

Navigating Bankruptcy in Digital Asset Markets: Netting and Collateral Enforceability

CONTENTS

Executive Summary	03
Introduction	06
Legal Nature of Digital Assets	08
Close-out Netting.....	11
Digital Assets as Collateral.....	15
Collateral Documentation	22
Conclusion	24

EXECUTIVE SUMMARY

The collapse in November 2022 of FTX, one of the largest and highest profile crypto exchange platforms, sent shockwaves through financial markets. Coming only months after the failure of TerraUSD¹ and the subsequent bankruptcy of Three Arrows Capital² and Celsius³, the insolvency of FTX and associated companies (including Alameda Research) prompted a cascade of liquidity and solvency concerns across the crypto ecosystem, with crypto lender BlockFi filing for Chapter 11 bankruptcy protection⁴ and several other firms suspending redemptions⁵.

At the time of writing, external observers are speculating on the various events that precipitated runs on these exchanges and assets. Insolvency administrators have started to pick their way through the rubble left in the wake of their failure, and regulators are being urged to provide clarity on the regulatory status of cryptoassets and accelerate implementation of an appropriate regulatory framework.

The startling loss of customer assets reported at FTX has highlighted that while the distributed ledger technology backing cryptocurrencies allows for unprecedented transparency in on-chain holdings, many investors have opted to hold their crypto assets via an exchange or similar intermediary. The oft-repeated aphorism ‘not your keys, not your crypto’ suggests that only a party running an on-chain node and possessing the private key associated with a cryptocurrency holding can reliably be considered the owner.

While cynical, this emergent shibboleth does reflect a fundamental question in financial markets: what defines the owner of an asset? And for a party that is not the direct owner, but holds an asset indirectly via an intermediary, what is the impact of an intermediary’s bankruptcy? These questions are generally settled in other financial markets⁶, which have developed standards to protect indirectly-held customer assets by making them bankruptcy remote from the intermediary. The FTX collapse indicates that such norms are still evolving (or may not yet exist) in the cryptocurrency markets⁷. When these issues are not well understood by market participants or the risks are not properly managed, unanticipated and significant loss of capital can emerge.

The treatment of customer assets is not the only legal risk question that needs to be addressed in the cryptocurrency market. The prospect of insolvency of a major market participant requires firms to consider how they manage counterparty credit risk, which intermediated or custodial structures are most appropriate, and whether the tools employed can be reliably enforced in a bankruptcy scenario. Applying existing bankruptcy rules to a new asset class inevitably raises legal characterization and other questions that must be tackled to provide the necessary certainty.

To address these fundamental legal risk questions, ISDA is producing two papers that will help market participants achieve greater certainty on the application of these foundational principles to the nascent digital asset derivatives market.

¹ www.reuters.com/business/finance/stablecoin-terras-broken-dollar-peg-hits-wider-crypto-markets-2022-05-10/

² www.reuters.com/technology/crypto-broker-voyager-digital-issues-default-notice-three-arrows-capital-2022-06-27/

³ www.reuters.com/technology/crypto-lender-celsius-files-bankruptcy-2022-07-14/

⁴ www.reuters.com/technology/blockfi-makes-first-appearance-bankruptcy-court-2022-11-29/

⁵ www.reuters.com/technology/crypto-broker-genesis-suspend-redemptions-new-loan-originations-tweet-2022-11-16/

⁶ In the US, the Uniform Commercial Code and Securities and Exchange Commission customer protection rule 15c3-3 set out frameworks for securities

⁷ Efforts are underway in certain jurisdictions to develop a more robust regulatory framework for digital assets. For example, the EU’s Markets in Cryptoassets Regulation introduces a number of requirements for issuers of asset-referenced tokens and crypto-asset service providers, including minimum capital and licensing requirements and information disclosures

This first paper will focus on close-out netting and collateral. The second will address issues relating to customer digital assets held with intermediaries, exploring specific questions on how they may be held, how those holdings might be treated in an insolvency scenario, and the relevant documentation and due diligence issues⁸ that would need to be addressed to achieve the intended level of customer asset protection. The second paper will be published in the first quarter of 2023. Together, the two publications will inform market participants of the legal and documentation questions that need to be addressed to establish ownership of digital assets, the posting of those assets as collateral and the enforceability of netting, which will enhance certainty and reduce risk.

Close-out netting and collateral are two of the most effective credit risk protections within ISDA documentation. Close-out netting allows parties to reduce (potentially unquantifiable) exposure to an insolvent counterparty by consolidating all economic exposures relating to their derivatives transactions into a single net sum. Timely and regular provision of collateral allows parties to further reduce credit risk on a day-to-day basis by ensuring they have sufficient assets to apply against any future unexpected losses that may arise due to their counterparties' default. Each of these protections significantly reduces the credit exposure of a party to a failing institution and provides insulation against the contagion effects of broader market failures by limiting potential unsecured exposure to an insolvent entity.

ISDA analysis indicates that netting arrangements relating to digital asset derivatives are likely to be enforceable in certain major jurisdictions (including England and Wales and New York). However, the enforceability of netting in each jurisdiction will depend on the counterparty's local insolvency law, some of which may exclude or omit digital assets from their scope of application. ISDA will therefore begin work in 2023 to update netting opinions in relevant jurisdictions to cover digital assets.

When it comes to collateral, it is likely that most (if not all) developed jurisdictions⁹ will recognize digital assets as property that will be capable of protection under local law, including for posting as collateral. However, the precise nature and extent of any rights associated with that property interest, the strength of legal certainty and certain technical issues, such as the methods by which that property can be posted as enforceable collateral, will vary based on the applicable jurisdiction(s).

ISDA supports and will continue to contribute to efforts by various national and international bodies to achieve greater legal certainty and consistency in this area. This paper focuses primarily on the issues that apply to the provision of collateral by on-chain transfer. Issues relevant for intermediated holdings of digital assets, including posting of collateral to a custodian to hold in a segregated collateral account, will be explored in greater detail in the second publication in this series.

While this paper focuses on the core issues of counterparty credit risk management and the benefits of greater legal certainty on the treatment of digital assets, many other types of risk must also be addressed in documentation for derivatives transactions. The different risks should be viewed together, as asset prices may be volatile during a counterparty default and uncertainty over how a particular risk may affect a transaction will make it more difficult to conduct close out or collateral operations.

⁸ A further benefit of ISDA documentation is the important know-your-customer function it serves by enabling the exchange of (and representations relating to the accuracy of) counterparty information, including information relating to domicile and organizational structure

⁹ From the perspective of derivatives market participants, the most relevant jurisdictions will likely be those that contain international financial centers

ISDA addresses these documentation risks by producing legal definitions and other contract templates for derivatives products. The FTX collapse serves as a reminder of the importance of robust documentation to manage these other risks. While the most obvious impact of FTX's default may be the direct losses experienced by its customers and counterparties, the broader impact on markets cannot be ignored – for example, the effect on parties with transactions due to settle based on the price determined on FTX's exchange. The absence of a published price (with no clear fallbacks) could leave transactions in limbo at precisely the time when it is critical for parties to understand and manage their exposures. Having robust, standardized documentation that addresses these scenarios reduces risks for all market participants.

INTRODUCTION

The events of November 2022 and the high-profile defaults of FTX and other digital asset exchanges¹⁰, market participants¹¹ and platforms¹² have shocked the digital asset ecosystem. Billions of dollars in customer funds have been lost, the viability of many previously acclaimed crypto projects has been fatally undermined, and the total market value of crypto assets has declined by over two-thirds. These events have inevitably led to a heightened awareness of default risk among market participants and increased focus on how these assets are held and protected by exchanges, custodians and other market infrastructure providers and intermediaries.

This paper is the first of two publications by ISDA that will seek to identify the key legal questions arising from the FTX insolvency and their application to the emerging digital asset derivatives market. ISDA's intention is to support derivatives market participants by providing additional clarity on the legal and property characterization issues that exist for this asset class. The papers will be relevant to service and infrastructure providers, particularly those that are actively involved in the transfer and intermediated holding of digital assets and are now seeking to restore confidence in the integrity and robustness of this market. The analysis will also be of interest to international legal standard setters, legislative bodies and regulatory authorities that are developing global and national rules that will ultimately underpin the use of digital assets within the global financial markets.

It is important to note that cryptocurrencies are only one example in a broader class of digital assets. While the crypto-asset markets are experiencing profound issues – due in large part to the absence of risk management, customer protection and operational controls – the underlying technology is being applied to create other forms of digital assets, including those that serve as digitized forms of equity or debt instruments, which have very different economic characteristics and risk profiles. Indeed, within the broader category of digital assets, there are many applications that could fundamentally enhance the operation of global financial markets.

Regardless of the precise nature and purpose of any specific digital asset or platform, it is vital that market participants have a clear understanding of the legal rights and obligations that result from entering into transactions that reference digital assets (or transacting in the digital assets themselves) so they can manage the risks of those transactions. This is true of derivatives markets generally, but the swift succession of insolvencies in the digital assets market in the second half of 2022, the recourse to bankruptcy courts and the broader impact on the accessibility and ongoing protection of customer assets indicates there is a lack of such clarity in the digital assets market.

This paper will explain how the ISDA documentation framework reduces some of the risks resulting from such failures. It does so by providing standardized terms that define the rights of either party to collect or enforce against collateral, and a tried-and-tested set of rights for responding to counterparty defaults that is extensible to new asset classes. In particular, this paper focuses on the application of close-out netting to digital asset derivatives and the enforceability of collateral arrangements that involve transfers or exchanges of digital assets. It also addresses the issues raised by a transfer of a digital asset to the direct control of the recipient that is reflected on the distributed ledger (ie, an on-chain transfer).

¹⁰ www.reuters.com/business/ftx-start-us-bankruptcy-proceedings-ceo-exit-2022-11-11/

¹¹ www.reuters.com/technology/crypto-broker-voyager-digital-issues-default-notice-three-arrows-capital-2022-06-27/

¹² www.reuters.com/business/finance/stablecoin-terra-broken-dollar-peg-hits-wider-crypto-markets-2022-05-10/

This analysis requires consideration of how digital assets are characterized under a particular legal regime. For example, the legal characterization of digital assets by a certain regime could determine how proprietary rights in these assets can be created and transferred, the types of security interest that may be taken and enforced over these assets, or how they will be treated upon an insolvency of a counterparty or financial intermediary.

This paper will begin by exploring the interaction between the novel technological features of digital assets and the legal regime(s) governing their operation that will likely inform this characterization.

LEGAL NATURE OF DIGITAL ASSETS

The Types of Digital Assets Analyzed

This paper focuses on digital assets that utilize distributed ledger technology (DLT) or similar technology¹³. These types of digital assets rely on consensus mechanisms (which may or may not utilize cryptography and are generally based on some level of decentralized decision-making) to manage the current state of the ledger, which, in turn, records the technological control of assets recorded within that ledger.

The issues raised in this paper will be most relevant to digital assets on DLT platforms that have a high degree of decentralization (eg, Bitcoin) and where there is no readily identifiable centralized entity (which might be subject to legal duties or contractual obligations) that maintains ownership records.

While these assets may be held indirectly via an intermediary, the key point is that the entity at the end of the custody chain will have an asset that is not recorded by any centralized entity, but resides solely in the distributed ledger¹⁴. The technological features of these digital assets can therefore create tension between established legal frameworks, which are predicated on the existence of centralized entities to determine ownership. This paper considers the novel technological features of these digital assets and explores how they might influence their legal characterization.

This paper will primarily focus on those types of digital asset that are likely to be utilized within the derivatives market. This includes cryptocurrencies such as Bitcoin and Ether and asset-referencing or tokenized assets that may be traded or used as collateral in future.

How do the Technological Features of Digital Assets Affect their Legal Nature?

Traditional financial assets like bonds and equities are typically defined by a set of legal rights and obligations constituted by statute or contract. They exist exclusively within the legal framework governing their constitution, features and use. These laws and contractual arrangements affect how the asset can be used – for example, by setting out the steps that need to be taken to transfer the asset. They may identify the rights and obligations that exist with respect to the assets and will provide prescribed recourse to parties if these rights and obligations are breached or ignored. The laws that apply to these issues depend, in part, on particular facts – for example, where the entities are incorporated and located and, importantly, where the asset is located.

Digital assets are different. They are predicated on the existence of the decentralized technological protocols and platforms on which they are created and subsist. These protocols and platforms govern certain aspects of their use, including how a digital asset might be transferred from one user to another. There may be no entity that is responsible for meeting, safeguarding or satisfying a holder's interest and rights in the digital asset, unlike a custodian of a bond or a bank in respect of a cash deposit – in fact, many DLT systems were created to avoid the need for such trusted entities.

¹³ As opposed to the digital representation of traditional assets, such as the digital representation of an intermediated security within the systems of a securities depository or other forms of digital asset that do not necessarily utilize distributed ledger technology (DLT) or similar technology (eg, air miles or gaming currencies). It could also include forms of digital or e-money

¹⁴ The relationship between an indirect holder and its intermediary is more analogous to traditional financial asset holding structures and so can be regulated using traditional legal concepts such as contract and property. The legal issues raised for digital assets held under this model will be addressed in the second paper in this series

While these technology protocols and platforms will likely reflect common notions of ownership and transfer of assets that may be recognized by legal systems, they may in some cases operate in ways that are inconsistent with the laws and regulations that apply to traditional financial assets. It is therefore important to note that the creation, transfer or dealing of a proprietary interest as a legal matter will be determined by any applicable legal or regulatory framework, irrespective of whether the technological ability exists to create, transfer or deal on the DLT in a different manner.

Understanding the precise legal nature of digital assets is essential. This will help clarify where and how applicable laws and regulations interact with the technological operation of these platforms and protocols. Where areas of tension exist, it will help determine whether and how the technology might adapt to the applicable legal or regulatory framework and/or how the law might evolve to adapt to these novel technological structures.

How do the Economic Features of Digital Assets Affect their Legal Nature?

In addition to the technological features of the digital asset, it is necessary to consider the economic features to categorize it – specifically, the nature and extent of any legal rights a holder will acquire. It is important to distinguish between the use of terms such as ‘owner’ or ‘holder’, as they may be used in a general sense rather than their specific meaning when used as part of a particular legal regime.

Laws will likely determine who can exercise legal rights in respect of assets by reference to legal concepts such as ownership or possession. While these terms are commonly used in everyday language, they typically have very detailed and technical definitions in a legal context that, in some cases, may not match their ordinary use.

This paper’s use of the word ‘holder’ is not intended to suggest that digital assets are necessarily capable of being ‘possessed’ in a legal sense. Rather, the paper refers to the ‘holder’ of a digital asset somewhat loosely as the person (who may be anonymous or pseudonymous) identified via a digital public address in the relevant ledger as having the power to control the digital asset by virtue of knowing the relevant private key or otherwise. This should be distinguished from the question of who is regarded as owning that asset under the rules of a particular legal system – and indeed whether the asset is capable of being legally owned.

Economic features that will be relevant when categorizing digital assets include the following:

- Some native digital assets (for example, Bitcoin) exist entirely within a particular DLT system and do not otherwise represent a bundle of legal rights. The technological protocol underpinning such a DLT system (eg, the Bitcoin blockchain) is intended to govern how these digital assets can be transferred between different holders – for example, using public key cryptography to create public-private key pairs that can be used to receive and spend Bitcoin.

In the case of digital assets that do not represent other legal rights, any value attributed to those assets will be solely a function of demand to be recognized as the holder of the asset and the supply of that asset. Given the value attributed to these assets and the fact this value can be transferred among parties, it is likely that most, if not all, developed jurisdictions will recognize digital assets as some kind of property interest capable of protection under local law. The precise nature and extent of any rights associated with that property interest, and the strength of legal certainty, will vary based on the applicable jurisdiction(s).

- Other digital assets may represent a bundle of legal rights that exist independently of the digital representation of the asset within the DLT system. For example, a company may issue a bond directly on a DLT. In such cases, a holder of the bond would likely have some form of legal rights (eg, a contractual claim) against the issuer. There may also be some legal requirements or restrictions on the granting and transfer of those legal rights that might not be recognized by the technological protocol underpinning the DLT system.
- Alternatively, a digital asset may be backed by or linked to another asset. In such cases, questions relating to the specific legal rights afforded to a holder of the digital asset will likely focus on whether there is an identifiable underlying asset. If there is, the next question is whether the issuer of the digital asset has any proprietary interest in that underlying asset. If it does, it should be determined whether and to what extent the holders of the digital asset have an indirect property right in that underlying asset. For example, are those rights distinct from the rights of any issuer (or equivalent) of the digital asset and those of any other holder of the underlying asset? Or is the backing simply an economic (ie, not legally enforceable) linkage such as an algorithmic stablecoin or a right of the issuer of the digital asset that is not passed to the holders of the digital asset?

These features are not mutually exclusive and any attempt at categorization will inevitably remain fuzzy. Certain digital assets may exhibit many of these features. The analysis can also be obscured by the terminology used to describe different types of digital asset. For example, a stablecoin might be described as being backed by, linked to or representing some other asset (eg, a fiat currency). From a legal perspective, the actual rights will determine the categorization rather than the terminology used to describe the asset.

The most important feature in characterizing the nature of a holder's interest in digital assets is identifying the technological powers and legal rights that the holder has and how those rights interact with each other. These rights need not be expressed and can be implied by the ongoing process of achieving consensus within the relevant DLT system.

These are some of the features that are likely to be most immediately relevant to this analysis. Understanding these distinctions and the issues associated with them will be crucial if digital assets and DLT are to be effectively and efficiently developed and adapted for use within the derivatives market.

CLOSE-OUT NETTING

What is Close-out Netting?

Close-out netting¹⁵ refers to arrangements that apply upon the early termination of two or more derivatives transactions. It is created by agreement between the parties and is a key feature of the ISDA Master Agreement for derivatives transactions. Upon the default of a party to the agreement (or similar event), all transactions are terminated and future payment and delivery obligations under those transactions are valued and netted in a single currency, resulting in a single net amount payable between the counterparties.

Why is Close-out Netting Important?

Close-out netting gives firms the ability to: (a) terminate all transactions early; (b) value these terminated transactions; and (c) take those values and all amounts previously due and unpaid into account to determine a single net sum owed by one party to the other. It is a self-help remedy with the principal aim of preventing a defaulting party from continuing to enforce derivatives contracts when it is unlikely to be able to perform¹⁶. Netting is used to manage the risk of a counterparty default or some other significant event in which the parties can no longer continue their derivatives relationship.

The enforceability of close-out netting is of particular importance following the insolvency or bankruptcy of a defaulting party. If the terminated transactions are not subject to an effective netting arrangement, the non-defaulting party would be subject to the risk that the insolvent entity (or its insolvency administrator) could continue to demand performance on derivatives transactions that are valuable to it, while failing to perform on those transactions that benefit the non-defaulting party (referred to as cherry-picking risk).

Regulated financial institutions are generally required to set aside regulatory capital for credit exposures relating to financial transactions, including derivatives. Regulatory authorities around the world, including the Financial Stability Board and the Cross-border Bank Resolution Group of the Basel Committee on Banking Supervision, strongly encourage the use of close-out netting provisions alongside the exchange of collateral because of their beneficial effects on the stability of the financial system¹⁷.

Statistics published each year by the Bank for International Settlements consistently show that close-out netting reduces the gross market value of outstanding derivatives transactions across all asset classes by over 80%¹⁸. Accordingly, regulated financial institutions that have enforceable netting arrangements in place are able to set aside regulatory capital for their net exposures, rather than the gross exposures represented by individual transactions¹⁹.

¹⁵ See ISDA Research Note, The Importance of Close-out Netting, www.isda.org/a/USiDE/netting-isda-researchnotes-1-2010.pdf

¹⁶ While netting is a self-help remedy, if the result of the netting is a claim for payment from a defaulting party, enforcement of that claim may require application to a court (like any other debt)

¹⁷ See a consultative paper issued by the Basel Committee on Banking Supervision, www.bis.org/publ/bcbs52.pdf, and the Financial Stability Board's Key Attributes of Effective Resolution Regimes for Financial Institutions, www.fsb.org/work-of-the-fsb/market-and-institutional-resilience/post2008-financial-crisis-reforms/effective-resolution-regimes-and-policies/key-attributes-of-effective-resolution-regimes-for-financial-institutions/

¹⁸ See latest Bank for International Settlements statistics on over-the-counter derivatives, www.bis.org/publ/otc_hy2111.htm

¹⁹ At the time of publication, this topic is under consideration by the Basel Committee on Banking Supervision for crypto-asset derivatives. It is likely that the framework for native crypto assets will be markedly different in terms of their prudential effect compared with traditional financial assets

Achieving Close-out Netting for Derivatives Referencing Digital Assets

As an arrangement between the parties, close-out netting must be part of a legally enforceable contract. Assuming the derivatives transactions themselves are enforceable, the termination and close out of those transactions must also be enforceable to avoid cherry-picking risk.

This is initially a question under the governing law of the contract²⁰. For this limited purpose (assuming neither counterparty is insolvent), the legal characterization of a digital asset appears unlikely to have particular relevance. Close-out netting under the ISDA Master Agreement does not depend on the nature of the underlying asset of the derivatives that have been terminated. Accordingly, the fact the underlying assets of derivatives that have been terminated are digital assets seems unlikely to affect the way close-out netting operates as a contractual matter²¹.

The enforceability of netting will also depend on the counterparty's local insolvency law. Some insolvency laws may impose restrictions on netting, subject to specific exemptions or safe harbors. If these exemptions are based on defined categories of derivatives, they may not expressly include derivatives on digital assets.

The specific consequences of one particular type of derivatives contract being outside the scope of insolvency netting protection would depend on other provisions of the insolvency law. Parties to derivatives transactions should therefore perform any necessary due diligence to determine the position of netting enforceability against a particular counterparty. To facilitate this due diligence, ISDA commissions netting opinions in a number of jurisdictions in respect of the netting provisions of the ISDA Master Agreements.

From an English law perspective, the close-out netting provisions of the ISDA Master Agreement will generally be valid and enforceable against most types of counterparty based in England or Wales in insolvency. An obligation to make a payment under a cash-settled digital asset derivatives transaction or deliver a digital asset under a physically-settled derivatives transaction is likely to be characterized as a delivery or performance obligation under the ISDA Master Agreement²².

Upon a default by a counterparty, the ISDA Master Agreement permits the non-defaulting party to designate an early termination date for all outstanding transactions. The effect of this designation is to cease each of the parties' obligations under those outstanding transactions and provide a mechanism for the calculation and payment of a single net amount²³. This is consistent with the single agreement architecture of the ISDA Master Agreement, which specifies that all confirmations documenting transactions constitute a single agreement entered into between the parties²⁴.

²⁰ The ISDA Master Agreement can be used with English, French, Irish or New York governing law

²¹ As a practical matter, differences between asset classes may affect how the values of the derivatives transactions are determined for purposes of netting. The fact the underlier of a derivatives transaction is a digital asset may therefore be relevant to how the transaction is valued on a close out

²² See Section 2(a) of the ISDA Master Agreement (both 1992 and 2002 versions)

²³ See Section 6(e) of the ISDA Master Agreement (both 1992 and 2002 versions)

²⁴ See Section 1(c) of the ISDA Master Agreement (both 1992 and 2002 versions)

It is sometimes said the close-out netting provisions of the ISDA Master Agreement rely on the ‘flawed asset’ approach. This is because all payment and delivery obligations due under the ISDA Master Agreement are subject to the condition precedent that an event of default (or potential event of default) has not occurred and is not continuing²⁵. There are a number of authorities on the effect under English law of the flawed asset approach and whether it might violate certain requirements under English insolvency law, including the anti-deprivation rule²⁶. Each of these authorities have concluded²⁷ that the close-out mechanics of the ISDA Master Agreement (including the flawed asset approach) do not contravene English insolvency law. These conclusions do not depend on the underlying asset class that is in question. There is therefore no reason to believe that the fact a particular transaction may reference a digital asset would have any impact on the conclusion.

From a US perspective, the US Bankruptcy Code contains numerous safe harbor provisions that, taken together, are designed to permit the exercise of contractual termination and offset rights by eligible non-debtor counterparties to financial transactions, including various types of derivatives, securities and commodities transactions²⁸.

There is ongoing debate in the US over the regulatory status of digital assets. Certain types of digital asset may be considered commodities and others might be considered securities, but the distinction is unlikely to affect the enforceability of close-out netting. It is likely digital assets will fall into at least one of these categories, and derivatives transactions referencing digital assets would be considered either swap agreements (a term that includes swap, option and forward agreements on commodities), forward contracts or securities contracts.

In addition, the economic dependence of the derivatives on the underlying digital asset and the nature of its spot market could be relevant (eg, under criteria that courts have developed in interpreting the term ‘forward agreement’). As such, it seems likely that the most common digital asset derivatives would fall within the scope of the US Bankruptcy Code’s safe harbor protections for close-out netting.

Within EU member states that have implemented the Financial Collateral Directive (FCD), if those EU member states rely on the FCD to support close-out netting, then consideration of the terms of the FCD will be necessary to determine the enforceability of close-out netting arrangements. The European Commission recently consulted on the potential inclusion of some types of digital asset within the scope of financial collateral under the FCD²⁹, which ISDA broadly supports.

²⁵ Section 2(a)(iii) of the ISDA Master Agreement (both 1992 and 2002 versions) specifies that a party may withhold payments or deliveries under a transaction governed by the relevant ISDA Master Agreement if an event of default or potential event of default has occurred and is continuing. It can therefore be said that a party to an ISDA Master Agreement never has more than a conditional entitlement to receive a payment or delivery under the ISDA Master Agreement until the scheduled due date for performance of that obligation, and only then if the conditions precedent in Section 2(a)(iii) are satisfied on that due date. The asset represented by each such conditional entitlement may therefore be said to be flawed

²⁶ The anti-deprivation rule is a long-standing rule of English insolvency law that allows contractual terms purporting to dispose of property on bankruptcy to be considered invalid as a fraud or evasion of bankruptcy law

²⁷ See, for example, *Belmont Park Investments Pty Limited v BNY Corporate Trustee Services Limited* [2011] UKSC 38 and *Lomas v FJB Firth Rixson Inc* [2012] EWCA Civ 419, [2012], All ER (Comm) 107

²⁸ See sections 555, 556, 560 and 362(b) of the Bankruptcy Code of 1986, as amended, 11 U.S.C. §§ 555, 556, 560 and 362(b). The safe harbored rights are limited to termination, liquidation, acceleration or offset, and have been found by one bankruptcy court not to cover the conditionality provision of Section 2(a)(iii) of the ISDA Master Agreement. See *Order Pursuant to Sections 105(a), 362 and 365 of the Bankruptcy Code to Compel Performance of Contract and to Enforce the Automatic Stay, In re Lehman Bros. Holdings, Inc.*, No. 08-13555 (JPM), Docket No. 5209 (Bankr. Ct. S.D.N.Y., September 17, 2009)

²⁹ European Commission, *Targeted consultation on the review of the Directive on financial collateral arrangements*, February 12, 2021, https://ec.europa.eu/info/consultations/finance-2021-financial-collateral-review_en

This analysis is not intended to be exhaustive or definitive on these issues. Rather, it is intended to provide an initial view on how the netting arrangements relating to digital asset derivatives transactions are likely to be viewed under the laws of some key jurisdictions. A detailed analysis would be required to determine whether netting arrangements will be enforceable under all such laws in every jurisdiction.

When Will ISDA Update Existing Netting Opinions to Cover Digital Assets?

The requirements outlined in the previous section are reinforced under many bank regulatory regimes, which permit institutions to calculate derivatives exposures on a net rather than gross basis only if an enforceable netting arrangement is in place. The existence of an enforceable netting arrangement is typically confirmed by the procurement of a written, reasoned netting opinion³⁰ confirming the enforceability of the relevant netting arrangement, such as the netting opinions commissioned by ISDA.

ISDA intends to begin expanding its current library of close-out netting opinions in 2023 to include coverage of digital asset derivatives.

³⁰ For example, see CRE 53.64, Basel III (www.bis.org/basel_framework/chapter/CRE/53.htm?)

DIGITAL ASSETS AS COLLATERAL

What is Collateral?

In the context of derivatives, collateral is an asset provided by one party (collateral provider) to another (collateral taker) to reduce the collateral taker's credit exposure to the collateral provider. Should the collateral provider default, the collateral taker has recourse to the collateral assets up to the value of the amount not paid by the collateral provider. Collateral is therefore typically in the form of assets with a value that can be readily realized by the collateral taker following the default of the collateral provider. In a derivatives relationship, where each party can have credit exposure to the other, both parties may be collateral provider and collateral taker.

Within the derivatives market, a collateral arrangement is typically categorized according to its risk management function as variation margin (also called mark-to-market or current exposure collateral), independent amount or initial margin. For further background on the purpose and operation of each type of arrangement, the distinction between them and the infrastructure supporting the management of these arrangements, see *ISDA Legal Guidelines for Smart Derivatives Contracts – Collateral*³¹.

How Might Digital Assets be Used Within Collateral Management?

There are likely to be significant benefits associated with the use of digital assets as collateral in derivatives transactions. Settlement periods are typically dictated by the infrastructure of the relevant asset class. In the case of traditional non-cash financial collateral, settlement periods are typically two business days for more liquid assets and longer for less liquid assets. The longer the settlement period, the greater the risk to the collateral taker, because it is not protected against the counterparty's credit exposure until the collateral has been received – by which time, markets may have moved and another transfer of collateral may be due.

A longer settlement period may also be detrimental to the collateral provider. If markets have moved in the opposite direction so the collateral receiver is required to return collateral, the collateral provider is potentially subject³² to the counterparty's credit exposure while awaiting the return of collateral.

A collateral provider typically has no direct, unilateral control over collateral once it has been transferred. If the collateral provider wants to exercise control over the collateral directly (for example, exercising a vote), it will need to substitute the collateral unless the collateral receiver has agreed to act in accordance with the collateral provider's instructions. Longer settlement periods mean the collateral provider will need to transfer alternative collateral much earlier than would be the case if the settlement periods were short. The use of digital assets could significantly reduce the time it takes to make substitutions, providing better collateral inventory management and creating optimization efficiencies.

One of the main benefits of using digital assets as collateral is that settlement can occur almost instantaneously (so-called atomic settlement). Shorter settlement periods open the possibility to multiple collateral transfers for intra-day market movements.

³¹ www.isda.org/a/VTkTE/Legal-Guidelines-for-Smart-Derivatives-Contracts-Collateral.pdf

³² Depending on the type of collateral arrangement

While perhaps not directly relevant to collateral for derivatives, it is worth noting that traditional settlement methods enable the transfer of securities on either a delivery-versus-payment basis (in which the securities are transferred in exchange for fiat currency and each leg is settled contemporaneously) or a free-of-payment basis (in which the securities are transferred with no corresponding cash settlement by the recipient). There is currently no straightforward solution in traditional securities markets for the transfer of securities against the transfer of other securities on a simultaneous basis (in other words, delivery versus delivery).

In the securities lending market, where the transfer of loaned securities and collateral are reciprocal, a solution that permits the simultaneous, conditioned exchange of those assets would reduce the operational and credit risk associated with traditional settlement methods. While this paper does not specifically refer to the provision of collateral in the context of repos and securities lending transactions, similar principles are likely to apply.

What is the Intended Legal Effect of Providing Collateral?

Collateral for derivatives is typically provided by transferring assets from the collateral provider to the collateral taker or some other agreed location, such as a third-party custodian or triparty provider. However, the intended legal effect of such a transfer in parties' collateral agreements can differ, with a choice between two principal methods: title transfer and security interest. Depending on the relevant jurisdiction, there may be an interplay between some of the economic rights granted with respect to collateral (eg, the right to reuse collateral or substitute without consent) and the intended legal effect of the collateral transfer.

Under a title transfer arrangement, the collateral provider transfers full ownership in the collateral to the collateral taker. Upon receipt, the collateral becomes the property of the collateral taker, which is generally free to reuse the collateral as it sees fit – for example, selling it or providing it as collateral to another party. The collateral provider no longer has any form of ownership interest in the collateral, even if the collateral taker continues to hold it.

Instead, the collateral provider has a conditional contractual claim against the collateral taker for the return of equivalent collateral if the exposure reduces. In the context of title transfer collateral arrangements, equivalent means fungible, so collateral of the same type and amount must be returned. While the collateral provider no longer owns the asset, there may be a contractual obligation on the collateral taker to pay the collateral provider an amount equal to the income that would be received by a holder of the asset during the life of the collateral arrangement (prior to any default).

Following a default of the collateral provider, the collateral taker enforces the collateral arrangement by valuing the equivalent collateral and netting that value against the size of the exposure. Similarly, following a default of the collateral taker, the collateral provider values the equivalent collateral and nets it against the size of the exposure. The collateral is not returned upon default. If the value of the collateral exceeds the size of the exposure, then the excess constitutes a debt owed by the collateral taker to the collateral provider.

Under a security interest arrangement, the collateral provider retains a proprietary interest in the collateral but gives the collateral taker a secondary proprietary interest. The collateral does not become the property of the collateral taker. As a result, some jurisdictions do not permit a collateral taker under a security interest arrangement to reuse collateral, although other jurisdictions do permit such reuse, subjecting the collateral taker to similar obligations as a title transfer arrangement to return equivalent collateral.

Upon a default of the collateral provider, the collateral taker enforces the security by taking one of a number of steps that are permitted by the relevant legal system – for example, selling the asset and applying the proceeds against the exposure. Collateral that is provided on a security interest basis may either be bilateral, where the collateral is transferred to the collateral taker (although the collateral taker does not acquire full ownership), or it may be transferred to a segregated account at a third-party custodian or triparty provider. The third-party custodian acts on the instruction of the collateral provider or the collateral taker, depending on whether a default has occurred. The triparty provider will manage collateral from the collateral provider via a ‘long box’ with both collateral optimization and collateral movements.

Before the legal effect of providing collateral can be established, parties should consider how the legal owner of a digital asset will be determined.

How is Ownership of a Digital Asset Established?

The interaction (and potential overlap) between the technological and legal features of a digital asset is particularly pronounced when considering how to demonstrate ownership of it. For example, anyone looking at the Bitcoin network will be presented with a comprehensive and unambiguous record of the public key associated with each Bitcoin at any point in time from the inception of the Bitcoin blockchain. Should this record be considered entirely and conclusively determinative of ownership and definitive proof that the individual or entity controlling the relevant private key owns all Bitcoins associated with it³³? What if the Bitcoin was stolen (eg, by illegally acquiring knowledge of the private key) or acquired fraudulently? Would the thief or fraudster become the legal owner? Would a subsequent innocent party acquiring the Bitcoin from a thief become the legal owner?

If the answer to any of these questions is not a clear ‘yes’, then should the ledger be seen as presumptively determinative of ownership of the asset in the absence of any information to the contrary, or merely an evidential record indicating potential ownership? And, critically, which legal regime’s rules will provide the answer to these questions considering it may not always be possible to identify a person due to their anonymity or pseudonymity?

These questions will be critically important to regulated entities seeking to use digital assets within collateral management processes³⁴. Parties will want to be confident they can acquire a digital asset safe in the knowledge that its acquisition cannot be subsequently unwound due to some defect in the legal enforceability of its transfer. The ability to rely on the law to provide certainty in such scenarios is likely to be a significant determining factor when considering which digital assets and DLT platforms to support or participate in.

What Does Ownership Mean in the Context of Digital Assets?

While the previous section is focused on who owns the asset, this section considers what they own and, crucially, what they are permitted to do with it. This requires looking at the precise rights and obligations an owner or holder of a digital asset might have or benefit from.

Determining the question of ownership involves considering both technological features (eg, whether a holder is technically capable of transferring the asset to another party) and the digital asset’s intended or implied legal features (eg, whether the holder is entitled to some legal claim over the asset).

³³ This position is sometimes referred to as ‘code is law’

³⁴ These questions are also likely to be relevant for a party entering into a physically-settled derivatives transaction referencing a digital asset

The relevant technological features will vary across DLT systems. For example, the transfer and settlement of a digital asset between two parties on a DLT system may be affected by certain technological specifications or limitations within the system's protocol, including block size or the transaction validation time and manner. These may differ based on the specific consensus mechanism or system architecture that is being used.

However, the recognition of an individual or entity within that DLT system as a holder of a digital asset via their control of the private key does not necessarily confer upon that person any legal right to assert ownership of that digital asset against someone else, or to exercise any of the legal rights that might be afforded to holders or owners of that digital asset.

In the context of collateral arrangements, these questions could be relevant at the point of determining whether a particular digital asset meets the definition of eligible collateral. For example, if a particular security qualifies as eligible collateral and has been tokenized, does the token identify the holder as legal owner of the security, can the token be delivered to the collateral taker and will delivery be equivalent to transferring the original security?

How Can Security be Taken Over Digital Assets?

Taking collateral by security interest raises a number of legal questions. Many different types of security interest exist. Depending on the relevant jurisdiction, parties may have a choice of the type of security interest they wish to create over a given asset, although the ultimate characterization of that security interest will likely depend on the jurisdiction's rules rather than solely on the parties' choice³⁵.

The granting of a valid security interest over an asset will sometimes depend on one or more perfection steps or satisfying other formality requirements. The following sections focus on how a security interest over digital assets might be perfected.

What Does it Mean to Perfect Security?

Once it has been determined that a type of security interest is appropriate for the relevant digital asset, it must be considered whether there are any additional requirements applicable to that security interest for it to be enforceable against the collateral provider, its insolvency official or a third party seeking to claim an interest in the digital asset. These are sometimes referred to as perfection requirements.

One of the purposes of perfection requirements is to create a legal framework that aims to avoid the kind of double-spending issue that the cryptographic technology underpinning digital assets was designed to prevent. Cryptographic hash functions are used in certain digital assets (eg, Bitcoin) to create a tamper-evident record within the blockchain. This means previous entries in the blockchain cannot be amended without being easily detected, ensuring individual Bitcoins (or fragments of Bitcoins) cannot be spent multiple times.

Similar principles may also apply to perfection requirements relating to security. A security interest must be perfected to avoid scenarios where overlapping interests in a specific asset are granted by a debtor to multiple creditors. Perfection therefore typically involves taking steps that would indicate to creditors that the secured assets are not free, unencumbered assets of the debtor.

³⁵ The selection of a particular type of security interest will also depend on considerations such as the type of asset being provided as collateral, the rights the parties intend to include in the security interest, the costs or risk of establishing an enforceable security interest, and the applicable legal jurisdiction in which that security interest will be granted, maintained and potentially enforced

Even though this may appear to be obvious when collateral is a financial asset transferred by the collateral provider to an account controlled by the collateral taker, the technical details of applicable perfection requirements should be carefully considered to reduce the risk of potential challenge and claw back of the collateral following insolvency of the collateral provider.

How Can Security in Digital Assets be Perfected?

Whether additional perfection requirements apply and limitations exist on the rights of the collateral taker will depend on the type of security interest. If more than one type of security interest is available for a type of asset, a collateral taker will generally prefer to choose the type of security interest that provides the required level of protection but has the fewest (or easiest to satisfy) perfection requirements.

It is not possible to analyze all the potential perfection requirements that may apply to different digital asset classes in each jurisdiction, as these will depend on the relevant jurisdiction and how the digital asset is treated there. For example, the analysis may hinge on whether the digital asset is considered to be a security or another type of intangible asset, and whether ownership interests in the digital asset are a legal or equitable right. In some jurisdictions, it may be necessary to register some or all types of security interest at a central registry.

There are, however, certain types of perfection requirements that exist in many jurisdictions and for which specific considerations arise in the context of digital assets. These are the concepts of control and possession.

How Can Control of a Digital Asset be Demonstrated?

Secured collateral arrangements relating to derivatives will typically involve the transfer of an asset, either bilaterally by a collateral provider to a collateral taker or to a third party. When an asset is transferred by the collateral provider and an appropriate arrangement has been put in place for the collateral taker to have sufficient control, the collateral provider (and, importantly, its insolvency official) will no longer have effective control of the asset and other creditors will be unlikely to assume it is an unencumbered asset of the debtor. Therefore, the ability to control an asset will often result in perfection of a security interest for securities and cash traditionally used as derivatives collateral³⁶.

What is necessary to have sufficient control will depend on the specific rules of the relevant jurisdiction. It can be so-called positive control, where the requirement is only satisfied if the collateral taker is able to take certain actions without the involvement of the collateral provider, or it might be negative control, where the collateral taker only needs to have the ability in certain circumstances to prevent the collateral provider from dealing with the asset. Different rules have developed in specific jurisdictions on how these control requirements might be satisfied for various types of asset.

Achieving and proving control over a digital asset should be relatively easy if the digital asset is transferred to an account or wallet controlled by the collateral taker. Like the transfer of cash or securities, such a transfer may appear indistinguishable from an outright transfer of the digital asset from the purely operational and technological perspective of the DLT itself³⁷.

³⁶ But not from a legal perspective, where the question of whether a transfer of full ownership or the creation of a security interest may depend on other factors, not simply whether the asset is in an account of the collateral taker

³⁷ Depending on the jurisdiction and asset type, there may be different or additional perfection requirements (eg, registration)

There could potentially be new technology solutions that demonstrate the requisite level of control, but it may take time for market participants to become comfortable that this gives the parties the protection they seek and is sufficient to perfect the security interest. While some digital assets are held in a manner that supports anonymity or pseudonymity where technological control is paramount, it seems unlikely that an arrangement relying on a perfected legally enforceable security interest would be used with a truly anonymous counterparty and so this possibility is not considered further here.

If the collateral provider wishes to retain some level of control over the collateral asset³⁸, additional legal certainty on how control is demonstrated in the digital platform may be needed, bearing in mind the distinction between positive and negative control.

For example, it may be possible to use a third-party custodian or triparty provider to achieve control. The third-party custodian or triparty provider would need to have the practical ability to control the digital asset, so it would need to be held in a wallet to which the custodian is the only person with access and has sole ability to use the private key associated with the relevant digital asset (notwithstanding ownership of the wallet may be with the collateral provider or collateral taker). Such an arrangement may reintroduce reliance on an intermediary (ie, the custodian) that has oversight of the digital asset. While this may remove one of the attractive features of DLT, a more controlled version of the distributed paradigm may be more likely in a scaled solution of digital assets in the capital markets.

The parties would also need to consider how the custodian holds the digital asset for their benefit to ensure they have a proprietary claim in the digital asset rather than simply a contractual claim against the custodian. A customer of the custodian will be primarily concerned about whether any digital assets held by the custodian are considered bankruptcy remote. This means that, upon the insolvency of the custodian, the relevant digital assets would be excluded from the insolvent estate of the custodian.

If the digital assets are not bankruptcy remote, a customer may instead rank as an unsecured creditor in respect of the value of those assets following insolvency of the custodian. This analysis likely depends on the jurisdiction in which the digital asset custodian is operating. This issue will be considered in the second paper in this series.

Can Digital Assets be Possessed?

Given the intangible nature of digital assets³⁹, it has been argued in different jurisdictions that it is impossible to take possession of them. Therefore, unless the legal regime is one in which possession of intangibles is recognized or an express inclusion is made with regard to a particular type of digital asset, it is likely that possession will not be possible for digital assets. Even where possession of intangibles is recognized generally or specifically, it seems likely the questions relating to control would be relevant to determine whether a party has possession of the digital asset.

³⁸ As would be the case for initial margin, where the collateral provider typically wishes to, or is required by regulation to, protect against the risk of the collateral taker's default. This is typically achieved by the collateral being transferred to a triparty provider or a third-party custodian and is therefore segregated from the collateral taker's proprietary assets

³⁹ Regardless of whether they are treated as intangibles for specific legal purposes

How can Security Interests in Digital Assets be Enforced?

If a collateral provider defaults and the collateral taker wishes to enforce the security, the methods of enforcement will depend on the applicable legal regime. It is not possible to provide an exhaustive analysis of the different methods of enforcement in every jurisdiction.

The most common method of enforcement would be to dispose of the digital asset in the secondary market – that is, sell the digital asset, collect the proceeds, apply those proceeds against the exposure and then account for the excess to the collateral provider. Collateral takers should consider whether they are likely in practice to be able to dispose of the digital assets in this way. For example, do they have sufficient trading lines in place with counterparties that are active in the digital asset space? Will there be sufficient liquidity at the time of default, particularly if the defaulting collateral provider is a large participant in the digital asset market?

Another common method of enforcing security interest in the financial markets is foreclosure or appropriation, which involves the collateral taker buying the collateral from the collateral provider and accounting for the value of any excess collateral.

Where appropriation or foreclosure is permitted, it will be necessary to consider how the collateral is valued (or, in other words, the price at which the collateral taker buys the collateral from the collateral provider). Consideration should be given to whether there is a sufficiently robust valuation methodology that can be included in the document for the digital asset, which may be more difficult than traditional collateral due to its relative price volatility and potential illiquidity.

What Issues Should be Considered When Providing Digital Assets on a Title Transfer Basis?

Compared to security interest, there are fewer issues associated with title transfer arrangements relating to individual asset types. This is because title transfer arrangements involve an outright transfer of the relevant asset, and the issues are therefore limited to ensuring the parties have satisfied any requirements to transfer ownership and netting and set-off are enforceable.

This would include any potential risk of the arrangement being recharacterized as a security interest, for which the collateral provider's ability to use or otherwise exercise control over the digital asset could be relevant. In the case of digital assets, title transfer is expected to operate in the same way as digital assets that are transferred on a purchase and sale – for example, by identifying the transferee digital wallet together with the need for an associated private key.

COLLATERAL DOCUMENTATION

The preceding section explored issues relating to the creation and enforcement of security interest in digital assets. These principles (as they relate to traditional assets) are reflected in the contractual standards established within ISDA's suite of collateral documentation. To address the issues set out in previous sections and other contractual issues relating to the use of digital assets as collateral, certain adjustments to ISDA's collateral documentation may be required. This section highlights areas where this is likely and suggests ways in which collateral documentation could be amended to accommodate the use of digital assets as collateral.

Would the Use of Digital Assets as Collateral Affect the Transfer Mechanics of ISDA Collateral Documentation?

Transactions in digital assets using DLT are validated by nodes on the network. Parties should consider whether the terms currently used to define the required transfer of collateral would be appropriate for the digital assets they wish to post. For example, they may wish to consider adding a requirement that the transfer has been confirmed through a specific number of state changes on the ledger so the transaction can be considered probabilistically irreversible⁴⁰.

It will also be important to ensure consistency in approach across the market. For example, market participants may have different views about how many confirmations within a particular DLT protocol will be required to evidence settlement. This could lead to issues where one party considers a transfer to have been made while the other party does not, particularly where instantaneous settlement might be expected.

Collateral documentation is usually drafted to accommodate daily valuations and transfers. Typically, collateral is only required if the collateral taker (in the case of a transfer of additional collateral) or collateral provider (in the case of a return of excess collateral) makes a demand, and there are cut-off times for transfers depending on when the demand is made.

Market participants should consider whether it is appropriate to cater for intra-day demands and intra-day transfers given the speed at which digital assets can be transferred (and the potential price volatility of the digital asset itself). It may also be appropriate to accelerate the transfer timings so provisions that require transfers by the close of business or next business day⁴¹ are accelerated. Similarly, interest terms based on daily accrual might need to be reviewed.

Parties should also consider whether there is any potential mismatch between the point at which ownership transfers under the collateral documentation, the point at which ownership transfers under the terms of the protocol governing the platform on which the digital asset exists and/or any relevant governing law. This may involve a detailed conflicts-of-law analysis between the law governing the transfer agreement (that is, the collateral documentation) and the law governing the arrangements by which the digital asset is constituted (which may not be easy to ascertain) and/or transferred⁴².

⁴⁰ Probabilistic finality refers to the likelihood of a transaction being reversed once it has been recorded to the blockchain. This likelihood decreases with each new block that is added to the chain. This is because nodes are incentivized to follow the longest chain and it becomes more technologically challenging at that point to remove transactions that are deeply embedded within that chain

⁴¹ In addition, some digital assets may be traded in 24/7 markets. In this case, parties may wish to consider amending collateral documentation to operate on all days, not just business days

⁴² For further information on the application of private international law rules to DLT systems in the context of derivatives trading, see www.isda.org/2020/01/13/private-international-law-aspects-of-smart-derivatives-contracts-utilizing-distributed-ledger-technology/

In addition, parties should consider the potential impact of including digital assets as eligible collateral within their existing collateral documentation or whether digital assets would need to be separately addressed. For example, certain types of digital assets may not benefit from protections that are only available for financial collateral or may not comply with mandatory regulatory margining requirements. These types of digital assets may therefore need to be separated from collateral arrangements that need to comply with these requirements. Other types of digital assets might constitute financial collateral or comply with mandatory regulatory margining requirements, so it may be possible to include them within the same collateral documentation.

How Should Technological Events Such as Forks, Airdrops and Staking Rewards be Reflected in ISDA's Collateral Documentation?

The ISDA whitepaper *Contractual Standards for Digital Asset Derivatives*⁴³ explored how digital asset derivatives transactions might be affected by the occurrence of certain technological events (for example, a fork⁴⁴). As part of work to develop standard-form documentation, ISDA has identified those events that will require some form of contractual risk allocation mechanism and is developing standard terms designed to achieve this in line with market expectations.

Similar considerations may apply to collateral documentation. For example, if a hard fork occurs with respect to a digital asset delivered under a title transfer arrangement, parties may wish to consider dealing with this using the concept of equivalent collateral, identifying a method of determining which outcome(s) of the fork should be treated as equivalent.

Similarly, in the case of security interest, parties should consider clarifying how this will affect the specified eligible collateral and whether any existing collateral asset would need to be replaced with its successor asset. Collateral providers may be able to address these types of risk by substituting digital asset collateral that is about to undergo a fork until the status of the asset following the fork is clear.

An airdrop⁴⁵ might be viewed as income from the other digital asset, although this analysis may depend on whether the airdrop is received by all holders of the existing asset. If an amount based on income on collateral assets is generally payable by the collateral taker to the collateral provider (referred to as distributions in documentation), the question is whether an airdrop is considered a distribution for this purpose. Parties should determine whether they wish to address airdrops relating to the assets they post as collateral. If so, they should agree what the correct allocation of the benefit of an airdrop should be and whether the documentation should be amended to ensure the desired outcome. In the case of security interest, parties should consider whether the airdrop forms part of the collateral or should be paid outside the collateral structure.

If the digital asset follows a proof-of-stake protocol, direct participants may be eligible to earn rewards for validation if they elect to stake (that is, lock up) a certain amount of value. Parties should consider whether the collateral arrangement should contain any standards on staking of posted collateral and, if so, how any associated rewards should be allocated.

⁴³ See www.isda.org/a/QVtgE/Contractual-Standards-for-Digital-Asset-Derivatives.pdf

⁴⁴ A hard fork is a permanent divergence in the DLT ledger, where the ledger splits into two separate ledgers and a new digital asset is created

⁴⁵ An airdrop is a transfer of a digital asset, usually for free, to some or all holders of an existing digital asset

CONCLUSION

As the digital asset derivatives market continues to evolve, it is clear work is needed to establish appropriate operational and risk management frameworks that will underpin the safe and efficient expansion of this market. Designing these systems and processes will require consideration of the applicable legal and contractual frameworks that will mandate or govern their operation.

This paper has considered a number of legal issues relating to netting of derivatives transactions referencing digital assets and the use of digital assets as collateral. Due to the large number of relevant jurisdictions and legal regimes, and the even larger number of digital asset types, it is impossible to define a comprehensive or one-size-fits-all approach to many of these issues.

However, this paper does identify a number of common features and challenges that will need to be considered and resolved by market participants seeking to implement digital-asset-based collateral management solutions. Many of these issues are not necessarily unique to digital assets. For example, questions concerning the precise legal characterization of other forms of intangible asset have historically been raised and have generally been resolved. There is no reason to suggest similar positive outcomes cannot be achieved for digital assets.

It is clear, though, that the use of digital assets raises some novel issues that will need to be resolved.

From a technological perspective, it is vital the developers of new digital assets (and associated platforms and protocols) that are designed to be used within a collateral management solution acknowledge certain requirements and restrictions associated with the creation of legally robust and effective security interest, and they are not designed in a way that is incompatible with applicable laws. To achieve this, collaboration among technology developers, legal practitioners and other key stakeholders will be necessary.

From a legal and property characterization perspective, it is recommended that international standard setters and national legislators continue their efforts to create harmonized model laws that recognize digital assets as a form of property capable of being the subject of security interest. Work by bodies such as the sponsors of the Uniform Commercial Code in the US⁴⁶ and the Law Commission⁴⁷ in the UK (which ISDA has contributed to) is very welcome.

Finally, the development of contractual standards will be crucial. Work is underway by ISDA and its members to develop contractual standards for digital asset derivatives. These contractual standards may ultimately expand to cover use of digital assets within ISDA's suite of collateral documentation. Whether using fiat currency to collateralize digital asset trades, digital assets to collateralize trades in traditional assets or digital assets to collateralize digital asset trades, certain adjustments will inevitably be necessary to accommodate some of the unique and novel features of these assets.

ISDA hopes this paper will support market participants as they advance toward the development of a safe, efficient and digital collateral management ecosystem within the derivatives market.

⁴⁶ See UCC, 2022 Amendments, www.uniformlaws.org/committees/community-home?CommunityKey=1457c422-ddb7-40b0-8c76-39a1991651ac

⁴⁷ See Law Commission, Digital Assets: Consultation Paper, <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jxou24uy7q/uploads/2022/07/Digital-Assets-Consultation-Paper-Law-Commission-1.pdf>

ABOUT ISDA

Since 1985, ISDA has worked to make the global derivatives markets safer and more efficient. Today, ISDA has over 1,000 member institutions from 79 countries. These members comprise a broad range of derivatives market participants, including corporations, investment managers, government and supranational entities, insurance companies, energy and commodities firms, and international and regional banks. In

addition to market participants, members also include key components of the derivatives market infrastructure, such as exchanges, intermediaries, clearing houses and repositories, as well as law firms, accounting firms and other service providers. Information about ISDA and its activities is available on the Association's website: www.isda.org. Follow us on [Twitter](#), [LinkedIn](#), [Facebook](#) and [YouTube](#).