



WALL STREET
BLOCKCHAIN ALLIANCE

DECENTRALIZED FINANCE

A Primer for Accounting Professionals

Presented by

The Wall Street Blockchain Alliance

and



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Introduction

On behalf of the Wall Street Blockchain Alliance, we are pleased to present this introduction to the subject of “Decentralized Finance”, more widely known as “DeFi”. As always, this work is the product of the thought leadership and collaboration of many members of the Wall Street Blockchain Alliance, as well as the WSBA team, Board of Directors and Advisors. Thanks also to our partners at the [Association of International Certified Professional Accountants](#) and [CPA.com](#). We are grateful for their collective wisdom, knowledge and guidance.

Originally known as “open finance”, the advent of DeFi represents yet another innovation on the rapidly evolving world of cryptoassets and blockchain technology. As with most new innovations, there is the growing litany of new announcements, innovative solutions and industry mania as these offerings progress throughout the landscape. For many, it seems a chance for new business models and rapid wealth creation. For the more sober minded, it is yet another step in the swift transformation happening across financial markets, and indeed across all industries in the global economy.

As always, change and disruption require us to revert back to first principles. And these first principles demand that we ask the question: *why?* Why decentralized finance? What problems does it solve? And what, in truth, do we actually *mean* by “decentralized finance”?

These inquiries bring us to the motivation for this publication. It is our hope that this primer can offer a proposed definition for DeFi, in all of its forms, as well as share with the reader current and future DeFi use cases. It also touches on the challenges of DeFi, not least of these being the uncertain and evolving regulatory and legislative challenges coming to the fore. As a product of the WSBA Accounting Working Group, this work also delves into the very complex accounting considerations that DeFi poses, both now and in the future. Finally, we conclude with some thoughts on what the future holds and offer some resources to keep pace with this future.

It is our goal that this be the first in a series of thought leadership publications that continue to aid the advancement of the cryptoassets and blockchain ecosystems, the accounting profession and global markets around the world. We welcome your thoughts and feedback and hope that you find this document informative as well as useful.

Sincerely,

Ron Quaranta - *Chairman of the Board, Wall Street Blockchain Alliance*

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1) What is Decentralized Finance (DeFi)?

Decentralized finance (DeFi) is perhaps the fastest growing, and most innovative development in the blockchain and cryptoassets sector since bitcoin first appeared in the marketplace. In order to make well informed decisions related to such a fast-growing sector of the economy, however, there needs to be consistent and enforceable terminology and a framework through which to view these issues. The purpose of this whitepaper, and the examples contained herein, is not to provide the authoritative answers that practitioners may be seeking. Rather, this discussion and analysis should be viewed as an introduction to the issues arising in the DeFi sector, and some of the key considerations that financial practitioners should consider moving forward.

*For the purposes of this primer, we propose to define Decentralized Finance or “DeFi” as: **the replication of traditional financial markets processes, including value exchange, borrowing, lending and derived financial instruments, without the use of intermediaries, via the leveraging of blockchain technology and smart contract capabilities.***

“The driving force behind decentralized finance...is to replicate the financing and lending capacity of the incumbent financial system without relying on its existing infrastructure.”

Thus, the driving force behind decentralized finance is to, in effect, replicate the financing and lending capacity of the incumbent financial system without relying on its existing infrastructure. In the world of DeFi there are a multitude of applications and offerings that have emerged in the marketplace, and some of these will be addressed later on in this paper.

It is difficult to overstate how important DeFi will potentially be for the continued adoption of blockchain and cryptoasset technologies and platforms. While DeFi is certainly not a perfect solution, or a cure-all for the growing pains and regulatory uncertainties that continue to exist, it does seem to represent a greater return to decentralized options and business models as originally envisioned for cryptoassets and blockchain.

To fully understand how and why decentralized finance has become such an attractive investment opportunity and high-profile application in the blockchain space, it is important to first contextualize just why decentralized finance has developed in the first place.

No technology, be it blockchain or some other type of application, develops or exists in a vacuum; blockchain and cryptoassets are no exception. Framed in a non-technological context, a base case for why decentralized finance has grown so quickly in 2020 has to do with the obstacles that decentralized cryptocurrencies have faced in becoming a legitimate alternative to fiat currencies. Bitcoin might have jumpstarted the blockchain and crypto conversation, but in terms of actually realizing many of the ideals as a payment mechanism and rail that underpinned this idea, bitcoin in many minds did not deliver. Stablecoins and other asset backed coins, including Central Bank Digital Currencies (CBDCs), that have been discussed [here](#) and [here](#), seem to represent organic developments seeking to address

“Interestingly...DeFi applications and projects are not dependent on bitcoin or any other traditionally decentralized cryptocurrencies.”

some of the issues linked to price volatility and regulatory uncertainty in the crypto space. In this light, the rise of DeFi as a proposed alternative to the banking system should not be seen as a radical development, but rather an iterative step in a process that has been well underway since 2017 with the bursting of the bitcoin price bubble leading to the “crypto winter”. Interestingly, particularly from an accounting, reporting, and regulatory standpoint, DeFi applications and projects are not dependent on bitcoin or any other traditionally decentralized cryptocurrencies. In other words, there is no reason to expect that DeFi applications will support bitcoin price increases going forward. Prices may indeed increase, but the utilization of bitcoin as a medium of exchange may not be directly connected to continued price appreciation going forward. Looking at the extreme price volatility that occurred during the end of 2020 and early 2021 illustrates this lack of connection; the dramatic swings in price do not seem connected to wider adoption or implementation of crypto payment solutions outside of headlines generated by a handful of organizations.

One other facet of the DeFi movement that needs to be acknowledged is that it could also be seen as a market response to the shift toward permissioned and semi-centralized applications that have arisen. Driven in large part by the desire of enterprises and institutions to capture the benefits of blockchain and cryptoasset technology, the development of permissioned blockchains makes logical business sense. Permissionless and completely decentralized models of data storage and transference certainly have an array of benefits but might not always be the most appropriate technology stack for an enterprise application or wider adoption. Semi-centralized applications (such as stablecoins), and permissioned blockchains have accelerated wider adoption, implementation, and utilization of blockchain and cryptoasset technology. To some, however, these same applications and iterations have led the ecosystem away from the original concept or idea of why blockchain and cryptocurrencies were developed. While it is true that some DeFi applications can run on permissioned blockchains, and utilize stablecoins as part of the DeFi process, the underlying goal is to do so without using incumbent financial institutions. In essence, what the DeFi movement represents is a pivot and return to the true decentralized goal and objective of why blockchain was developed and implemented in the first place.

Now that the context for decentralized finance has been established, we will shift to an examination of just what decentralized finance is in the context of blockchain and cryptoassets.

2) DeFi Examples and Offerings

Currently, there are several general types of projects or functions that operate within the DeFi sector. Without diving into overly technical details, these categories include the following: liquidity mining, crypto staking, crypto lending, decentralized exchanges, and derivatives:

- a) *Liquidity Mining* – Also known as “Yield Farming”, is a practice in which a network participant provides liquidity to a pool of existing cryptoasset resources. In exchange for “lending” these crypto coins or tokens to the existing pool, the lender/investor is rewarded with a rate of return in the form of new coins or tokens. Taking a step back from the cryptoasset sector, an analogy that illustrates this is as follows - in return for providing liquidity to the organization, the lending individual or institution earns a rate of return (which varies by instrument and service) that is payable out in new tokens or coins created by the organization. In some instances, this DeFi practice can be more associated with stablecoins¹ and is dependent on the investor continuously rotating the investments into various projects in order to earn the highest rate of return

payable in crypto coins or tokens. One can think of yield farming as a rotating investment allocation seeking to continuously generate the highest yield return possible.

- b) *Crypto Staking* - One the most common DeFi applications in the marketplace can take the form of staking, in which an investor translates the cryptocurrency process into something that is approximately equivalent to true passive income. There will be an example outlining how a staking operation functions below, but a good example to consider would be the ability to earn interest on current crypto holdings, which seems to resonate best with crypto non-experts. Let's take a look at how a crypto staking operation can function.

Firstly, and something that should always be covered in any investment analysis, is that in order for a staking operation to occur, this process must occur on a Proof-of-Stake (PoS) blockchain. Taking a look at how crypto staking works at a high level, the following steps are generally considered to be in existence across the staking conversation. Once a defined "minimum balance" on a PoS blockchain is met, the nodes (computing devices critical to the functioning and processing of transactions on a blockchain, and which can contain the entire history of blockchain transactions) will invest these funds into the network (representing the stake). A similar way to look at this process is the node itself depositing funds in the form of a security deposit to help stake, fund, and support the blockchains.

Following this staking, blocks are approved and added to the blockchain, with the size of the stake of a specific investor directly in proportion to the odds that one specific node is selected to approve the next block in. Assuming that the block is approved and added correctly to the blockchain, the node will earn and receive a block reward; this is very similar to how miners earn rewards under a Proof-of-Work blockchain model.

Lastly, an important security aspect is that stakers can lose a portion of their investment if their node is found to be guilty of attempting to double-approve or otherwise compromise the integrity of the network. For interested parties, crypto exchanges such as Coinbase offer centrally managed crypto staking services, highlighting yet again the back and forth between more centralized investing options, and the decentralized ethos of the blockchain and cryptoasset space.

In terms of reporting and disclosure, the specifics around how crypto staking might in fact operate, are going to be important both in terms of compliance and personally identifiable investor information. Specifically, how this might play out is something more akin to how traditional brokerages operate and report as opposed to how crypto exchanges currently operate. As of this writing there is no obligation for crypto exchanges to document or report information; any individual or institution that has navigated crypto taxation is well aware of these issues. Reporting accurate data in a consistent and comparable manner lies at the heart of how financial institutions, market actors, and regulators interact with each other. Given the reporting and disclosure matters that have already been raised and negatively impacted some blockchain and crypto organizations in order to grow DeFi requires transparent and logical rules.

- c) *Crypto Lending* - The lending aspect of DeFi lies at the heart of this entire DeFi ecosystem, but even this foundational application can take several different forms. Specifically, this can be represented in the form of collateralized stablecoins, requiring pools of liquidity or other specific solutions focused on trying to increase the liquidity of certain cryptocurrencies. Crypto lending is perhaps one of the most interesting projects due to the somewhat paradoxical nature of lending in the cryptocurrency space. How this might ultimately play out is still up for debate, but the crux of the argument is that crypto lending can take two generalized forms. Firstly, crypto lending can take the form of actually lending out cryptocurrencies

directly, which is almost directly the opposite of the idea of direct ownership under the original bitcoin proposal. Numerous organizations have begun to offer lending services that actually lend out cryptocurrencies, with all of the reporting complications that such an arrangement will produce. Another option is closer to the model that is implemented at [MakerDAO](#), in which the specific financial instrument in question is – in essence - a collateralized financial instrument.

- d) *Decentralized Exchanges* – Alongside the rise of decentralized banking and other financial services is the emergence of decentralized exchanges. Decentralized exchanges, or DEX's, are cryptocurrency exchanges that enable direct peer-to-peer trading in cryptocurrencies online without the need for an intermediary organization, such as a brokerage firm. An array of these institutions exists, and will operate in slightly different manners, but all offer the same service. Instead of having to rely on an intermediary, such as the Depository Trust & Clearing Corporation (DTCC), individuals and institutions can initiate and complete transactions of different types of instruments on a peer-to-peer basis. As illustrated by the controversy² around what happened at Robinhood during Q1 2021, there are facets of how centralized exchanges operate that are not always clearly understood. That said, counterparty risk, collateral and fulfillment issues, and the uncertain regulatory landscape create an ambiguous outlook for mass adoption of truly decentralized exchanges.
- e) *Derivatives* - The central idea of a derivative instrument connected to blockchain is the creation of a synthetic asset that represents real world assets. Such a construct enables blockchain users and investors to access physical assets instead of just being able to access crypto-related digital instruments. Translating this into cryptoasset terminology, the argument could be made that every stablecoin, or an asset-backed crypto instrument, is a derivative. Taking it one step further, DeFi operations that rely on stablecoins for other processes could be thought of as a second order derivative. The specifics of the accounting for such instruments are beyond the scope of this paper as well as current accounting guidance but do need to be mentioned to present a comprehensive picture of the landscape.

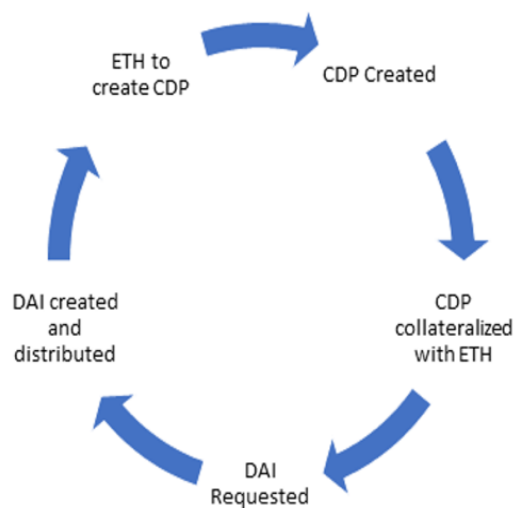
3) Specific DeFi Projects

In order to practically understand the implications of DeFi on the financial markets, it seems logical to also include several market examples currently available. For the purposes of this publication, we will be focusing on some of the highest profile organizations that operate in the DeFi sector.

- a) *MakerDAO* - Given the fact that there are numerous DeFi capable computer applications available in the marketplace, this analysis will focus on taking a deep dive into the operations of MakerDAO for illustrative purposes. This is due to the fact that 1) MakerDAO is generally considered to be one of the most well-known iterations of DeFi, and 2) there is significant analysis and discussion related to the inner workings of MakerDAO operations.

Prior to starting any analysis of DeFi products however, there are two facts that must be addressed. Firstly, there is no definitive accounting guidance in any jurisdiction on issues related to the use of cryptocurrencies or cryptoassets in decentralized finance. Secondly, and unique to a DeFi analysis, is that MakerDAO specifically is a private organization using permissioned blockchains options, so it is indicative of the broader trend and shift toward permissioned and semi-centralized blockchains. With that context in mind, let's take a look at some of the specifics of how MakerDAO operates and functions.

Essentially, MakerDAO is a protocol behind the stablecoin DAI—a cryptocurrency which maintains a direct 1:1 relationship (or peg) to the U. S. Dollar. Each DAI is backed by Ether (the token of the Ethereum public blockchain), which removes the need for a third-party verification of required collateral. This Ether is then deposited into a Maker smart contract, creating a Collateralized Debt Position (CDP). In this way, MakerDAO can be thought of as a credit facility issuing loans with a certain interest rate. If the interest rate (known in this instance as a “stability fee”) is low, people are encouraged to borrow more. If the interest rate is high, the high cost of capital makes it less attractive to borrow. The DAI tokens that were issued must be paid back upon maturation of the CDP, and during the economic life of the CDP, stability (interest) payments must be made. The illustration below should also assist with visualizing this process:



Subsequent to the creation of this financial instrument, and if the investor does want to exit the position, this process can be reversed so that the investor ends up holding their previous crypto holdings. One other factor that should be assessed as a part of this conversion is that a 150% collateralization must be maintained to avoid liquidation. In other words, if the value that supports the CDP drops below the 150% threshold, this position will be automatically liquidated. Granted there are certainly ways in which investors can automate the maintenance of this 150%, but it does add an additional layer of complication to this analysis.

- b) *BlockFi* - Since [BlockFi](#), a company which offers cryptocurrency related credit products, has seemingly assumed a leadership role in the DeFi space, due to the attractive rates of interest (payable in crypto) that it offers, it is worth taking a look at some of the specifics as to how this enterprise functions. Readers of this document should always conduct their own due diligence prior to investing, as this is presented as a summary of generalized functionality rather than investment advice. This discussion will focus on the BlockFi Interest Account (BIA) product.

Firstly, it is important to recognize that, as of this research, BlockFi can accept initial deposits/transfers of USD via a wire transfer, versus ACH or other payment mechanisms. BlockFi will provide investors with wire instructions for the specific financial institution to facilitate this process. Subsequent to the transfer going through, those USD funds will in turn be used to purchase stablecoins, which defaults at this time to GUSD³,

a stablecoin created and managed by Gemini. This also highlights the fact that the DeFi space, although headlined by specific institutions, does often involve collaboration between a number of organizations. As soon as this process is complete - the purchase of GUSD via the USD transfers, the investor can trade those GUSD for any BlockFi supported cryptocurrency. BlockFi Interest Account clients can deposit their crypto and earn interest in the same crypto, paid monthly. In addition, interest earned by account holders is subject to compounding. Thus, the amount subject to interest compounds, increasing overall annual yield.

At this point it is also worth noting that there are some conditions that come with access to BlockFi resources and options. First, there is a \$10 fee that is incorporated into the funds being transferred to BlockFi. Second, the wires that are completed may not be available for at least several days. Other considerations that need to be factored into the assessment of this arrangement are the fees and other charges that are associated with the potential withdrawals of funds from the BIA account. In other words, even if the underlying concept of a BIA is a decentralized idea and concept, many of the rules and guidelines that users/investors have to abide by are quite similar to other existing financial institutions and intermediaries.

From an accounting and reporting perspective, a seemingly simple question must be asked and addressed - how should the interest income from BlockFi (or other DeFi providers) be treated and reported, by both investor and provider? On the one hand, there is no blockchain or crypto specific guidance as of yet in the marketplace, so practitioners and organizations are going to have to work with what current guidance actually does exist. Specifically, this means that not only are the transactions and other associated interactions linked to cryptocurrencies will generate taxable events, but that any income generated as a result of DeFi activities will - obviously - also generate taxable events. Seemingly obvious, this is a point that seems worthy of reiterating, i.e. - if the income is in the form of crypto, versus fiat, this does not change the tax implications of this income.

An additional facet of BlockFi that is worth mentioning is that while a majority of the focus is the interest generating aspect of their services, customers can also obtain loans from this firm as well.

- c) *Compound Crypto* - Another aspect of the DeFi landscape are the specific tokens and coins that can be involved in the crypto lending and staking processes. One specific example of this includes [Compound](#) and its native token for blockchain applications. The primary use cases of Compound are lending and borrowing cryptocurrencies, facilitated by the Compound native token. Building on the popularity of DeFi, decentralized applications at large, and blockchain technology, Compound enables the decentralized lending and borrowing of an array of cryptocurrencies that include Dai (DAI), Ether (ETH), USD Coin (USDC), Ox (ZRX), Tether (USDT), Wrapped BTC (WBTC), Basic Attention Token (BAT), Augur (REP), and Sai (SAI).

Let's take a deeper look into the operations of Compound and see how it compares to some of the other decentralized examples provided above. Depositing or locking cryptocurrencies within Compound is similar to depositing funds into a savings account, with one important distinction. Instead of depositing funds into a bank, funds are directed to the Compound wallet associated with the account in question. Similar to lending to a bank (via the deposit function), interest begins to accumulate on deposited funds. Instead of simply earning interest in dollars, the interest that is earned in the same token or coin that was originally lent, which can take the form of any of the aforementioned cryptocurrencies listed above. The cryptocurrencies that are lent on deposit is, in turn, added to a general pool denominated in whatever cryptocurrency was indicated.

For every lending transaction that occurs, borrowing activity is sure to follow, and Compound is no exception to this general financial services rule. After crypto denominated funds have been deposited into an account, individuals can borrow against these funds, with those initial deposits serving as collateral. The specifics of how Compound evaluate borrowing requests are listed in detail on the organization website, but there is an evaluative process that determines how much can be borrowed based on the quality of the underlying asset. Specifics are documented on the Compound organizational page, but in whatever cryptocurrency is borrowed there will be interest associated with, and owed on, the amounts borrowed. In other words, the amount and terms of crypto borrowing are - at least in part - determined by the type and quality of the asset that is put on deposit at Compound.

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4) Challenges Presented by DeFi

Some of the challenges presented by DeFi are not unique to DeFi itself but are endemic to the current state of blockchain and digital assets from a regulatory and accounting rule making perspective. Specific to DeFi, the following challenges cannot be minimized.

- a) *Scalability* - While private or permissioned blockchains have seized the majority of attention and investment since bitcoin hit previous all-time highs at the end of 2017, DeFi applications - for the most part - are dependent on public or permissionless blockchains. These scalability issues can cause slower block confirmation time, as well as high “gas” fees (network fees paid for transacting on the Ethereum blockchain). While certain developments, the Lightning Network (bitcoin) and Ethereum 2.0 seek to address these concerns, these continue to represent limits to adoption.
- b) *Price volatility and liquidity risk* - Discussed at various points in this paper, price volatility is a recurring risk and obstacle toward wider adoption of cryptocurrencies as a legitimate alternative to fiat transactions. Adding to this is the liquidity risk that can arise in some crypto, which in turn can be exacerbated (or even cause) price swings that play a role in highlighting volatility. In other words, the very same price volatility that excited investors can create a destructive cycle for DeFi organizations.
- c) *Lack of regulatory checks* - One innovative product or innovation inherent to the DeFi sector is the idea of flash loans, governed by smart contracts, that can assist in bypassing much of the red tape that can delay more traditional lending and credit granting activities. In theory these same smart contracts can unwind loans if any criteria are breached, but the reality may be more complicated. In addition, there are also questions as to how flash loan origination and possible syndication could still remain in compliance with “Know Your Customer” and Anti-Money Laundering regulations.

5) Regulatory Considerations

As appealing as it might sound to consider DeFi a return to the original concepts of blockchain and cryptoassets, there is the reality that in order to expand and mature, operating in compliance with financial regulations is a must. Specifically, since the underlying goal of DeFi is to provide liquidity, access to credit, and enable crypto holders to generate excess returns (outside of price appreciation), the obligation to comply similarly to financial institutions is a relatively obvious one. A few of the legal frameworks that need to be taken into account are -

paradoxically - some of the same regulations and frameworks that have necessitated a pivot and shift toward more semi-centralized or centralized blockchain options.

- a) *Know Your Customer and Anti-Money Laundering regulations* – KYC/AML regulations are two foundational elements of the money transmitter and financial payment infrastructure including the Bank Secrecy Act and associated regulations. In fact, since the Great Recession of 2007-2009 (which also coincided with the mining of the Genesis Block of the Bitcoin blockchain), one of the fastest growing areas of job growth in financial services has been in the compliance sector. While DeFi applications might wish to establish more of a peer-to-peer methodology for lending and capital creation, compliance and operating in accordance with financial regulations is an imperative.

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Another consideration that has, at least partially been addressed in the United States, is whether or not issuers of stablecoins (which play a large role in the DeFi area) can have underlying assets stored at institutions with FDIC coverage or whether or not those underlying assets need to be stored directly at the institution itself. This is an area of discussion that continues to be hotly debated and discussed, both by market actors and policymakers, but this is something that also has implications from an accounting perspective, including regarding valuation, taxation and reporting

b) *Qualified Custodians* - The conversation around qualified custodians is a complicated one no matter what sector of the financial is being discussed, and this also carries over to the blockchain and cryptoasset piece of the financial services space. At a basic level, and to add some context to this conversation, a qualified custodian is an organization that is approved by regulators to hold assets on behalf of clients. For example, financial institutions such as commercial banks, retail banks, brokerages, credit unions, and other mainstream entities all are qualified custodians. In the blockchain and cryptoasset sector, however, the conversation has not been as clear cut until 2020 and 2021. Especially since blockchain and cryptoassets were designed to either operate outside of the traditional financial system or serve as the basis for an alternative financial system, regulatory uncertainty and ambiguity has continued to make progress difficult. More recent changes, both in terms of stablecoin development and regulatory pronouncements from the Office of the Comptroller of the Currency (OCC) have clarified some outstanding items. As a result of these clarifications, banking institutions can hold dollars that serve as reserves for stablecoins, and those same banks can now be an integrated part of a public blockchain. Both developments move the blockchain and cryptoasset sectors more toward mainstream integration as well as opening the door toward more comprehensive development of a blockchain based lending and borrowing system. Prior to diving into some of these specifics, however, it should be noted that while the concepts of DeFi - seeking to replicate the facets and opportunities of the existing financial system - the legislation and regulation are not nearly as firmly established as for incumbent financial institutions.

- c) *Wyoming crypto bank implications* - An interesting effect that has been connected to the growing interest and investment in blockchain and cryptoasset projects is the development of an entirely new banking sector centered on these innovations. Wyoming is the most prominent example and has rapidly emerged as a leading force and hub for blockchain and cryptoasset development, spearheaded by the recent launching of special purposes banking institutions. This is certainly a reflection of the entrepreneurial spirit of the individuals involved, but it is also a reflection of the regulatory approach taken by policymakers in the

state. Establishing an entirely new banking or financial institution is both a sign of how fast growing and prominent the blockchain and cryptoasset sectors have become since their introduction, but also highlights the need for blockchain and crypto specific organizations. From an accounting, auditability and insurance perspective, amongst others, it seems that the accounting and financial services sectors still appear to be playing catch-up with the development of these banking entities. From the perspective of DeFi, this also raises the question as to whether or not a more centralized blockchain financial institution will enable broader adoption and utilization of DeFi or not.

- d) *The STABLE Act* - No discussion or analysis of the DeFi sector would be complete without mentioning the introduction of the STABLE Act⁴ near the end of 2020. Led by Democratic Congresswomen Rashida Tlaib (D-MI), the stated purpose of this legislation is to prevent the build-up of a “shadow banking” sector that could potentially undermine the integrity and security of the U.S. financial sector. As a result of the proposed rules and regulations that would accompany this act, however, there is the potential that all stablecoins and stablecoin issuers would be rendered illegal unless having previously received federal approval.

At the core of the issues raised by some members of the crypto community is the relatively broad range of activities that will fall under proposed legislation. Specifically, there are several important clauses and proposed regulations that any stablecoin issuers would need to comply with. Firstly, any stablecoin issuer would need to obtain a federal banking charter, going above and beyond compliance with state regulations and/or money transmitter laws. Secondly, any issuer would have to be in full compliance and fulfillment of existing banking regulations. Clearly said regulations exist for a reason, but the cost and complexity of these regulations might tend to favor incumbents versus new entrants. In addition, any stablecoin issuers would be required to obtain the approval of both the Federal Reserve and the Federal Deposit Insurance Corporation (FDIC) six months before issuance. Lastly, the stablecoin issuers themselves – as opposed to working with financial institutions who have FDIC coverage – would either need to obtain FDIC insurance or deposit dollar reserves at the Federal Reserve. That said, it is worth repeating at this point that the STABLE Act is still simply proposed legislation, and given the other pressing matters facing the marketplace, blockchain and cryptoassets legislation does seem to be a matter that is on the back burner.

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6) DeFi Accounting and Tax Considerations

As with any new iteration or application there are going to be questions that need to be assessed as they relate to the accounting of this information and data. Specifically, there are accounting questions that need to be addressed as they relate to the income, earnings, and assets that are created as a result of DeFi operations. Returning to the conversation above, it is relatively straightforward to determine that income that is earned from staking or other passive methodologies will be treated as ordinary income. This tax treatment is a direct result of the classification of cryptoassets - regardless of whether they are decentralized or more centralized

in nature - as property. This classification means that every crypto transaction, or changing of ownership, results in a taxable event.

Given the unclear guidance issued to date from regulatory agencies, it seems possible that income from DeFi operations will be treated as ordinary income.

Seemingly a straight-forward and simple answer, this surface level simplicity obscures the other accounting focused issues related to DeFi assets and liabilities. For example, if an organization is operating as a DeFi lender, and relying on the liquidity pooling to provide that liquidity and financing options to investors, how are these pools recorded and reported? Again, lacking authoritative guidance to these issues, the profession is left to postulate and put forward several alternative methodologies. Several of the integral questions in this area include, but are not limited to the following:

- a) Should these be viewed as liabilities, akin to how customer deposits are currently viewed at incumbent financial institutions? Conversely, since there is a mutual benefit derived from both the recipient and providers of this liquidity, there might be a conversation to be had around where such pools of liquidity fit in the accounting lexicon?
- b) Additionally, how are the assets that are created - potentially in the form of earnings that are reinvested into DeFi programs or applications - going to be treated? An analogy that might seem reasonably close to this is Dividend Reinvestment Programs (DRIP) that allow investors to automatically reinvest dividends paid to acquire more shares. In the context of DeFi this might instead take the form of a larger stake or percentage of the ownership/liquidity pool. If this is the case there are issues and considerations that need to be taken into account in terms of valuation, reporting, and potential tax issues.

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When it comes to cash flow issues, reporting and other considerations, there might not be as many issues in terms of accounting and valuation, but may instead be an issue in terms of correctly reporting said information. DeFi, at the end of the day, is a new and emerging application of blockchain technology. Additional issues that might arise, however, might be less connected to the cash flow itself and instead might be linked to issues from governance or other ownership related tokens.

For the purposes of this discussion, governance and governance issues connected to DeFi applications include how a blockchain project will be managed, led, and potentially evolve over time. In terms of potential investor rights and obligations, the governance considerations include what, if any, input investors might have over how decisions are made within the project.

Especially with the increased regulatory action and scrutiny that the blockchain and cryptoasset space continues to experience, investor protections, governance, and rights are going to become much more prominent. Both in terms of reporting and valuation, different types of coins and tokens, as well as different kinds of investment opportunities, mean that investor rights and governance issues need to be both transparent and understandable to investors and regulators alike.

Some of the other accounting specific issues that can be linked directly to DeFi are the importance of connecting

DeFi applications to real world assets. The importance of needed DeFi accounting regulation is difficult to overstate, given the multitude of crypto accounting issues that already exist for virtually every blockchain enabled or tokenized asset

In the same way that various asset classes have different accounting treatments, additional accounting considerations must be considered given that not all cryptoassets that are part of the DeFi accounting conversation should be treated in an equivalent manner. It is important to remember that the entire DeFi ecosystem, at least as far as mainstream accounting conversations are concerned, has literally just begun to move beyond conceptual conversations. Just a few of the types of DeFi cryptoassets that are going to be accounted for include, but are not limited to cryptoassets connected to staking, lending, borrowing, tokenizing real world assets, and the accounting for cryptoassets that are also linked to the earnings and/or profits of real-world assets.

7) The Importance of DeFi Audits

While it is clearly still early days in the DeFi conversation and accounting rules and regulations are still evolving, current audit and attestation standards, while applicable, may also evolve given potential future developments in this space. Auditing plays an integral role in both inspiring investor confidence as well as providing an objective review of the data produced by an organization. Particularly since DeFi is a relatively new capability in the blockchain space and might still be a concept and idea not terribly well understood by the non-expert population, providing some level of objective confirmation could provide a much-needed framework through which analysis can continue. Some of the specific items that would seem to be reasonable inclusions for the audit process to include, but are not limited to, the following:

“...current audit and attestation standards, while applicable, may also evolve given potential future developments in this space.”

- a) Confirmation of the assets and liabilities of the organization in question. Given how volatile some of the prices of underlying cryptoassets can be, there could very well be far ranging implications for contingent liabilities, debt covenants, and other potential legal obligations.
- b) Being able to ascertain who exactly the counterparties for various transactions actually are for certain sets of transactions and activities. This is of particular importance given just how decentralized DeFi applications can actually be. Establishing the identities of these counter party organizations might not be as difficult for a DeFi application managed by a centralized entity but for a truly decentralized DeFi program this might pose other significant questions.
- c) Smart contract audits and examinations can be an overlooked aspect of just what a DeFi audit will entail. Much of the focus, including the bulk of this whitepaper, is going to - and reasonably so - tend to focus on the financial operations perspective of DeFi operations. Reasonable, but an incomplete perspective; smart contracts are ultimately what drive the DeFi environment and enable the execution of many core DeFi activities.
- d) Controls around how various cryptoassets can exchange ownership and be transferred between different individuals and institutions, which will invariably happen in any financial ecosystem. A strong motivation for

why the DeFi subset of blockchain and cryptoassets was invented in the first place was to facilitate greater access to capital and other financial resources. Given this, the auditor must develop an understanding of the processes and methods in place to ensure that these decentralized cryptoassets can be transferred in a secure and transparent manner.

- e) If the DeFi operation is a combination of both cryptoassets and physical real-world assets, what are the specific control activities and processes that the DeFi operations have created in regard to the physical assets? As much, if not all of, the value of tokenized coin or token is directly linked to the physical asset that it is connected to, it does make sense that there should be robust controls over the physical assets themselves.
- f) Building on the previous point, and again assuming that the DeFi coins or tokens in question are in turn linked directly to physical assets, there should also be appropriate controls and control processes around how this connection is managed. Simply stating that a connection exists, even a connection that is pegged or connected to a predetermined level, needs to be documented, reported, and maintained over time by the organizations.
- g) With regards to the auditing of a blockchain itself, the privacy and security of DeFi options is, in part, linked to the decentralized nature of blockchain operations. Auditing, or creating a trail or data set that is capable of being audited on a consistent basis, are contrary to this idea of decentralization. To address this, organizations need to have adequate and documented controls related to accessing and relying on the information it obtains from the blockchain.
- h) In addition to the specific controls and processes that are designed and implemented by organizations initially, there should be a process by which such controls and processes are updated and modified over time, as the organization likewise changes and evolves.

In order to accurately disclose, report, and document the information being put forward by the organization, an appropriate and robust control environment, which would be the responsibility of organizations and not unique to DeFi, is necessary for wider implementation and adoption.

Lastly, organizations may decide to outsource some services provided, as part of their DeFi participation, to third parties. Examples of services that may be outsourced to third parties include but are not limited to the following:

- Wallet management, including both hot and cold wallet services.
- Know-your-customer and anti-money laundering compliance procedures.
- Tax compliance and reporting tasks.
- Custodial services for stablecoins or asset-backed-tokens.
- Crypto payroll and/or bookkeeping services.

Since organizations participating on a DeFi platform would remain responsible for each outsourced crypto service, they would need to monitor the processes and controls performed by the third parties. One way to do that is to obtain a SOC 1 or 2 report from these third parties. Readers interested in learning more about this specific topic are encouraged to review the AICPA publication "[Blockchain in SOC for Service Organization Examinations](#)", which can be found [here](#).

8) Reporting and Disclosure - As with any financial information or organization there is going to be a requirement and expectation that certain types of information will be reported out to the marketplace. Since the DeFi space is - in essence - an attempt to replicate the commercial lending practices it would seem logical to apply similar best practices to how data is reported by DeFi organizations or participants. Some of the specific considerations and open questions that are unique to the DeFi sector include, but are not limited to, the following:

- a) How are the sources of funding for the liquidity pools disclosed, whether they have to be disclosed at all? Will the sources of capital need to be publicly disclosed on a continuous basis, only updated on a periodic basis in the case of large institutional changes (in excess of 5% for example) or have the identities of major funders only disclosed to regulatory agencies. Given the global nature of capital flows and DeFi in general it is not unreasonable to expect that some sources of capital might come under greater scrutiny than others.
- b) Does the country of origin need to be reported? Especially since the blockchain and cryptoasset sectors are so globally diversified the fact that operators and market leaders exist across the globe should come as no surprise. Specific to the DeFi sector, however, the origin and location of mining pools or large institutional partners may have a business and geo-political role. For instance, given the geo-political tensions between the United States and China, which show no sign of abating in the near term, would an overt bias or affiliation on either side represent a potential risk?
- c) How often should this information be reported? Particularly in the case of DeFi, some of the core components of how this operation functions may actually be proprietary to the organization. Additionally, this might also represent a situation where disclosing certain types or classes of information might not be allowed in some jurisdictions. As opposed to simply disclosing financial information or other statistics, and especially since DeFi relies entirely on a decentralized methodology to operate effectively, disclosure related to those operations might not be as cut and dry as initially estimated.
- d) How is this data and information verified and confirmed, or if need be, corrected? One of the fundamental features of blockchain is that once data is written into a blockchain record, the data is tamper-proof and immutable, particular in regard to public blockchain. While this has been partially addressed via the rise of permissioned blockchains (many of which can allow for data correction) this is still an issue that needs to be fully addressed.

“Decentralized finance can be seen and categorized as an almost classic example of how private market innovation and dynamism can far outpace the rule and standard setting process.”

Although the “pure” version of DeFi would not include any centralized operator or point of control, many of the examples documented in this whitepaper do - in fact - have a centralized operator that manages and governs the process. Akin to how major suppliers or organizations can have an outsized influence over existing supply chains and trade relationships it would be logical to conclude that such a centralized DeFi player, or small group of organizations, could end up having an outsized influence over the broader DeFi operations.

9) Summary

Much like the accounting and reporting conversation for the blockchain and cryptoasset sector at large, the proposed path forward and further development of these issues are going to be a matter of discussion for the foreseeable future. Decentralized finance can be seen and categorized as an almost classic example of how private market innovation and dynamism can

far outpace the rule and standard setting process. Key to this conversation is the progress and clarification that can only be achieved or delivered from increased commentary from policy makers. Accounting and the accurate reporting and disclosure of financial information - regardless of specifics- are essential to the wider adoption and utilization of any financial instrument. DeFi seeks to replicate many of the benefits and functionality delivered by the incumbent financial system while also leveraging advances in the blockchain and cryptoasset applications. Given this, the importance of consistent accounting, consistent reporting, and insurance products applicable and relevant to this new asset class cannot be overstated. Especially since DeFi can create and result in financial services such as lending, an equivalent to dividend reinvestment programs and others, ensuring that the categorization and reporting of these results are accurate and in compliance with existing guidelines and accounting rules.

Accounting rules and guidelines do not exist in a vacuum, and so in order to put together any comprehensive or well thought out accounting conversation, there is going to be the need to acknowledge that these conversations need to be wider than might initially appear. The specific accounting questions and considerations that are going to arise related to the DeFi sector might - on the surface - be able to answer in relatively short order, but that misses the more important point. DeFi is seeking to replicate many of the opportunities and liquidity generating events that already occur, and so it is reasonable to project and forecast that many of the incumbents that operate in the lending and liquidity areas will continue to play major roles in this area.

In short, the single most important piece of accounting information and data that can be shared and reported from an accounting perspective is how to ensure that this reporting is transparent and consistent in nature. At the end of the day, accounting data needs to be used to help make better business decisions.

10) Conclusion

The rise of the DeFi marketplace continues to accelerate and show the organic development and maturation of the blockchain and cryptoasset sectors. Reflecting back upon the history and prior track record of these areas, the rise of DeFi should not be seen as a radical departure from existing trends, but rather a natural response and evolution in response to market forces. On the one side were the forces of centralization and permissioned blockchains that continue to exercise influence as it pertains to commercial and enterprise adoption of blockchain tools. These trends and forces do not seem situated to wane or disappear over time. Rather, it seems that the interest and investment by firms in these sectors will only continue to increase, which in turn will also increase the interest and investment into more decentralized options.

DeFi is a fast moving, fast evolving, and rapidly accelerating aspect of the blockchain and cryptoasset space, which is still in the early stages of development. No matter what specific facet of decentralized finance is actually implemented into the marketplace the underlying reality and message is the same; DeFi is here to stay.

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