

Cryptoasset Development, Regulatory Maturation, and Future Directions – Considerations for Accounting Practitioners

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Abstract: The rise of stablecoins and other cryptoassets, following the dramatic rise and fall of traditional decentralized cryptocurrencies such as bitcoin, purported to address the price volatility and reporting complications associated with cryptocurrencies. Despite representing a potential halfway point between traditional decentralized cryptocurrencies and fiat currencies, several reporting and regulatory issues remain unaddressed. In fact, the very nature of stablecoins creates several new complications for individuals and merchants seeking to use these cryptoassets as fiat alternatives. Specifically, accounting, reporting, and disclosure requirements surrounding stablecoins are both ambiguous and pose significant obstacles to adoption. This research examines the promise of stablecoins, several obstacles that remain to further adoption, and potential pathways forward that may assist in resolving these items. Additionally, this research concludes with key considerations for further clarification and adoption of cryptoassets moving forward.

Keywords: stablecoins, cryptoassets, cryptocurrencies, regulatory, reporting

1. Introduction

Stablecoins and other forms of cryptoassets have become increasingly prevalent and investable for both individuals and institutional investors since bitcoin became well known and widely discussed beginning in 2016. Even as new iterations and developments in the blockchain and cryptoasset space continue to mature, the regulatory framework and jurisdictional uncertainty that have also developed continue to serve as a substantial obstacle toward more widespread adoption. Specifically, the introduction of stablecoins, a cryptoasset that is supported or otherwise connected to an external asset (Hayes, 2019) leads to a differentiated conversation from those pertaining to decentralized cryptoassets such as bitcoin. Stablecoins are both connected to external assets, and by extension can have from value derived from this linkage, as well as potentially being issued and governed by a centralized entity versus the open source nature of bitcoin. In other words, the stablecoin movement is indicative of a broader shift toward more centralized and permissioned options of blockchain and cryptoasset management. Discussed within this research is a multi-faceted analysis that attempts to examine both the trends that exist in the cryptoasset space, as well as what regulatory improvements and developments might assist with wider adoption and utilization of different cryptoassets.

Of particular interest to financial professionals interested in this fast-growing space is that, during 2020 alone, the total supply of stablecoins has increased by 94% (More, 2020). The total market capitalization of the space, nearing \$10 billion as of this

research, and as confirmed by stablecoinindex.com, remains dominated by incumbent players such as Tether USD. Despite this market cap dominance, several other players have moved quickly into the space, taking advantage of some of the accounting and reporting issues that had previously arisen with Tether USD. Some specific examples of these other prominent stablecoins include Gemini, the Paxos Standard, and Circle USD. Functionality varies from coin to coin, but the core appeal of stablecoins seems to have led to the expansion of the marketplace in a meaningful way. Still small when compared to the market capitalization of bitcoin and ether, which fluctuates but is well in excess of \$100 billion USD, stablecoins have clearly seized upon a need in the marketplace.

Breaking down both the topics of stablecoins and other cryptoassets as well as the obstacles that remain in the way of wider adoption, this research is written with both a practitioner and academic audience in mind. Despite short-term obstacles and headwinds that may slow specific individual projects it is increasingly apparent that crypto and blockchain are becoming integrated into the mainstream financial services conversation. One of the most prominent obstacles to mainstream adoption is the continued lack of consistent regulatory and reporting standards on a global basis. In 2020 the European Central Bank (ECB) provided some updated clarity to the marketplace, in the form of a call for proactive and standardized stablecoin treatment (Pirus, 2020). Despite this announcement, however, the taxation, reporting, and disclosure treatments for different cryptoassets – including stablecoins – remains widely varied depending on jurisdiction. In the United States, the most liquid capital market in the world, the treatment of cryptoassets remains a patchwork of differing regulations and classifications depending on the specific regulator in question.

Understanding both what these assets are, as well as how they fit into the wider adoption conversation, is necessary to contend with current issues as well as the ability of professionals to offer more comprehensive advice moving forward. Concluding this assessment is a potential framework for further developing and refining regulatory approaches to enable innovative growth to continue while safeguarding investor assets and rights. Stablecoins, as per the evidence presented within this research as well as the market growth of the space, seems to present a fast growing and desirable application of cryptoasset technologies. In order for this application to achieve wider adoption, however, a robust understanding of both the technology and the regulatory landscaper are necessary.

2. Stablecoin Overview

Understanding what stablecoins are is an important step forward in the conversation regarding the legal classification and regulation of different cryptoassets. Stablecoins may represent, in theory at least, a halfway or midway point between decentralized cryptocurrencies and traditional fiat currencies, but that is only a partial perspective as to what these cryptoassets represent. Unlike decentralized cryptocurrencies such as bitcoin, stablecoins are commonly issued and governed by a single organization or a consortium of organizations.

Focusing in specifically on how a stablecoin might operate, there are a few core components that seem to be consistent across various stablecoin applications. First and foremost is the fact that a stablecoin cryptoasset is somehow connected, pegged, or tethered to an external asset. Gold, commodities, and fiat currencies all represent potential stabilizing agents. In most cases, these external assets are held by a custodial partner institution, and not the organization issuing the cryptoasset. Second, actions and taken by the issuing organization to maintain the pre-existing relationship between the cryptoasset and the underlying asset. For example, if a stablecoin purports to be equivalent to the U.S. dollar on a 1:1 basis, that organization will need to take action to ensure stablecoins are not issued in excess of reserves, and that the market agrees with this valuation. Lastly, and a consideration that needs to be explained from a technical and operational perspective, is how these stablecoins can be exchanged or redeemed for the underlying asset in question. Outlined in more detail in the cryptogold example, investors and other market participants must have clarity as to the process by which a stablecoin can, if possible at all, be exchanged for the stabilizing underlying asset.

This is a common theme no matter if the stablecoin is issued and governed by a single entity such as Gemini or Paxos, or a stablecoin being developed by a consortium of entities such as the efforts underway at the Libra Association. Interestingly, and seemingly a response to the feedback received following the initial publication of Libra materials in June 2019, in 2020 a series of Libra 2.0 documents were released to the marketplace. In essence, and illustrated by the change – from supporting Libra via a basket of currencies to developing different versions of Libra supported by different fiat currencies, there appeared to a shift in ambition from fiat replacement to payment accelerator. In essence, this seemingly simple change alters that nature of the Libra Association from attempting to develop a global and private form of money, to something more akin to a multi-currency payment platform (Massad, 2020).

An additional stablecoin that has entered the marketplace is Circle USD which, interestingly, has received support and investment from incumbent market actors such as Goldman Sachs. Issuance by a centralized entity or group of entities may increase the transparency and ease with which users can resolve issues, but have struck some permissionless blockchain advocates as contradictory (Liu, Wu, & Xu, 2019). Although to some, the increased centralization of cryptoassets represents a betrayal or paradoxical development, a semi-centralized or centralized approach might be able to address governance issues that have arisen with truly decentralized blockchain models. Specifically, the issues of scalability, usability, the adding and subtracting of users, integrating blockchain with other technologies, and deciding how any changes are to be made represent areas in which improvements are possible (Rikken, Janssen, Keww, Bolivar, & Scholl, 2019).

In addition, such an arrangement can add several additional layers of complications to the considerations that need to be factored into the accounting, reporting, and custodial conversations. These considerations will be examined throughout this research, and to begin this analysis it seems expedient to utilize an example for illustrative purposes.

Many early proponents of bitcoin and decentralized cryptocurrencies did, and still do, compare cryptoassets to digital gold. Whether this correlation is appropriate depends how price volatility is judged, but nonetheless a primary selling point of many cryptoassets is linked to a 1) decoupling from governmental control and potential debasing, and 2) forming a legitimate alternative to fiat currencies (Lee, 2018).

Returning back to the discussion around the opportunities and challenges connected to stablecoin maturation and development, there are some specific items that appear to be moving to the forefront. One particular opportunity for stablecoins, in terms of being utilized as a medium of exchange versus speculative investment, is the e-commerce space. Of particular importance are the lower fees associated with cryptoassets and stablecoins compared to credit card fees, faster confirmation of transactions, and the growing levels of mistrust of financial incumbents among millennials (Di Maggio & Platias, 2020). These factors, combined with the growth of Square, which has achieved much of said growth via charging lower fees, would seem to be features able to be copied by stablecoins. With e-commerce growing rapidly, and this growth accelerating in post COVID19 landscape, the potential for stablecoins to play an important role in e-commerce is not insignificant.

Challenges to stablecoin adoption are not specific to the stablecoin space, but are rather indicative or broader obstacles to cryptoasset adoption overall. Inconsistency with regards to how taxation, reporting, and disclosures should be handled, mistrust among some merchants and individuals linked to the prior criminal associations of cryptoassets, and technical complexity impact stablecoins and decentralized cryptocurrencies alike. That said, the taxation issues connected to stablecoins seem to be proving especially problematic. Even as the stablecoin space continues to grow at an accelerated rate, the tax considerations and complications of actually using stablecoins as a medium of exchange remain ambiguous and complicated (Chandrasekera, 2020). Since stablecoins were developed, in large part, to reduce price volatility linked to cryptocurrencies and encourage wider usage as a medium of exchange, these stablecoin specific tax issues remain a significant challenge.

Cryptogold Example

A theoretical example of a stablecoin stabilized and supported by gold seems to represent a straight forward meeting point for proponents of cryptocurrency and other sound money supporters. It is worth noting that many of the initial proponents and supporters of cryptocurrency were supporters due to dissatisfaction with current monetary and fiscal policy, especially the regimes potentially influenced by central governments or governmental organizations. Gold has long been used as a reference point and example of sound money principles and limited outside control, so it is logical that many stablecoins are associated with gold and other precious metals.

As of this research, the primary alternative to stablecoins underpinned by gold are stablecoins supported by fiat currencies such as the USD. That said, regardless of how these stablecoins are stabilized, no cryptoassets are considered an equivalent of money on a consistent global basis. Jurisdictional differences always exist, but it is worth noting

that no uniformity or substantial equivalency has emerged with regards to classifying cryptoassets as money equivalents.

Returning to the example at hand there are several considerations that need to be considered when attempting to construct a viable, practical, and scalable stablecoin. Prior to any in-depth review or analysis of the stablecoin use case, however, it is prudent to reiterate the fact that stablecoins are not considered money or cash equivalents under U.S. GAAP. Various jurisdictions and nations have an array of tax treatments, reporting requirements, exclusions, and disclosures that must be fulfilled, but there is no consensus on these matters. Generally speaking, there does not yet to be an opinion or point of view that any cryptoassets, be they stabilized or completely decentralized, should be equated to money. Ironically enough, and even though the United States Internal Revenue Service has yet to recognize as cryptoassets as money, and not taxable property, other agencies have sought to impose additional regulations of cryptoasset issuers. In December 2019 the Financial Crimes Enforcement Network mandated that stablecoin issuers will be treated as money transmitters, and need to be in compliance with Know Your Customer (KYC), and Anti-Money Laundering (AML) regulation. In other words, stablecoin issuers are mandated to in compliance with money transmitter regulations, even though other regulatory treatments do not recognize stablecoins as money or monetary equivalents.

This inconsistency can be observed, especially in the United States, by the current status and treatment of cryptoassets as property versus being treated as a medium of exchange. Even after the IRS issued additional FAQs and an additional revenue in the fall of 2019, the classification of cryptoassets has not yet shifted to money or a legitimate fiat alternative (Internal Revenue Service, 2019). Additionally, as of this research there has been no definitive classification or guidance from either the Financial Accounting Standards Board (FASB), or the International Accounting Standards Board (IASB) related to the potential treatment of cryptoassets as a medium of exchange or monetary equivalent.

Without said clarification and consistency in approach, use cases and mass adoption remain a work in progress. This uncertainty is further amplified by the spate of crimes, hacks, and other accounting malfeasances that occurred in 2019 and 2020.

Assuming that an organization develops and brings to market a stablecoin that purports to be stabilized by gold, an important consideration that needs to be assessed is whether or not this stablecoin is actually redeemable for physical gold itself, or whether it is instead redeemable for some other sort of gold related security. For example, the stablecoin might be redeemable for a gold ETF, or other equivalent security, which may or not may be as appropriate or desirable given the specific investor in question. Building on this question there also should be revised internal control and cybersecurity framework implemented to maintain custody over these gold-backed coins. In other words, there need to be parallel control and custody arrangements for the cryptoasset as well as the physical assets or securities that support the stablecoin. This in turn leads to a question of which specific entity or third party provides custodial services for said

stablecoin. While this might seem like an obvious point and perspective to highlight, this can be something that is overlooked; which institution or institutions actually have custody of the underlying assets? It would seem prudent that the organization that offers custodial services – if they do – over the cryptoasset should not also offer custodial services over the physical assets as well to help maintain appropriate separation of duties. Such services exist, but a lack of standardization and industry norms results in a fragmented approach to providing these services (Leisling, 2020).

Stablecoins also seem to raise additional considerations and fears that are related to the corporate governance of said stablecoins. Specifically, what measures are being implemented to help protect the rights of investors large and small? Given the lack of insurable products that currently exist in the marketplace, it is also worth pointing out and realizing that these are not idle concerns (Chung, 2018). The dearth of insurance or other investor protective tools and policies means both investors and investees should conduct robust due diligence around these areas. The development and risk of cybersecurity losses, both reputational and financial, has led to cybersecurity considerations to move from the back burner to top of mind conversations as hacks and breaches dominated headlines in 2019 (Kharif, 2019). Aforementioned hacks and investors losses have led to various proposals such as self-insurance, or the development of captive insurance organizations, to emerge. The development and implementation of self-insurance products may be perceived by some market participants as a positive development, but as blockchain and associated cryptoassets move increasingly into the mainstream financial conversation, it does seem logical to conclude that externally developed cyber and insurance products oriented toward blockchain and cryptoassets will need to develop.

Across the globe, and impacting both retail and institutional investors, the hacks and breaches that have occurred connected to blockchain and cryptoasset organizations highlight the scope of this issue. During 2019 alone, billions of dollars were stolen or otherwise misappropriated from exchanges and other hot wallets. Specifically, a breach occurred at Binance – one of the largest crypto exchanges in the world, and repeated technical issues at Coinbase – the largest U.S. exchange – around the bitcoin halving in May 2020, highlight the still emerging nature of the space. As institutional investors and capital flow into the space (Peng, 2020), the need for more standardized and widely adopted cybersecurity practices will only increase.

On top of the development and market adoption of blockchain specific policies or products it is also worth pointing out that the accounting around stablecoins involves two distinct processes. Stablecoins may have been initially developed and marketed as a halfway point between decentralized cryptocurrencies and fiat currency options, but the accounting treatment of these instruments presents a complicated scenario. The dual structure of how stablecoins are constructed creates, by default, a two-tier accounting, reporting, and disclosure obligation on the side of individuals and merchants seeking to either receive, or make payment in, stablecoins. Furthermore, the lack of authoritative guidance or even non-authoritative best practice documents around

blockchain at large means that practitioners are seeking to provide advice without supporting information to serve as a reference.

The first accounting conversation should be connected to the accounting and reporting of the cryptoassets themselves; cryptoassets of all kinds are still an emerging field with an ambiguous regulatory landscape. Different treatments and accounting methodologies may seem prudent, but that is not the current market situation. For example, and even though a consensus seems to be emerging that cryptoassets should be classified as intangible assets (Stein Smith & Castonguay, 2019), this does not work when examined further. Simple questions related to impairment policies, revaluation of previous impairments, and whether these cryptoassets are indefinite lived intangible assets remain without authoritative responses. Intangible asset treatment is, at best, a stop gap solution, and authoritative accounting guidance from either the FASB or IASB is required to spur further adoption.

Second, and an item that might have remained out of mainstream conversations to this point, is how the underlying physical assets will be accounted for during periods of price volatility. Even alleged stable underlying assets such as the USD do fluctuate in value and these valuations need to be accounted for, reported, and disclosed in a consistent and standardized manner. For example, a stablecoin that is supported or stabilized by crude oil would have had – potentially – dramatic reporting and redemption issues as a result of May 2020 oil contracts dropping below \$0 for a brief period in March of 2020. Setting aside that aberration the drop in price per barrel that occurred during Q1 2020 would have served as a destabilizing force for both the cryptoasset and the reported financial positions of associated organizations. These organizations include merchants accepting such a cryptoasset as a form of payment, businesses holding an oil backed cryptoasset, and third party custodians. Discussed in more depth below, while employing a third party custodian is nothing new, the fact that this third party custodian serves as the proverbial backstop for the asset itself does introduce additional complexity to this conversation.

3. Regulatory obstacles and opportunities

Even though many stablecoins were initially developed and marketed as a vehicle by which merchants and investors could recognize the benefits of decentralized cryptocurrencies without associated volatility, implementation has been more nuanced. The lack of regulatory clarification and specification continues to serve as a substantial headwind to further stablecoin development and adoption across economic actors. Although legislation that was previously proposed, the Token Taxonomy Act of 2019, was not passed into the law, there have been efforts made to expand upon these previously raised issues. Specifically, the purpose of these proposed laws and pieces of legislation can be distilled to the following areas. First, lawmakers seem to acknowledge the fact, reinforced by communications from accounting associations, that a de minimis exemption for individuals seems appropriate. Secondly, clarity is required as to which regulatory body or agency oversees the cryptoasset marketplace. Lastly, accounting treatments and classifications of cryptoassets, including tax positions, needs further clarification if blockchain and crypto are to achieve mass market adoption.

Lawmakers around the world proposed numerous bills and acts related to blockchain and cryptoassets in 2019, and as of 2020 crypto-specific regulators were beginning to be written into law, so there does seem to be an appetite to pass measures to assist market actors (Alexandre, 2020). That said, the Token Taxonomy Act of 2019 put forward several ideas and concepts that would directly clarify accounting and reporting treatment for cryptoassets. Specifically, there were several important considerations raised in this proposed law introduced that if passed into law would address the patchwork regulatory framework that has arisen. The inconsistency with which crypto regulations and frameworks have emerged both in the United States and internationally, continue to present headwinds toward broader adoption and utilization of cryptocurrencies as either a legitimate fiat alternative or an investable instrument. Drilling down into these proposed changes and developments include, but are not limited to the following:

1. The creation and codification of different classes and definitions of assets that would be include crypto-commodities, crypto-currencies, and crypto-securities. While this is something that has been discussed and analyzed by various regulators, the establishment and codification of different types of cryptocurrencies also appears to reflect a shift underway in the marketplace at large. At this point in time there has been no formal guidance from the FASB or IASB as of yet, which creates a substantial gap for financial services professionals and investors seeking to allocate capital to the space. As mentioned above a stop gap solution of intangible accounting has emerged, but that raises additional issues in and of itself without resolving existing conflicting regulatory approaches.
2. Assigning a unique regulator to oversee these various cryptoasset categories that would result of implementation of point #1. Some might argue that bifurcating and increasing differentiation between these various cryptoassets would muddle the regulatory landscape, but actually such a distinction and differentiation is commonplace among existing assets classes. Commodities, securities, and currencies are governed and regulated by different regulatory agencies, have different applicable laws, and are treated differently regarding investor rights and obligations. Instead of adding confusion to the marketplace, however, this distinction and differentiation makes it simpler for investors and other stakeholders to understand the regulatory landscape for these different assets.
3. In addition to these two core components of the proposed legislation it does seem evident that further clarification from the IRS and other tax collection agencies worldwide would assist from a regulatory and adoption perspective. Taxation is invariably a part of any asset class, but the confusion that still abounds among accounting and tax preparation professionals indicates that these issues are still significant. Although the IRS has made several efforts via the publication of FAQs and a revenue ruling toward the end of 2019 there remain several questions that require further clarification. Specifically, the lack of a de minimis exemption, the continued tax treatment of cryptoassets on a patchwork basis by global agencies, and different levels of tax rates and exclusions further complicate reporting efforts.

It is also worth to reiterate that the tax, reporting, and disclosure treatments for decentralized cryptocurrencies and stablecoins vary but wide degrees depending on the jurisdiction in question. Stablecoin treatment for the time being seems to be categorized alongside decentralized cryptoassets, but unlike the reporting of equity and debt securities there are not globally or even regionally accepted guidelines for how cryptoassets are reported and treated. Even within trade blocs such as the European Union, there is a wide range of treatments and reporting and use cases for cryptoassets that have been developed; this is not a trend that seem to be changing at any accelerated rate. Other obstacles to broader and more mainstream adoption of blockchain and cryptoassets exist, amplifying the uncertainty created by a regulatory landscape that is both fast moving yet amorphous at the same time.

Implementation stumbling blocks

Of particular importance for an analysis of stablecoins would seem to need to include an examination and explanation as to why stablecoins, other cryptocurrencies, and different cryptoassets have failed to accelerate in terms of adoption and utilization by individuals as legitimate fiat alternatives. These reasons do not represent any specific new trends or dynamics, but rather serve as a reminder of how ambiguous and emerging the reporting and accounting are for the blockchain and cryptoasset marketplace. In order for reasonable non-expert individuals and merchants to use cryptoassets as a medium of exchange and legitimate fiat alternative, several requirements must be met. Users must have confidence in the price integrity of the cryptoasset, i.e. headlines covering the dramatic swings in bitcoin prices, that can total hundreds or thousands of dollars a day, do not sooth potential anxieties. In addition, financial institutions must have the guidelines and rules to confidently accept, store, and convert cryptoassets into other cryptoassets, and into fiat if necessary. Lastly, accounting treatments, reporting, and tax policies must not only be in alignment and be consistent, but should not stifle the innovative and fast moving nature of the wider ecosystem.

According to studies and research conducted between 2018-2020 the vast majority of cryptoasset transactions were connected to rather than cryptoassets being used as legitimate fiat alternatives (Rausch, 2019). Particular to the bitcoin marketplace, 2020 seems to be a year where investors continue to focus on accumulating additional positions and holdings versus leveraging bitcoin as a medium of exchange (LaVere, 2020). Even with bitcoin prices well below the all-time highs of 2017, and with the virtual printing of fiat currencies on the rise, the bias of bitcoin investors seems to remain one of holding as an investment. Such a treatment of cryptoassets can logically be extended to the broader cryptoasset space; investors and merchants alike seem to need additional time to analyze the benefits and costs of this opportunity.

At the risk of overtly dwelling on the technical aspect of this analysis, in order for any cryptocurrency or cryptoasset to move to the mainstream it appears reasonable to expect several distinct changes to come to forefront over the next several years.

First and foremost, there will be the technical challenges that are going to have to be overcome from a functional level to encourage both individuals and merchants to use cryptoassets as fiat alternatives versus treating and holding them as investable instruments. Interestingly, even as the number of Americans holding cryptoassets doubled during 2019 (Partz, 2019), the total number of crypto transactions related to bitcoin – the largest and most liquid cryptoasset – fell behind those of ether (Rudden, 2020). Resolving security issues connected to the various wallet applications and cybersecurity considerations is an important first step, as recurring hacks, breaches, and cryptoasset thefts do little to inspire confidence in the cryptoasset marketplace. Specifically, and an extension of the frauds associated with initial coin offerings (ICOs), cybersecurity issues and considerations remain a significant headwind to blockchain and cryptoasset adoption (Esan, 2019). Additionally, the number of high profile, and financial damaging hacks and breaches connected to wallets and crypto exchanges, that occurred during 2019 may have also led to hesitation among retail investors and merchants to more widely utilize cryptoassets (Thompson, 2020).

Other issues that are also connected to the adoption of blockchain and cryptoassets are also the considerations connected to the rise of the internet of things and 5G technology. As increasing amounts of data is being transferred across mobile networks, autonomous networks, and other types of systems the importance of keeping this information secure will escalate in importance. Blockchains and associated tokens may appear to be a solution, but the nascent nature of the space from a development and hardware perspective might forestall and prove to be a significant headwind to this maturation and development (Marsh, 2019). Specifically, the passage of the General Data Protection Regulation (GDPR) and the potential noncompliance of blockchain with GDPR and other similar regulations presents an implementation issue outside of specific accounting and financial markets trends (Official Journal of the European Union, 2016). That said, privacy and data portability considerations will need to be resolved to foster and encourage further development.

One last item that needs to be examined, both in terms of technological maturation and cryptoasset adoption is the integrity of these specific data points. In other words, even as technological integration and adoption increases the need for an examining the individuals behind these technologies will only continue to increase. Cybersecurity is a part of these adoption issues, but also ensuring that these networks are updated and modified in response to market trends and changes also represents an important point. For example, the bitcoin blockchain is updated via a process labeled as a BIP, blockchain improvement protocol. For stablecoins – some of which run on permissioned networks rather than the bitcoin blockchain - there needs to be a methodology and process for in-house networks to be updated alongside the changing nature of the underlying blockchain code underpinning these enterprise networks. Even if the enterprise network itself was developed entirely as an original code it will need to be updated in response to changing market conditions. This might seem like a novel concept of idea, but is actually the exact same concept and idea that is incorporated into the implementation and maintenance of any technology system of platform.

Smart contract regulation and implementation

At the core of the idea, a smart contract is neither inherently smart nor does it resemble a traditional contract. Distilling the idea to its core components, the process by which a smart contract can be created include the following. A traditional written contract is examined, alongside legal and business subject matter experts. Following the approval of this contract, the pertinent clauses of this contract can be extracted, akin to (IF, THEN) formulas that exist in data analytics programs. After once again receiving approval from legal and business process experts, these pertinent clauses are then embedded into an underlying blockchain, enabling the automatic execution of these clauses following a preapproved external condition (Canelon, Huerta, Incera, and Ryan, 2019). Smart contract, although enabling automation, should also be an integral component of cybersecurity methods and concepts developed around blockchain technology.

The development and maturation of smart contracts serve to illustrate an important step in the implementation of blockchain across enterprise and organizational lines. It is worth pointing out that a blockchain in and of itself is not able to process information or analyze this information; blockchains are platforms to store and record transactions and other information, most notable the opportunity to create an alternative financial and banking system (Whirty, 2018). For blockchain technology to achieve the potential it is purported to deliver across industry lines, the data stored therein must be able to be transferred, analyzed, and exported between different technology systems and platforms. Smart contracts form this proverbial glue, but also raise crypto specific audit and attestation issues that continue to emerge and mature (Smith, 2020). Smart contracts are the proverbial gas and connection points between different blockchains as well as blockchains ability to communicate with other technology platforms and tools. As much as these applications can benefit the greater adoption and implementation of blockchain technology and different iterations of blockchain, the regulation of smart contracts must evolve as quickly as the technology itself.

First and foremost, there is a need for greater clarification as to what actually specifies a smart contract since the moniker itself is inaccurate in nature. Smart contracts are neither inherently smart nor a traditional contract, but are rather the end result of executable programmable language that has been connected or otherwise embedded into a blockchain. The process by which these applications are developed will vary from situation to situation, but will generally follow-up a consistent pattern. Kicking off this workstream will be the writing and creation of a contract with all necessary components; counterparties, rights, obligations, terms, and consideration. Subsequent to this writing and finalization of this traditional contract this agreement would have to be distilled down to a series of (IF, THEN) statements that are able to programmed and executed on an automated basis. After this distillation has occurred then the programmable language can be embedded or otherwise connected to the blockchain in question. A relatively straight forward concept and idea in theory, it does seem that this process will require greater clarification and certainty from a regulatory status. Setting aside the legal specifics for the time being several business and accounting focused considerations do require some additional clarification and standardization. Not meant

as an exhaustive listing, these considerations should be factored into future analyses and conversations on the subject.

- 1) **Enforceability.** Are these contracts going to be equally as enforceable as traditional contracts in both common law jurisdictions as well as under English law courts? Navigating different legal jurisdictions and framework can be complicated enough without having to also contend with the technical complexities of smart contracts. Enforceability is always a consideration for the legitimacy of contacts, and especially with this new mode of contractual frameworks entering the marketplace, this will only continue to accelerate.
- 2) **Legality.** What pieces of information and confirmations will be appropriate to include as legal evidence? This might seem like a minor consideration since initial smart contracts seem to be just digital representations of traditional contracts, but that might evolve over time. Especially since smart contracts do not exist or evolve in a vacuum, and will inevitably be impacted and influenced by machine learning and artificial intelligence, identifying points where manual approvals or reviews can take place might ultimately be where oversight and regulation takes place.
- 3) **Auditability.** For the audit and assurance part of the accounting and financial services landscape it is also important to understand and articulate what pieces of information connected to smart contracts will be counted as audit evidence? For example, if a smart contract has been enacted and having an impact on the business are there specific identifiable parts and attributes of this smart contract that can be leveraged and utilized as appropriate evidence and information?

Smart contracts and stablecoins

Stablecoins, by the very nature of the cryptoasset, have a two-tiered and bifurcated operating structure; the cryptoasset and the underlying asset. This development, building on the already existing questions regarding the appropriate classification of cryptocurrencies, has led to increased demand for crypto-specific regulation and reporting frameworks (Jackson, 2018 & Parashar and Rasiwala, 2019). Specifically, redeeming stablecoins for the underlying asset, incorporating changing values of both the cryptoasset or the underlying, and reporting and disclosing these fluctuations in an appropriate manner, represent core areas in which smart contract functionality and implementation must continue to develop. Put another way, without a functioning smart contract that is adaptable, enforceable, and understandable by all involved counterparties, it seems unlikely that more sophisticated stablecoins will achieve larger market share. Although not a specific accounting issue per se, the fact that smart contracts represent the proverbial glue that enable blockchains to interoperate and work with other technology platforms makes this topic a potential stumbling block to future adoption. Especially since stablecoins require some sort of automated or intelligence applications to function as advertised, resolving these open items is imperative for further cryptoasset development.

4. Cybersecurity considerations

An additional consideration that needs to be taken into account from a regulatory and broader legal conversation are the cybersecurity issues and obstacles that continue to

stall blockchain and cryptoasset adoption.. Cybersecurity is not something that can be analyzed or examined in a vacuum, nor is it something that can be handled in and of itself, but rather should be connected to privacy, financial, and other legal ramifications. Drilling down into how cybersecurity regulations can and should connect to the blockchain and cryptoasset conversation there are several fundamental areas and factors that need to be built into any analysis and development of cyber policies.

Leading off the conversation, the initial question that needs to be addressed and asked is whether or not there is a need for blockchain and crypto specific cybersecurity insurance policies and other projects? While the debate and conversation around cybersecurity has continued to develop and evolve in the light of multiple hacks and breaches, it remains relatively immature and still is very much a work in progress as it relates to how blockchain can possibly impact this fast moving space (Kirkby, 2018). It is still too early to forecast how cybersecurity will evolve over time, but several key areas seem worth of additional analysis as they connect to stablecoins and cryptoassets more broadly.

Perhaps most obviously is the connection between the development and implementation of specific blockchain and cryptoasset related policies to protect investors and organizations utilizing this information. At the current point in time there are no, or extremely limited, investor protections or insurance for investors that are either allocating capital to cryptocurrencies or are dealing with smart contracts or other subcategories of cryptoassets. Cybersecurity, investor protections, and need for cyber policies specifically connected to blockchain and cryptoassets remain a work in progress, necessitating that organizations take proactive steps to address these potential risks (Bruno & Gift, 2019). Most traditional general insurance and/or cybersecurity policies do not mention blockchain or cryptoassets, and this links back to an earlier point discussed above. Regardless of what cryptocurrency or cryptoasset is analyzed, there is no widely accepted definition, classification, or acceptance for where cryptoassets fit into the financial lexicon. As a direct result of this lack of widely accepted standard and definition, investors and organization may find themselves exposed to losses not covered by existing general, or even cyber, policies.

An additional point and perspective that should be raised as a part of the potential cybersecurity and regulatory conversation is the fact that while hacks and breaches have occurred with some regularity in the broader space, most of these hacks and breaches are not usually directly connected to the blockchains themselves. Wallets and other application portals are how investors and cryptoasset holders, individual and institutional alike, access and are able to transact using cryptoassets. Particularly as it connects to stablecoins – developed and marketed as a legitimate alternative to fiat currency options – accessing and using these stablecoins on a daily basis can create several additional considerations. Accessing cryptoassets via potentially unsecure portals via smartphones, tablets will amplify the potential for hacks and breaches, further illustrate challenge nascent cybersecurity regulations pose to the space.

It is interesting to note that as a part of one of the COVID19 stimulus packages, totaling approximately \$2 trillion USD, there was a clause inserted during the process proposing

the idea of a centrally developed and managed cryptocurrency. Following the initial announcement of this concept, there have been financial resources allocated at the federal level to assist with the development of this initiative (Odera, 2020). Since this would be governed and developed by the U.S. government it would be reasonable to expect this potential stablecoin to be supported by the USD. Although the proposed cryptodollar would potentially address many of the current outstanding and open items related to cryptoasset accounting, it also raises several potential security and privacy concerns that need to be addressed alongside technical considerations (Stein Smith, 2020). Specifically, if a central bank digital currency (CBDC) is controlled by the central bank or other governmental entity, will this result in every transaction being approved and reviewed by a central clearinghouse? If this is the case, there remain significant conversations related to privacy that must be had prior to mass adoption or implementation.

Something of specific importance, and an item that is uniquely connected to the idea of a CBDC, is the possibility that purchase history and other associated information could be leverage to deplatform individuals or institutions. This might not seem like a particularly important in advanced democracies, but this potential result is certainly something that needs to be taken into account with regards to other economies and markets. Compounding this situation is the reality that blockchain and cryptoassets must also evolve and coexist with legal and regulatory developments such as GDPR and equivalent laws. Consumer privacy and data rights, including the importance of data portability and the right to be forgotten, seem to present a paradox to wider blockchain adoption, which create tamper resistant and rapidly shared data records. Since every cryptoasset, including stablecoins, are dependent on an underlying blockchain these considerations also have the potential to impeded further mainstream utilization of stablecoins. CBDCs have the potential to resolve and address many of the current issues that exist in the cryptoasset ecosystem, but they also come with new and unique challenges. As of this research the future of various CBDC projects is uncertain, but the increased investment and attention paid to these ideas is worth noting.

5. Reporting and disclosure

The reporting and disclosure connected to cryptoassets also remains an open item and consideration for organizations seeking to utilize stablecoins as a part of business operations. Specifically, the lack of authoritative and consistent guidance and regulatory treatment pertaining to how cryptoasset should be treated, reported, and disclosed continue to serve as substantial barriers to further development. As of this research the reporting processes for bitcoin and other decentralized cryptocurrencies remain inconsistent, with organizations seeking to leverage existing best practices and regulations to the extent that is possible (Franklin, 2019). Depending on the regulatory agency in question, and even the specific cryptoasset in question, the accounting and financial reporting processes and tasks varies from institution to institution. Accounting data, and by extension the marketplace at large, depend on consistent, comparable, and timely information; in order for this information to be produced accounting and reporting standards need to be standardized.

Reporting and disclosing are both core components with how organizations report data to the market, how investors make informed decisions, and numerous efforts are underway to improve aspects of these processes. Specifically, recent developments connected to SOC engagement and certifications indicates that accounting organizations and cryptoasset organizations realize the importance of standardizing these processes (Jackson, 2019). Given this, and despite the efforts and publications of many industry sectors and associations, there remains an amount of ambiguity and uncertainty linked to these facets of the accounting and reporting spaces. Without purporting to represent an all-inclusive listing or comprehensive categorization of these issues, these considerations are some of the open items that appear to need to be addressed moving forward.

- 1) How should the changes in valuation be reported and disclosed? Specifically, if cryptoassets are on the balance sheet that are thinly traded, or have been delisted, should additional disclosures be included in the footnotes of the organization?
 - a. If these cryptoassets are thinly traded, does it make sense to disclose and report the specifics of the valuation methodology?
- 2) Does it make sense for information connected to the management team or blockchain developers to be included in some kind of disclosure?
 - a. Specifically, following the number of ICO frauds in 2017, due diligence on the management teams should be conducted in any case. That said, there is no standard process at this time as to what pieces of this information should be disclosed,
- 3) If the valuation of various cryptoassets changes during the year, should the methodology that is used to value and track the valuation of these cryptoassets be disclosed?
 - a. Cryptoasset valuations have varied wildly during the last several years, and while these gains and losses may be reported on the income statement, does the organization need to disclose the specific methodology techniques? Especially since there may be price differentials for thinly traded or newly issued cryptoassets, increasing the transparency around how said valuations are calculated may be a prudent course of action.

Stepping back from the specifics of disclosure, the reporting of cryptoassets raises several considerations that are still evolving in nature. While the majority of the conversation to date have centered around the reporting and valuation of bitcoin and other traditional decentralized cryptoassets, there is an additional dialogue that needs to be held as it connects to stablecoins. Specific to stablecoins, the issues around how the handle the two-tier accounting for both the cryptoasset and the underlying asset need to be addressed to help continue and accelerate stablecoin utilization. An issue and consideration that remains unaddressed, and perhaps most clearly illustrated by the respond to the Libra Association, is the potential systemic risk that widespread risk stablecoins can cause (Haggerty, 2019). Although this relatively recent entrant to the cryptoasset space is still small in terms of market capitalization when compared to decentralized options such as bitcoin, the value proposition of these cryptoassets can

prove problematic from a reporting perspective. If for example, these assets are stabilized or underpinned by a physical commodity such as gold, the control and reporting of both the digital cryptoasset as well as the underlying physical asset must be treated equivalently.

6. Potential regulatory differentiation

One of the most promising trends that is seeming to emerge and develop as the blockchain and cryptoasset marketplace continues to mature is the potential for different types of cryptoassets to develop and ultimately be treated differently connected to the use of these cryptoassets. For example, if there is an organization that is simply accepting payment (but not paying bills) in various forms of cryptocurrencies and stablecoins it would make sense that these holdings might be treated as investment equivalents. Connecting to these trends and classification it also would seem prudent to treat the gains and losses – realized and unrealized – as reportable directly on the income statement as they occur. Whether this will increase the volatility of earnings depends on 1) the number or scope of cryptocurrencies held by the organization, 2) the underlying volatility of these cryptoassets, and 3) the preparedness of the team; this seems to be most transparency and reasonable methodology for valuing securities.

Individuals or merchants that, instead of simply accepting payments in the form stablecoins or cryptocurrencies, are holding them as an asset for the medium or long term, might be able to argue these assets and holdings should be treated as inventory. If these stablecoins are indeed to be held and used as part of how the business operates there is precedent for utilizing FIFO or LIFO accounting methodologies. The issuance of IRS FAQs during the fourth quarter of 2019 seemed to convey that this might be an appropriate policy position since the IRS did state that several different methodologies would be accepted under different situations. Taking a step back from the numerous differences between GAAP, IFRS, tax treatment and jurisdictional variations, the overarching trend and direction does seem to be picking up steam. Based on the increasing scope and market capitalization of the broader cryptoasset space, regulator seem to be coming to realization that consistent and standardized reporting and disclosure requirements are necessary. Ultimately it is always difficult to forecast just how regulations will evolve over time, but it does seem prudent and reasonable that these differences will eventually manifest themselves in more codified regulations.

The potential of a new Crypto Token Taxonomy Act of 2020, which as of this research remains more of a concept rather than legislation, would codify this differentiation and assist with increasing the transparency around the situation. Some of the specific changes and developments included within this proposed legislation include the breaking up of the cryptoasset space in to the areas of crypto-commodity, crypto-security, and cryptocurrency, with specific regulators assigned depending on this classification (Kim, 2020). The sole regulators of these various cryptoasset categories would be the Commodity Futures Trading Commission (CFTC), the Department of the Treasury, and the Securities and Exchange Commission (SEC), respectively. In addition to increasing the regulatory clarity around cryptoassets, this bill would also provide a

bifurcation of stablecoins into two distinct categories dependent on how these stablecoins are stabilized. In short, the Crypto Token Taxonomy Act of 2020, although not moving from concept to legislation as of this time, seems to present a logical extension of current conversations.

Realizing that as of this research this is still a proposed bill rather than one that is moving forward through Congress, it seems prudent to include some of the core components for this analysis. Cryptoassets truly do appear to represent an entirely asset class or subsets of financial instruments, and it would seem reasonable that these instruments should be classified, reported, and treated differently depending on the specific use case of these assets. Specifically, this proposed Act would differentiate cryptoassets into three buckets which could then be used to propose different oversight and regulations for these various financial instruments. These segments and buckets would be crypto-commodities, crypto-currencies, and cryptoassets that are to be treated as securities.

This reflects the reality on the ground; with over 4,000 cryptoassets in existence as of this research and with over 2,000 actively traded on exchanges on a daily basis it would be illogical to assume the totality of this market should be treated and regulated under one umbrella. In addition to reflecting the business reality and situation on the ground, such segmentation of the cryptoasset space also mirrors more closely how other financial instruments are treated and regulated.

7. Centrally managed crypto reporting

The conversation around the implementation of a centrally managed cryptoasset has accelerated and matured since the ICO bubble of 2017. This can be seen as a result of the billions of dollars, and thousands of transactions, that were subsequently discovered to be questionable or outright fraudulent in nature (Hackett, Roberts & Wieczner, 2019)). One iteration and outgrowth of this increased regulatory focus is the shift in narrative around the applicability of governmentally issued and managed digital cryptoassets. Beginning as part of the proposed response to the economic impact of the COVID-19 outbreak, the concept of a governmentally issued and managed cryptoasset appear to have moved from a fringe topic to a mainstream debate. As of this writing it remains to be seen whether or not this proposal was intended as merely a mile-marker, or a legitimate attempt to push this concept forward. Either way this does raise the question as to how these assets should be reported and what – if any – effect the implementation of such as cryptoasset will have on the broader marketplace at large.

Perhaps most obviously would be the takeaway that if a cryptoasset is backed and regulated by a central institution such as the Federal Reserve or the ECB, that these assets should be treated as equivalents as non-digital versions. In other words, a cryptodollar or cryptoeuro could, in theory, be considered and classified as a government sanctioned stablecoin. This development would also enable the cryptoasset pace to accelerate trends related to interest bearing crypto accounts and other consumer facing applications (Hajiric, 2019). Such an arrangement would seem to lay to rest and resolve some of the reporting and disclosure issues that currently exist in the

space (Lee, 2020). That said, there are several additional disclosures that might seem appropriate and relevant given the underlying nature of a governmentally issued stablecoin regardless of jurisdiction.

- 1) Is the supply of digital currency tied in any way to the underlying money supply? For example, if a nation has \$100 billion of currency units circulating worldwide as a measurement of money supply, is the limit for digital currency units capped at that same \$100 billion? If this is not the case it might result in a discount being applied to either the physical or digital version, distorting what should otherwise be a straight forward conversation.
- 2) Would an individual or institution be able, if so desired, to be redeem or otherwise exchange the virtual currency units for the physical units or vice versa? Seemingly a technical or minor issue, the preference of consumers as well as the functionality of these different versions cannot be ignored. Using different forms and versions of these currencies may be more or less practical given the circumstances, and this is something that should be taken into account for both individual and institutional use cases.
- 3) How will the value of the cryptographically secured digital currencies be stabilized? Specifically, if the digital or crypto version of the US Dollar is pegged on a one-to-one basis to the USD, what specific steps are in place to ensure that this stabilization operates as advertised? Simply stating that these virtual versions are equal to the “regular” USD is not enough; there must be processes in place to help ensure that these digital versions are treated as equal to dollars.

It is also worth noting at this point that any centrally managed or governed cryptoasset or cryptocurrency also raises the potential for potential corruption or unethical activities on the part of the individuals in charge of supervising the clearing and potential approving of these transactions. Under current monetary and fiscal regimes there is clearly a role that is played by the central government or clearinghouse, but the permanent and digital nature of blockchain based transactions will potentially amplify the actions of bad actors. The conversation around the privacy connected to blockchain based transactions is not something new, nor is it a conversation that appears to be petering out or fading away. To the contrary, as increased number of centrally managed and planned cryptoassets debut in the marketplace it will become even more important in order to help foster the innovation and adoption necessary for adoption by larger numbers of individuals or merchants.

Discussions and Conclusions.

Blockchain and cryptoassets continue to develop and mature at an accelerating rate, and so predicting the future with any accuracy is a difficult endeavor. That said, taking into account the array of issues, opportunities, and challenges raised within this piece, there do seem to be several core areas that are most pertinent to the conversation. First, regulatory differentiation between the array of cryptoasset offerings seems both logical and conducive to further ecosystem development. Usage simply will not increase until legal and compliance issues are at least partially addressed and clarified. Second, building on the regulatory clarification, accounting and reporting standards must

become at least more standardized and consistent on a global basis. This will lead to improved reporting, increased transparency, and more usage of cryptoassets by individuals and institutions alike. Lastly, and this is something that requires an interdisciplinary approach, cybersecurity and other insurance policies specific to blockchain or cryptoassets must be brought to market. Given the scale of hacks, breaches, and losses that have occurred just during 2019 and 2020 alone, there are obviously weaknesses in the operations of exchanges and institutions that must be addressed. Frameworks and approaches evolve over time, but the need for accounting practitioners to play an active role in resolving these conversations should be self-evident. Blockchain and stablecoin adoption brings numerous opportunities to the table, but also raises potential challenges, and addressing them requires a logical and broad approach.

Future Directions

Any research paper, but especially a research paper attempting to analyze an emerging technology sector such as blockchain, or more specifically, stablecoins, invariably will come with limitations. Specific to this paper the following limitations should both be acknowledged, and also viewed as opportunities for further research and analysis. First, the fast moving regulatory and oversight landscape means that the treatment, rights, and obligations connected to stablecoins can rapidly change. Second, the development and introduction of a new stablecoin option into the market – perhaps something like Libra 2.0 or something new entirely – could disrupt current analysis and discussion. Lastly, the potential of an exogenous shock, like a global health crisis such as COVID19, has the potential to accelerate or forestall adoption of stablecoins and other blockchain enabled tools. While these are limitations, these limitations also represent potential future areas of research.

Clearly, the blockchain and cryptoasset space continues to develop and evolve in directions that are difficult to predict and forecast, but it does seem clear that the overarching trend is toward broader utilization of a wider array of products. Different cryptoassets are going to have different use cases and applications, and differentiating the various levels and iterations of cryptoassets is an important step forward to facilitate more comprehensive development. As cryptoassets secured or otherwise connected to an underlying asset become more commonplace these new cryptoassets will also generate additional considerations and issues to be addressed. On top of the reporting of cryptoassets, which is in and of itself a comprehensive issue, disclosures and other reporting factors need to be examined. While it is true that the disclosures and reporting will vary from cryptoasset to cryptoasset there is the need for increased disclosure in order to maintain market transparency and price discovery. Accounting practitioners and other financial professionals will need to understand both the accounting issues as well as the cybersecurity and disclosure issues that will become a part of this dialogue moving forward. Remaining proactive and engaged in this educational and training process will be both a challenge and an opportunity for the practitioner community.

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