to this feedback is expected this Summer. StraitsX, a payments institution regulated by the MAS, has been issuing XSGD since 2020, and it has already taken part in Project Orchid, an experimental project demoed in Singapore's Fintech Festival at the end of 2022. Project Orchid is expected to run its V2 in 2023 with expanded use cases. (Please see Appendix C for more details on Project Orchid).
- Several other jurisdictions are developing frameworks for thinking about stablecoins. Of particular interest are jurisdictions whose currencies are themselves pegged to the USD, such as the Hong Kong Dollar (HKD) and the United Arab Emirates Dirham (AED). Stablecoins in these currencies would be relatively stable to the USD without relying on US banking rails and would thus be resistant to both disruptions in USD banking (e.g., what USDC suffered from with Silicon Valley Bank), as well as direct exposure to US regulators (e.g., the Wells notice served to Paxos for BUSD).

"With a progressive regulatory regime, as well as the stability of the AED-USD peg, AED stables are positioned to play a key role within both crypto and TradFi. We see this as a critical ingredient to the maturity of the digital asset ecosystem as a whole."

- Faisal Al Hammadi, Managing Partner, Further Ventures

Lack of a common chain

One of the benefits of moving financial activity from private ledgers to a public blockchain is the benefit of interoperability. This benefit loses potency when assets are spread across multiple chains. For this space to develop, it will be necessary for issuers to align on one or more common chains. In fact, this is a space where collaboration amongst stablecoin issuers in separate currencies is necessary. These stables have the most value when they can be traded against other stables; for that to happen, there should be coordination as to which chain the coins trade on.



And which chain should that be? There are several answers which make sense:

- Ethereum is often the first port of call for any stable, due to its established ecosystem, with common-good platforms like Curve, Uniswap, Aave and Compound, and the fact that essentially every exchange in crypto accepts ERC-20 deposits. However, Ethereum does suffer from high transaction costs and a long time-to-finality, which makes it a difficult chain on which to build any type of payment applications capable of handling the likely volume of stablecoin-based payment applications.
- Polygon seems a likely candidate. It has cheap transaction costs, quick finality, and good integrations with centralized exchanges. It is EVM-equivalent, which means that most common Ethereum dApps are on Polygon as well.
- Solana is also an intriguing option. It shares most of the above qualities with Polygon, including cheap transactions and quick finality. One drawback is the recent record of inconsistent uptime; this must be convincingly solved before payment processors feel confident depending on Solana. Solana is the chain that has seen the most success with orderbook-like DEXes and more recently with Openbook and Ellipsis. Given that FX historically trades in an orderbook, this may be the natural fit for on-chain FX trading.

“We are building a financial future with FX trading as the liquidity backbone for international payments and trade, resulting in more efficient lending and enabling remittances. Solana is unique not only for its ability to support orderbook depths similar to fiat FX markets, but also for its bilateral, information-rich transactions leveraging Solana Pay. Projects like Decaf Wallet and Credix are already improving people’s lives in LATAM by drastically lowering the costs of remittance and invoice financing.”

– Anna Yuan, Solana Stablecoin Lead

- Avalanche represents another potential candidate. Avalanche’s structure utilizes subnets, and each subnet can be configured separately, allowing customizable environments for given use cases. For example, the Evergreen subnet “Spruce” is a permissioned subnet, meaning that only KYC’ed entities can take part; this establishes a space where institutions that have a high KYC threshold can participate. Currently, this subnet is being tested by entities like T Rowe Price, Wellington, WisdomTree, and Cumberland. FX is an obvious use case for these types of institutions, so the growth case for non-USD stablecoins on Avalanche seems very strong.

And how could the necessary coordination occur? In April of 2023, an industry group called Stablecoin Standard met for the first time. This group represents stablecoin issuers in different currencies looking to grow the same use case discussed in this paper. Coordination with this group should lead to the coins consolidating on a single chain, which will allow them to be more interoperable.

“Stablecoins have become an increasingly important part of the digital asset ecosystem, with their market capitalization reaching over \$100 billion. However, the lack of regulatory clarity and standards has led to concerns around their safety and stability. The formation of this industry body and the establishment of minimum industry standards for stablecoin issuers can help address these concerns and promote greater trust in stablecoins among users and regulators alike.”

–Christian Walker, Co-Founder of the Stablecoin Standard

When we look at which chains the top non-USD stablecoins are issued on, they are each on Ethereum but the commonalities end there. Most but not all are also on Polygon; with Algorand and Solana, the number gets smaller, and just a handful are on Optimism and Arbitrum.²¹

²¹Source: DeFiLlama



Table 3

BTC Pair	Denomination Type	24H Trade Volume (\$USD)	Share of Volume (out of Top 20 pairs)
BTC/USDT	Stablecoin	\$6,047,000,000	48%
BTC/TUSD	Stablecoin	\$2,790,000,000	22%
BTC/USD	USD	\$2,162,000,000	17%
BTC/BUSD	Stablecoin	\$863,000,000	7%
BTC/KRW	Other Fiat	\$413,350,000	3%
BTC/USDC	Stablecoin	\$200,000,000	2%
BTC/JPY	Other Fiat	\$120,000,000	1%
BTC/EUR	Other Fiat	\$93,350,000	1%

Concentration of trading volume at Global-first exchanges

When it comes to centralized exchanges, each can be classified as either regional or global. While every centralized exchange has its operating entities domiciled in some specific jurisdiction(s), there are some centralized exchanges which are better defined by their global presence. Binance, for example, although its official stance is that it does not have a headquarters, operates its holding company out of the Cayman Islands.²² However, both its employees and clients are distributed globally. Such global exchanges typically do not feature banking rails, and their liquidity is typically in stablecoin pairs; in fact, this is still one of the primary use-cases for stables. Because these exchanges are global in nature, liquidity has naturally concentrated in USD stablecoins, such as USDC and USDT.

Coinbase, however, is a regional exchange, mainly servicing a U.S. customer base. It does support banking rails, and liquidity there is primarily in USD. Regional exchanges in smaller markets support banking rails in their native currency; for example, Bitstamp supports Euro pairs, and Indodax supports Indonesian Rupiah trading. With that said, non-USD fiat trading is still a small slice of overall centralized exchange volumes. In that sense, the current state of thin market-share for non-USD stables parallels the state of non-USD fiat use in centralized exchanges.

Table 3 below shows the volume share for BTC pairs for the top 20 BTC exchanges by daily trading volume:²³

²²Reuters article, March 27, 2023 (Source: Reuters)

²³Top 20 BTC pairs by trading volume over the last 24 hours, as of April 27, 2023 (Source: Messari)

The concentration of liquidity at global-first exchanges may indeed persist. The question of how liquidity on centralized exchanges will develop over the next five years is a large topic, and not the focus of this paper, so we will simply leave it with the following statement: If the market were to change its concentration profile, we would expect to see other currencies become more prevalent, and that should in turn lead to more non-USD stable usage.

Decentralized liquidity

Finally, if non-USD stables are to proliferate, they will likely need someplace decentralized to trade, otherwise the value of interoperability decreases significantly. Where, then, should on-chain FX trading occur?

- There's nothing stopping these pairs from trading on Curve. Even though Curve is primarily for like-to-like pairs, there are multiple pools there which are not like-to-like (for example, Tricrypto), and this does include some FX pairs.
- Uniswap may be a more prudent home for on-chain FX trading, since the price of the pairs can and should move. Particularly with the liquidity options offered by Uniswap V3, which allows liquidity providers more customization on how they set their liquidity.
- It could be that on-chain FX trading deserves a venue of its own. We have seen this with DFX Finance, which offers liquidity between USDC and stables of other currencies, with a bonding curve specifically designed for on-chain FX trading. DFX Finance has faced some headwinds, however, including a hack in November 2022 from which it is still recovering.²⁴

²⁴Polychain-backed DFX Finance hacked for \$7.5 million (Source: The Block)

In each of these cases, a venue exists but the volumes are minimal. Curve's largest FX pool, 3EURpool, is currently only seeing daily volumes of \$337k, and its TVL currently sits at \$3.53 million.²⁵ Uniswap's largest FX pool, USDC/XSGD, is currently seeing daily volumes of \$753.36 thousand, and its TVL currently sits at \$1.06 million.²⁶ Non-USD stables, across all pools, have seen a tiny slice of total stablecoin volume year-to-date, with a TVL of less than 1% of total TVL. It was built, but so far, no one has come.

“Right now, there’s an opportunity for a decentralized exchange focused on FX stable pairs, with a UX purpose-built to the expectations of traditional forex traders.”

- Tama Churchouse, Cumberland Labs COO

Conclusion

In closing, we view non-USD stablecoins as a sector which will become much more significant as crypto matures. There are clear and prominent use cases for non-USD stables, including enabling FX trading, remittance, and trading in native currency. While the current state of the market, and the extremely dominant role of USD stables, is surprising, we have been able to identify multiple reasons for the current status quo:

1. Regulatory hurdles.
2. Lack of a common chain.
3. The global nature of crypto's largest exchanges.
4. Lack of a clear trading venue.

However, for each of these blockers, there are clear catalysts on the horizon which may prove to be disruptive; it's not clear when USD-dominance of stables will be reduced, but at this point it's hard to imagine we don't see this change in the next few years. At the beginning of this article we noted that being too early was as bad as being too late, but given the regulatory developments, the industry coordination, and the work being done by builders focusing in the space, the time for non-USD stablecoins may be fast approaching.

²⁵Curve Pools ranking for 3EURpool as of April 26, 2023 (Source: Curve)

²⁶Uniswap V3 WETH/XSGD pool on Polygon, as of April 27, 2023 (Source: Uniswap)



Appendix A: Extensive List of Non-USD Stables²⁸

Coin	Pegged Currency	Market Cap (\$USD)	Stablecoin Issuer
EURT	EUR	\$225,904,547	Tether
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TRYB	Lira	\$33,100,251	Tryb Group
AGEUR	EUR	\$20,509,404	Angle Protocol
CEUR	EUR	\$17,750,176	Celo
GYEN	JPY	\$16,970,472	GMO-Z
DCHF	CHF	\$9,889,519	Sygnum
EURE	EUR	\$8,459,331	Monerium
IDRT	IDR	\$7,992,346	Rupiah Token
XIDR	IDR	\$6,441,459	StraitsX
SEUR	EUR	\$4,819,145	Synthetix
XCHF	CHF	\$3,498,561	Bitcoin Suisse
CNHT	CNH	\$2,972,656	Tether
EUROE	CNH	\$1,216,817	Membrane Finance
CNHC	CNH	\$718,158	Membrane Finance
BRZ	BRL	Not available	Transfero
JPYC	JPY	Not available	JPYC Inc.
MXNT	MXN	Not available	Tether
mCEUR	EUR	Not available	Moola
CADC	CAD	Not available	PayTrie
QCAD	CAD	Not available	Stablecorp

Note: Market caps shown as of April 25, 2023. "Not Available" market caps indicate that circulating supply and market cap was not officially verified by CoinMarketCap or CoinGecko.

²⁸Rankings and market cap based on data reported on CoinMarketCap, CoinGecko, and DeFiLlama as of April 25, 2023 (Source: Various databases)



Appendix B: Impermanent Loss in FX Pairs

Because of the high volatility in crypto trading, and in particular the high volatility of pairs which trade primarily in DeFi, impermanent loss can be a serious deterrent to providing liquidity at an AMM. FX pairs, however, exhibit much lower volatility, and as a result, impermanent loss has a much smaller effect. Of the G10 currencies, the single largest one-year move was in USD-NOK in 2013, when the Kroner depreciated by 23% in a single year. That one-year move would have resulted in an impermanent loss of -0.52%. On average, providing liquidity to an $x*y=k$ AMM on an FX pair would, over the last decade, resulted in -0.09% of impermanent loss per year.

YoY Change in Price

Date	EURUSD	USDJPY	GBPUSD	USDCAD	USDCHF	USDNOK	AUDUSD	USDSEK	NZDUSD
2021-22	-6%	-14%	-11%	7%	1%	11%	-6%	15%	-8%
2020-21	-7%	11%	-1%	-1%	3%	3%	-6%	10%	-5%
2019-20	9%	-5%	3%	-2%	-8%	-2%	10%	-12%	6%
2018-19	-2%	-1%	4%	-5%	-2%	2%	0%	6%	1%
2017-18	-4%	-3%	-6%	8%	1%	5%	-10%	8%	-6%
2016-17	14%	-4%	10%	-6%	-4%	-5%	8%	-10%	2%
2015-16	-3%	-3%	-16%	-3%	2%	-2%	-1%	8%	1%
2014-15	-10%	0%	-5%	19%	1%	19%	-11%	8%	-12%
2013-14	12%	14%	-6%	9%	11%	23%	-8%	21%	-3%
2012-13	4%	21%	2%	7%	-2%	9%	-14%	-1%	-3%

Impermanent Loss

Date	EURUSD	USDJPY	GBPUSD	USDCAD	USDCHF	USDNOK	AUDUSD	USDSEK	NZDUSD
2021-22	-0.05%	-0.21%	-0.16%	-0.06%	0.00%	-0.14%	-0.05%	-0.25%	-0.08%
2020-21	-0.06%	-0.15%	0.00%	0.00%	-0.01%	-0.01%	-0.04%	-0.11%	-0.03%
2019-20	-0.09%	-0.03%	-0.01%	-0.01%	-0.10%	-0.01%	-0.10%	-0.21%	-0.05%
2018-19	-0.01%	0.00%	-0.02%	-0.03%	0.00%	0.00%	0.00%	-0.04%	0.00%
2017-18	-0.03%	-0.01%	-0.04%	-0.08%	0.00%	-0.03%	-0.13%	-0.08%	-0.04%
2016-17	-0.22%	-0.02%	-0.10%	-0.06%	-0.03%	-0.03%	-0.08%	-0.14%	-0.01%
2015-16	-0.01%	-0.01%	-0.39%	-0.01%	0.00%	-0.01%	0.00%	-0.07%	0.00%
2014-15	-0.15%	0.00%	-0.04%	-0.38%	0.00%	-0.37%	-0.17%	-0.08%	-0.19%
2013-14	-0.20%	-0.21%	-0.05%	-0.10%	-0.14%	-0.52%	-0.09%	-0.46%	-0.01%
2012-13	-0.02%	-0.47%	0.00%	-0.06%	-0.01%	-0.09%	-0.29%	0.00%	-0.01%
Average	-0.08%	-0.11%	-0.08%	-0.08%	-0.03%	-0.12%	-0.10%	-0.14%	-0.04%



Appendix C: About Project Orchid²⁸

Project Orchid is a multi-phase exploratory program facilitated by the Monetary Authority of Singapore that examines use cases and requirements needed to launch a CBDC in Singapore. In the first phase of the program, one of the trials was run by StraitsX, Grab (a ride-sharing app in Singapore), and Temasek. During the trial, XSGD was wrapped into an NFT with Purpose-Bound-Money (PBM) logic, which allowed it to be used only for specific use cases. The PBM was airdropped to attendees of the Singapore Fintech Festival, and could be spent with vendors by scanning QR codes with the Grab app. At that point, the PBM was unwrapped, the XSGD was converted, and vendors received SGD. For more information, please see the whitepaper here: [MAS-Project-Orchid-Report.pdf](#).

²⁸Source Monetary Authority of Singapore (MAS)



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