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Stablecoin Reserve Structures Matter

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Clearly the stablecoin market has resilience and is in demand for a multitude of use cases, but to scale from here, market participants will need to have ever growing confidence on their durability – particularly during times of economic stress, writes Andrew Pedvis, Founder of Digital Securities Consulting. There is much to consider but one key element of these stablecoins will be the structure that governs the reserve assets and the strength of connection between token holders and those assets, Mr. Pedvis explains in this analysis that reviews the major stablecoins.

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Today, stablecoin market participants have a greater awareness of the assets backing their tokens and stablecoin issuers are providing greater transparency, yet there still appears to be limited focus on the structure of how assets are held in reserve. In traditional finance, structure never plays second fiddle to the assets themselves because the structure is what determines how well those assets are protected and under what circumstances they are available to investors.

Clearly, attention to reserve assets is warranted given questions raised in years' past regarding Tether's reserves; Terra Luna's algorithmic stablecoin collapse in 2022, and stresses on Circle's USDC early in 2023, when some of their reserve asset deposits at Silicon Valley Bank were believed to be at risk. Each of these scares led to "depegging" events where flights from the respective stablecoins caused their values to decrease versus their benchmark fiat currency.

But stablecoins have been resilient – there are over \$126 billion outstanding by dozens of issuers – demonstrating that they have a practical purpose in the market. There is clear demand to utilize stablecoins to transfer value between parties using modern financial infrastructure; execute instantaneous "risk-off" or "risk-on" shifts between more volatile digital assets; or enable a greater degree of financial inclusion in an asset class that strives to track familiar fiat currencies. Given the sustained interest in this asset class and the volume of stablecoin options available, it seems likely that market participants will have an increasing appetite for information regarding potential risks and mitigants.

There are a number of variables related to the structure of reserve assets that holders of stablecoins should care about including: **1)** Where assets are held (type of entity and jurisdiction); **2)** Whether assets are in 'segregated' accounts and/or 'bankruptcy remote' entities; **3)** Contractual rights to those assets or put differently, beneficial interest in the assets **4)** Liquidity of the assets, and **5)** Degree of regulatory supervision. The more of these structural elements that appear blurry or unsatisfactory, the greater the potential risk that the reserve assets will not be available to token holders when needed or that perceived risks will lead to depegging events.

Below is a summary of some of the basic structural elements of the top five stablecoins based on market capitalization. The summary is provided on a best-effort basis using information that is in the public domain and without access to private information from these stablecoin issuers. It is possible that there are additional protective structures and/or structural flaws that exist.

Table 1	Tether¹ (USDT)	Circle² (USDC)	MakerDAO (DAI)	TrueUSD³ (TUSD)	Binance⁴ (BUSD)
Market Capitalization⁵	\$87.8 Billion	\$24.5 Billion	\$5.3 Billion	\$3.3 Billion	\$1.8 Billion
Reserve Assets Entity	Undisclosed	Circle Reserve Fund and U.S. Financial Institutions	Maker Vaults, Wedbush Securities Inc., and Sygnum Bank AG ⁶	Hong Kong, Swiss, and Bahamian Depository Institutions	U.S. Insured Financial Institutions
Type of Entity	Undisclosed	SEC-Registered Money Market Fund	Ethereum-based Smart Contracts and Regulated Custodians	Financial Institutions	Financial Institutions
Beneficial Owner	Tether Holdings Ltd.	USDC Holder	Vault Holder	Techteryx Ltd. / TUSD Holder	BUSD Holder
Bankruptcy Remote	No	Yes	Mixed	No	Yes
Regulated Issuer	No	Yes	No	No	Yes (Paxos)
Auditor	BDO Italia S.p.A	Deloitte & Touche LLP	Various Technology Auditors	The Network Firm	Withum Smith+Brown, PC

Tether's USDT is the dominant stablecoin today, accounting for as much as two thirds of the \$126 billion outstanding tokens. BDO's independent auditor's report regarding Tether's "Consolidated Reserves Report" helps to provide greater transparency surrounding the amount and type of reserve assets available to support outstanding USDT although is less informative with respect to the structure of how these assets are held.

The Consolidated Reserves Report summarizes holdings across Tether Holdings Limited and its wholly owned subsidiaries ("The Group"); however, it does not provide any information as to the financial institutions where those assets are held for The Group. Without knowledge regarding the jurisdiction/s or types of entities that are holding the reserve assets, it is difficult to assess the relative safety of those accounts. For instance, how creditworthy are the financial institutions that hold the assets and are they susceptible to a bank run like that of Silicon Valley Bank? Is the banking sector in the country healthy and likely to be supported by any existing depository insurance entities? As well, are the assets held in segregated accounts keeping them safe from other claimants in a liquidation scenario?

On the topic of beneficial interest, BDO explains in the report that the stablecoins are classified as "refund liabilities." Refund liabilities is an accounting term that reflects a firm's expectation that some revenue will ultimately be returned. For retail companies this might be an expectation that certain products could be refunded and similarly in the stablecoin context this would be an expectation that stablecoins could be refunded for cash in the future. The accounting recognition is helpful although not necessarily contractual thus leaving open the possibility that other liabilities at the firm could rank senior to claims by token holders.

While it is not clear whether the entities Tether has chosen to hold assets are in segregated bankruptcy-remote accounts, we do know from the Consolidated Reserve Report that the reserve assets are recorded as Tether's consolidated group's "total assets." Thus, any new debt that Tether or its affiliates accumulates or other liabilities the firm incurs, such as potential legal settlements related to outstanding civil lawsuits mentioned in the report, could have more senior claims than those of the token holders.

From a liquidity perspective, total assets are 103.9% of total liabilities providing some buffer, however, the ratio decreases to 89% if only cash and cash equivalents are included in the calculation (See Table 2 below).

In summary, Tether's Consolidated Reserves Report provides limited clarity on a few fronts, including where the reserve assets are held; whether there is any segregation of accounts at those entities; and specificity regarding token holders' beneficial interest. And while total assets exceed liabilities, about 15% of the assets are less liquid and/or more volatile assets.

Table 2				Collateralization Ratio (Assets / Liabilities)		
Issuer	As of:	Total Reserve Assets* (\$ Millions)	Total Liabilities (\$ Millions)	Total Assets	Cash & Cash Equivalents Only	Cash & Cash Equivalents less Bank Deposits
Tether (USDT)	9/30/23	\$ 86,385	\$ 83,177	103.9%	89.0%	88.7%
Circle (USDC)	9/14/23	\$ 26,111	\$ 26,060	100.2%	100.2%	93.4%
MakerDAO (DAI)	11/20/23	\$ 9,141	\$ 5,305	172.3%	44.6%	44.6%
Techeryx (TrueUSD)	10/29/23	\$ 3,362	\$ 3,355	100.2%	100.2%	0.0%
Binance (BUSD)	9/29/23	\$ 2,315	\$ 2,260	102.5%	102.5%	101.4%

Sources: Data was extracted from transparency reports found on websites of Tether, Circle, TrueUSD, and Paxos (for BUSD) as well as www.daistats.com (<http://www.daistats.com>) for MakerDAO.

* MakerDAO assets in table include only \$2.4 billion in treasuries cited on www.daistats.com.

Circle's USDC is the second largest stablecoin with \$24.5 billion outstanding. Circle Internet Financial LLC, the issuer of the stablecoin, is regulated as a money transmitter and to conduct business involving virtual currency by the New York Department of Financial Services as well as by the Financial Conduct Authority in the UK as an E-Money Issuer. Deloitte is the independent auditor that provides an examination of the assertions by the management of Circle Internet Financial LLC in their transparency reports.

Circle Internet Financial, the issuer of the stablecoin, has setup the Circle Reserve Fund to hold the reserve assets. The Circle Reserve Fund is an SEC-registered money market fund that is managed by BlackRock Advisors, LLC. The Private Placement Memorandum for the Circle Reserve Fund indicates that Circle Internet Financial is the sole 100% shareholder of the fund and Circle's attestations indicate that the shares of this fund are held for the benefit of USDC holders.

Although some reserve assets are held outside the fund at unnamed financial institutions, we do know from the attestations of the report that these entities are U.S. regulated financial institutions and that the assets are held in segregated accounts for the benefit of the token holders.

Total reserve assets exceed outstanding tokens with a ratio of 100.2%. All those assets are deemed cash or cash equivalents and thus provide a good degree of liquidity against any redemptions. And while 7% of the assets are held as deposits, they are held at U.S. financial institutions in segregated accounts.

In summary, the structure of reserve assets for USDC token holders is very clear and favorable. Reserve assets are held in segregated accounts in an SEC-registered fund or at U.S.-regulated financial institutions for the benefit of token holders, assets are matched nicely from a liquidity perspective, and the issuer has regulatory supervision in both the UK and the U.S.

MakerDAO is a decentralized finance ("DeFi") platform that is the issuer of the DAI stablecoin. There is approximately \$5.3 billion of DAI outstanding making this the third most prominent stablecoin in the market today. While MakerDAO is unregulated and affords holders limited protective legal structure around digital reserve assets, there is a significant amount of protection from a technology perspective.

DAI stablecoins are issued when individuals deposit collateral – such as ETH – in MakerDAO "vaults" that resemble traditional margin accounts. To receive \$1 of DAI today an account holder would have to deposit approximately \$1.5 worth of ETH. Vaults are constructed with smart contracts and thus the collateral is programmatically stored for the benefit of the depositor (this covers both asset segregation and beneficial interest). The depositor can reclaim the collateral by paying back the DAI unless there is a significant devaluation of the collateral, in which case it will be partially or wholly liquidated to repay the DAI "loan." The holder of DAI is entitled to residual amounts less fees for liquidation. Additionally, the fees charged for the liquidation of collateral are used to populate a reserve fund – called Maker Buffer – that are also for the benefit of stablecoin holders.

DeFi structures may serve token holders well by creating immutable code that dictates how assets are held and released without the possibility of intervention by other parties. However, even here there can be problems and disputes. During a crash of ETH in 2020, several vaults liquidated rapidly setting off a downward spiral that ultimately cost participants on the platform millions. While there was a lawsuit that was ultimately settled by the Maker Foundation (<https://blockworks.co/news/maker-settle-black-thursday>), settling disputes between individuals and decentralized ecosystems is complex and not well tested.

While crypto reserve assets and DAI stablecoins can operate exclusively within the world of distributed ledgers and smart contracts, DAI can also be minted with the deposit of traditional assets such as U.S. Treasury securities that require involvement from traditional financial services firms. For instance, in a recent proposal to shift reserve assets from other stablecoins to U.S. Treasury securities, a risk and legal assessment

was sent to the MakerDAO community to enable a vote. The outline includes a detailed summary of the legal structure and entities involved including: BlockTower Capital Advisors LP as arranger, Celadon Financial Group as broker, Wedbush Securities Inc as custodian to hold the Treasury securities on behalf of TACO Foundation, a Cayman entity setup up and controlled by MakerDAO.

Evaluating the liquidity of reserve assets is a more involved process for MakerDAO. Using daistats.com, a website that summaries assets and liabilities for MakerDAO, assets appear to have exceeded outstanding tokens by 172% on November 20. However, if the ratio is adjusted to focus on less volatile cash equivalent assets – such as the short-dated Treasury securities described above, the ratio is closer to 44.6%.

In summary, MakeDAO provides a good degree of clarity over where and how crypto assets are stored, in technology-driven segregated accounts, and with clear delineation of beneficiaries. The mechanics of the ecosystem are, however, very intricate and fully automated so there is always the possibility of an unexpected scenario hindering an orderly liquidation of assets. As well, traditional assets require much greater attention to determine how assets move from traditional market players through decentralized participants. Additionally, while there are pockets of regulated entities involved, the overall DeFi platform is not regulated and there does not appear to be any auditor involved in providing consolidated easy-to-consume reserve asset reports.

TrueUSD (TUSD) stablecoins, issued by Techteryx, Ltd, are ranked fourth by market capitalization with approximately \$3.3 billion outstanding. Transparency reports, examined by their auditor – The Network Firm – can be generated on their website on demand.

Techteryx's October report indicated that the reserve assets are USD denominated and held at depository institutions domiciled in Hong Kong, Switzerland, and the Bahamas. This information is vague and presents a wide spectrum of possibilities when considering the protection of those assets. For instance, if it were the case that a large part of the USD denominated assets were bank deposits held at institutions in the Bahamas, token holders would generally have exposure to the banking sector in a country rated **B+** by Standard & Poor's. So a **B+** rating, considered "speculative grade," has a far weaker credit profile than the Federal Deposit Insurance Corporation in the U.S. that ultimately backed the deposits of Silicon Valley Bank.

According to the report, TUSD holders appear as the beneficial owner of the reserve assets held by the depository institutions which is preferable since it reduces the risk of other claims on these assets by entities such as Techteryx creditors. However, the auditor has also highlighted in the report that the general terms and conditions of Techteryx's corporate account at the Swiss institution "... do not explicitly specify that the related funds are escrowed on behalf of TUSD token holders..." This opens the door to other claims on these assets if the Swiss financial institution or Techteryx were to become insolvent.

From a liquidity perspective, total reserve assets exceed outstanding tokens with a ratio of 100.2%; however, liquidity is much tougher to assess. This is because it appears that the entirety of the reserves is in the form of deposits at institutions outside the U.S. Any difficulties at the individual banks holding these assets could create an obstacle to redeeming the tokens.

Overall, the transparency provided around the jurisdictions where the reserve assets are held indicate that token holders could be exposed to significant credit risk (banking sector in Bahamas) as well as some uncertainty regarding beneficial interest recorded at the Swiss institution. As well, asset liquidity appears to be highly dependent on the strength of the financial institutions that hold its reserve assets.

Binance's BUSD is operated by Paxos, a New York Department of Financial Services regulated money services business. While Paxos is no longer minting BUSD (<https://paxos.com/2023/02/13/paxos-will-halt-minting-new-busd-tokens/>) and is in the process of winding down this stablecoin, it is still the fifth most prominent stablecoin in terms of market cap with approximately \$1.8 billion outstanding.

Paxos' auditor, Withum Smith+Brown, PC, has verified that assets exceed outstanding stablecoins and that the reserve assets are held at U.S. insured financial institutions. While the report suggests that the assets are held for token holders, there is no specific mention of whether they are held in segregated accounts. Total reserve assets exceed outstanding tokens and are almost entirely held in the form of cash or cash equivalents thus highly liquid.

The reason that BUSD is being discontinued is because the SEC charged Binance "...for the unregistered offers and sales of ... BUSD... and crypto-lending products known as "Simple Earn"...". While on the one hand this earning feature benefits token holders, the structure is likely part of what led the SEC to charge that this stablecoin constituted the issuance of an unregistered security. Thus, one additional consideration regarding structure is whether the structure itself may define whether the stablecoin will be viewed as a security and if it is, whether it is compliant with applicable regulations.

Interestingly, Paxos has more recently launched a stablecoin for PayPal that has a similar legal structure but that does not offer a return to the holders. Perhaps this approach would make it less likely for the stablecoin to be considered a security, although even here the SEC has issued a subpoena requesting documents (<https://www.sec.gov/Archives/edgar/data/1633917/000163391723000156/pypl-20230930.htm>) from PayPal regarding their stablecoin. Alternatively, there are also some examples of quasi-stablecoins being issued in the form of tokenized money market funds that follow a different set of regulations and that could become more prominent in the future.

Clearly the stablecoin market has resilience and is in demand for a multitude of use cases, but to scale from here, market participants will need to have ever growing confidence on their durability – particularly during times of economic stress. There is much to consider but one key element of these stablecoins will be the structure that governs the reserve assets and the strength of connection between token holders and those assets.

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Footnotes

[1] Tether's website: <https://tether.to/en/transparency/#usdt> (<https://tether.to/en/transparency/#usdt>)

[2] Circle's website: <https://www.circle.com/en/transparency> (<https://www.circle.com/en/transparency>)

[3] TrueUSD website: <https://tusd.io/transparency> (<https://tusd.io/transparency>)

[4] Paxos website: <https://paxos.com/regulation-and-transparency/> (<https://paxos.com/regulation-and-transparency/>)

[5] Source: The Tie as of November 20, 2023

[6] MakerDAO proposal: <https://forum.makerdao.com/t/project-andromeda-risk-legal-assessment/20969> (<https://forum.makerdao.com/t/project-andromeda-risk-legal-assessment/20969>)

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