

Blockchain & Cryptocurrency Regulation



Fifth Edition

Contributing Editor: Josias N. Dewey



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A custodial analysis of staking

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Introduction

The recent "crypto winter" has brought renewed focus to the question of what happens to a customer's digital assets¹ held at a custodian when that custodian becomes subject to insolvency proceedings. Do the digital assets form part of the custodian's bankruptcy estate such that they are available to satisfy the claims of the custodian's general creditors, or are the digital assets outside of the estate and reserved for the customers for whom they are held? Market participants often describe this as a question of whether the digital assets are "bankruptcy remote".²

Conscious of their customers' concerns, a number of U.S. digital asset custodians have taken steps to make clear that digital assets they custody are not their property and are not available to their general creditors. One mechanism that custodians have used to achieve this clarification in the United States is to "opt in" to Article 8 of the Uniform Commercial Code (the "UCC").³ Article 8 of the UCC is the state law regime that governs certain commercial law aspects of the relationship between a securities custodian and its customer.⁴ Article 8's flexible design allows non-securities custodians and their customers to opt into Article 8 so long as it "makes sense" to apply the duties set forth in Part 5 of Article 8 (the "**Part 5 duties**") to the relationship between the customer and the custodian.⁵ Given the fungibility and transferability of many digital assets, and the possibility of distributions (such as airdrops), or voting or other rights, it will in many cases make sense to apply these duties to the relationship between a digital asset custodian and its customer.

Article 8 contains clear, express language that custodied assets subject to its provisions are not property of the custodian and are not subject to the claims of creditors, except in certain limited circumstances.⁶ Accordingly, by opting into Article 8, many custodians have largely assuaged their customers' concerns and silenced some of the loudest (if uninformed) naysayers.

As the digital asset landscape evolves, however, custodians are increasingly offering ancillary services that may complicate the Article 8 analysis. One such service is "staking", whereby a custodian facilitates its customer's participation in the consensus mechanism of a blockchain in order to earn "rewards", usually in the form of additional digital assets. Staking is very much unique to the digital asset space and has a number of features that are somewhat or entirely atypical in traditional securities or other custodial relationships. For example: the staked assets may need to be "locked up" for a period of time; the custodian may engage a third party to perform some of the staking services; and the staked assets may be "slashed" (*i.e.*, reduced) in certain circumstances. These differences give rise to a question as to whether a staked digital asset can be subject to a valid Article 8 "opt-in" and benefit from its provisions clarifying that custodied assets are not property of the custodian.

In this chapter, we analyse whether a custodian's provision of staking services could cause the custodial arrangement to fall outside of Article 8. As described in greater detail below, we argue that staking should not generally cause a digital asset custodial relationship to deviate from the contours of Article 8. Rather, the additional complications of staking are such that it particularly "makes sense" to apply the Part 5 duties to the relationship between the custodian and the customer. Accordingly, a digital asset custodian that provides staking services and its customer should be able to opt into Article 8 and benefit from its clear language stating that custodied digital assets are not property of the custodian and are reserved for customers.

What is staking?

The technology of staking is complex and varied. For the purposes of this chapter, we have described a common staking mechanism, along with a few common variations.

Consensus mechanisms

In traditional securities holding frameworks, a single operator, such as a transfer agent, maintains a register (essentially a ledger) on which it records the owner of an asset and any transfers of ownership. The recorded owner may also hold for others and may therefore maintain its own ledger. For example, the Depository Trust Company is a central securities depository that is the "registered owner" of the vast majority of corporate debt and equity securities traded in the United States and maintains books and records identifying the institutions on behalf of whom it holds the securities. Those institutions may in turn maintain books and records identifying the customers for whom they hold the securities. The responsibility for maintaining each such ledger in traditional holding frameworks remains with a single entity; responsibility is not shared.

Distributed ledgers, by contrast, are shared databases of transactions that are maintained and updated across multiple networks, institutions, or individuals. Since there is no single operator, distributed ledgers, such as blockchain, require a "consensus mechanism" to give effect to the transfer of an asset on the ledger (which transfer is often referred to in the industry as a "transaction").⁷

The most well-known consensus mechanism is the proof-of-work ("**PoW**") mechanism that is used on the Bitcoin blockchain.⁸ Under a PoW consensus mechanism, certain participants (known as "miners") expend a substantial amount of computational power to solve a cryptographic puzzle.⁹ The first miner to solve the puzzle can add a "block" to the blockchain, which includes various transfers of digital assets recorded on the network.¹⁰ The winner will then broadcast both the block and the solution to the cryptographic puzzle to all other miners for validation and acceptance.¹¹ The winning miner receives a reward for correctly solving the puzzle and adding the block, typically in the form of the digital asset native¹² to the blockchain.¹³

Proof-of-stake

An alternative consensus mechanism is proof-of-stake ("**PoS**").¹⁴ Unlike PoW, PoS does not require participants to solve a mathematical problem in order to participate in the mechanism. Rather, PoS blockchain networks permit certain participants, referred to as "**Validators**", to stake digital assets (usually the digital asset native to the blockchain) in order to have the opportunity to participate in the verification and creation of blocks of data on the blockchain.¹⁵ Staking effectively amounts to the Validator committing digital assets to the network to secure the Validator's obligation to correctly and promptly validate and add blocks to the blockchain.¹⁶

If a Validator is chosen to validate a block and performs satisfactorily, the Validator will receive "staking rewards" in the form of additional amounts of the native digital assets. However, if a Validator is delayed or incorrectly, fraudulently or maliciously validates blocks, the blockhain network may "slash" (or deduct) staked digital assets to penalise the Validator.¹⁷ If a Validator wishes to remove its staked digital assets from the validation process, referred to as "unbonding",¹⁸ there is typically a waiting period to ensure that no slashing should be applied to the digital assets before they are freely transferrable.¹⁹

Digital asset custodians are increasingly offering their customers the opportunity to stake their custodied digital assets and thereby earn rewards. A custodian that offers this service will typically pool multiple customers' (and potentially the custodian's proprietary) digital assets and stake those assets on the network. The custodian will then either perform the validation function itself or hire a third-party Validator to perform those functions, in each case on behalf of the customers.²⁰

Analysis

As discussed above, staking is generally an add-on to a basic digital asset custody service. Accordingly, the starting place for analysing how staking can affect the treatment of digital assets in a custodian's bankruptcy is the treatment of the basic custodial relationship in a bankruptcy situation. The next step is to assess whether the staking service affects that treatment.

Overview of bankruptcy analysis

In this chapter, we focus our analysis on the insolvency law most likely to be applicable to many U.S. digital asset custodians: the Bankruptcy Code.²¹ When market participants refer to "bankruptcy remoteness", what they generally mean is that the assets do not form part of the custodian's bankruptcy estate so as to make them available to the custodian's general creditors. Under Section 541 of the Bankruptcy Code, the bankruptcy estate of a debtor includes essentially "all legal or equitable interests of the debtor in property as of the commencement of the case".²² However, "neither § 541(a), nor any other Bankruptcy Code provision, answers the threshold questions of whether a debtor has an interest in a particular item of property and, if so, what the nature of that interest is".²³ "That gap is filled most of the time by nonbankruptcy law."²⁴ Therefore, for a court to determine whether custodied digital assets form part of the custodian's bankruptcy estate, it would need to determine whether the custodian has any legal or equitable interest in the customer's digital assets under otherwise applicable non-insolvency law.

There are generally no U.S. federal or state laws that specifically address whether digital assets held by a custodian are property of the estate. As such, a court would generally have to turn first to the parties' agreement to see how they describe the custodial arrangement. As noted above, digital asset custodians and their customers are increasingly including language in their customer agreements to "opt in" to Article 8 of the UCC. Such an "opt-in" is frequently referred to as a "**Financial Asset Election**". It consists of an agreement between the custodian and the customer that the customer's digital assets are "financial assets", and is effective if the custodian is a "securities intermediary" and the financial assets are credited to a "securities account".²⁵

If this opt-in is effective, then UCC Section 8-503 would be applicable, which provides:

To the extent necessary for a securities intermediary to satisfy all security entitlements with respect to a particular financial asset, all interests in that financial asset held by the securities intermediary are held by the securities intermediary for the entitlement holders,^[26] are not property of the securities intermediary, and are not subject to claims of creditors of the securities intermediary, except as otherwise provided in Section 8-511 [of the UCC]. (Emphasis added.)

Thus, non-insolvency law, such as the UCC, has provided the Bankruptcy Code with an answer to whether the custodied assets are property of the custodian for purposes of an insolvency proceeding. Except to the extent UCC Section 8-511 dictates a different result, digital assets subject to an effective Financial Asset Election would not be property of the custodian's estate or be subject to the claims of its creditors, to the extent such digital assets are needed to satisfy all "security entitlements" (*i.e.*, all claims of customers) with respect to such digital assets.

Section 8-511 of the UCC addresses who has priority to financial assets as between a customer with a security entitlement to a digital asset and a party with a security interest in that asset. Therefore, this exception is only relevant to situations in which a third party has a security interest in the financial assets underlying customer security entitlements.²⁷ In many cases, custody agreements between customers and digital asset custodians will prohibit the custodian from granting such a security interest, except as authorised by the customer.²⁸

Given that Article 8 directly addresses the treatment of financial assets subject to its provisions, a court's first task in assessing whether digital assets subject to a Financial Asset Election are property of the custodian's bankruptcy estate should be to address whether the Financial Asset Election is effective.

Overview of Article 8

As noted above, Article 8 is a set of commercial law rules that apply to the relationship between a securities intermediary and its customer. Article 8 was intentionally designed to provide flexibility. As the official comments to the UCC note, the definitions in Section 8-102 of the UCC "are worded in general terms, because they must be sufficiently comprehensive and flexible to cover the wide variety of investment products that now exist or may develop".²⁹ Accordingly, although Article 8 was designed with securities foremost in mind, including to address the indirect holding system for book-entry securities, its definitions are worded broadly enough to cover other types of assets. Most notably, the definition of "financial asset" includes not only securities, but also:

(iii) any property that is held by a securities intermediary for another person in a securities account if the securities intermediary has expressly agreed with the other person that the property is to be treated as a financial asset under [Article 8].³⁰

The UCC defines a "securities intermediary" as "... [a] person, including a bank or broker, that in the ordinary course of its business maintains securities accounts for others and is acting in that capacity".³¹ Neither this definition nor the associated commentary requires that a securities intermediary be a regulated entity, such as a bank or broker-dealer.³² Rather, a securities intermediary includes any person that maintains "securities accounts" for others in the ordinary course of its business and is acting in that capacity.

Similarly, a "securities account" need not be limited to an account for holding securities. A "securities account" is defined in UCC Section 8-501(a) as "an account to which a **financial asset** is or may be credited in accordance with an agreement under which the person maintaining the account undertakes to treat the person for whom the account is maintained as entitled to exercise the rights that comprise the financial asset" (emphasis added). Notably, the UCC does not define the word "account" for this purpose. However, the term is generally understood to refer to a securities intermediary's books and records, ledgering system, or other mechanism for recording a customer's interest in financial assets.

The official UCC comments make clear that the self-referential (and ultimately circular) nature of the foregoing definitions is designed to make the inquiry as to whether a given relationship falls within the scope of Article 8 a functional one:

[Q]uestions of the scope of the indirect holding system rules cannot be framed as 'Is such-and-such a financial asset under Article 8?' Rather, one must analyze whether the relationship between an institution and a person on whose behalf the institution holds an asset falls within the scope of the term securities account as defined in Section 8-501. That question turns in large measure on whether it makes sense to apply the Part 5 rules to the relationship.³³

Thus, in order to determine whether a Financial Asset Election is effective, a court must examine whether the relationship between the digital asset custodian and a customer in relation to digital assets is such that it "makes sense" to apply the rules set forth in Part 5 of Article 8. In particular, a court would consider whether the Part 5 duties would have meaning and relevance in the context of holding digital assets for customers.³⁴ Recently promulgated amendments to the UCC, which are expected to be enacted on a state-by-state basis in the near future (the "**2002 UCC Amendments**"), confirm that "[m]any of the duties set forth in Part 5 will often be relevant to a digital asset".³⁵

Application of the Part 5 duties to the basic custodial relationship

Part 5 articulates five principal duties of a securities intermediary to its customers, known as "entitlement holders". In many instances, it does "make sense" to apply these Part 5 duties to the relationship between a digital asset custodian and a customer.

The first duty

The first duty of Part 5 is set forth in UCC Section 8-504(a):

A securities intermediary shall promptly obtain and thereafter maintain a financial asset in a quantity corresponding to the aggregate of all security entitlements it has established in favor of its entitlement holders with respect to that financial asset. The securities intermediary may maintain those financial assets directly or through one or more other securities intermediaries.

Given that the principal role of a digital asset custodian is to hold digital assets for customers, it should generally make sense to apply this duty to the relationship between a digital asset custodian and its customer. This may particularly be the case when the digital asset custodian holds the digital assets on an omnibus basis, meaning that it commingles the digital assets of multiple clients (and potentially its own digital assets) and when the digital assets at issue are fungible. In such circumstances, there are no particular assets identifiable for each customer, so it makes sense to require that the custodian maintain sufficient digital assets to satisfy all client entitlements.

The second duty

The second duty is contained in UCC Section 8-505(a), which provides that a "securities intermediary shall take action to obtain a payment or distribution made by the issuer of a financial asset". A number of digital assets may give rise to airdrops or forks or otherwise involve some kind of distribution or payment, and the custodian could have a responsibility to collect and hold such distributions on behalf of digital asset customers. Accordingly, it would often "makes sense" to apply this duty to the relationship between a digital asset custodian and its customer.

The 2002 UCC Amendments clarify that "[i]t is not necessary for all of the Part 5 rules to be relevant to a particular financial asset for the relevant property to qualify as a 'financial

asset' credited to a securities account". Accordingly, the fact that this duty may not be relevant for a given digital asset should not in any way impair a Financial Asset Election in respect of that asset.

The third duty

The third duty is contained in UCC Section 8-506, which provides that "[a] securities intermediary shall exercise rights with respect to a financial asset if directed to do so by an entitlement holder". Simply owning a digital asset can provide the owner with the right to participate in certain activities on the blockchain, like the consensus mechanism or other governance actions.³⁶ Given these rights that may arise in relation to digital assets, it will often "make sense" to apply this duty to the relationship between a digital asset custodian and a customer.

The fourth duty

The fourth duty is set forth in UCC Section 8-507(a):

A securities intermediary shall comply with an entitlement order if the entitlement order is originated by the appropriate person, the securities intermediary has had reasonable opportunity to assure itself that the entitlement order is genuine and authorized, and the securities intermediary has had reasonable opportunity to comply with the entitlement order.

The UCC defines an "entitlement order" as a "notification communicated to a securities intermediary directing transfer or redemption of a financial asset to which the entitlement holder has a security entitlement".³⁷ It will often very much "make sense" to apply this duty to the relationship between a digital asset custodian and a customer, considering that customers will very likely wish to use the services of the digital asset custodian to transfer their custodied digital assets, whether in connection with a sale, loan, pledge, or other transaction.

The fifth duty

Lastly, UCC Section 8-508(a) provides that a securities intermediary shall act on customer directions to "change a security entitlement into another available form of holding for which the entitlement holder is eligible" or transfer the relevant financial asset to a securities account of the entitlement holder at another securities intermediary. As with the other duties, it "makes sense" to apply this duty to the relationship between the digital asset custodian and a customer, since a customer may wish to withdraw its custodied digital assets from the custodial arrangement and hold digital assets directly or transfer such digital assets to another custodian.

Therefore, it will in many cases "make sense" to apply the Part 5 duties to the relationship between a digital asset custodian and its customer. Accordingly, a court should conclude that a Financial Asset Election applicable to basic custodial services is effective.

Application of the Part 5 duties to staking

If a custodian offers staking services as an additional service, a court would need to consider whether that staking service is such that it no longer "makes sense" to apply the Part 5 duties. For the reasons discussed below, we believe a court should reach the opposite conclusion, namely that it particularly "makes sense" to apply the Part 5 duties to a custodial relationship involving staking.

The first duty

The fact that a customer's digital assets are subject to a staking arrangement does not mean it makes less sense to require the custodian to maintain sufficient digital assets to satisfy all

customer security entitlements. The core of the custodian's role will still be to return all custodied assets to customers.

Depending on the particular staking arrangement, the custodian may need to maintain the digital assets in a different manner than when the digital assets are not staked. For example, the custodian may need to hold the digital assets in a different blockchain address, such as the blockchain address of the Validator. Although these alternative structures may complicate the analysis of whether the custodian is satisfying its duty to maintain the digital assets, they do not render such duty less meaningful. Indeed, Section 8-504 contemplates there may be different ways for a securities intermediary to satisfy the duty set forth therein, *e.g.*, by holding the financial assets directly or through a subcustodian.

The second duty

Given that the principal purpose of staking is to earn rewards, it very much makes sense to require a digital asset custodian providing staking services to collect and remit those distributions/payments to customers. Indeed, it will often particularly "make sense" to apply this duty in the context of staking, where rewards are common and expected, than in a number of other digital asset custodial relationships, where distributions will likely be infrequent and unexpected.

The third duty

It will similarly particularly "make sense" to apply the third duty to a custodial relationship involving staking than to a basic custody arrangement. For digital assets on PoS blockchain networks, the right to stake is a core right attendant to the digital asset. Accordingly, by facilitating the ability of its customers to stake digital assets, a custodian is exercising its entitlement holders' rights in the manner directed by the customer.

The fourth duty

It also makes sense to apply the duty to follow entitlement orders to a custody arrangement involving staking. The fact that the digital asset may be temporarily "locked up" in connection with the staking relationship does not mean that it makes less sense to apply this duty to the relationship. At some point the digital asset will be eligible for "unbonding" and it will make sense to require the custodian to comply with the customer's orders as to the transfer or redemption of the digital asset. Indeed, "unbonding", by which a digital asset.

The fifth duty

As with the other duties, it makes sense to apply the duty to change a security entitlement to another *available* form of holding to a custody arrangement involving staking. Similar to the fourth duty, the "lock up" required by many staking arrangements may make it impossible for the custodian to comply with a customer request to change the holding arrangement for some period of time. The customers participating in the programme will have agreed to this arrangement; however, and at some point, the digital asset will be eligible for unbonding, at which point another form of holding would become available and it would make sense for the custodian to comply with the customer's instructions to the same extent as in a basic custody arrangement.

What about slashing?

For the reasons discussed above, it will often very much make sense to apply the Part 5 duties to digital asset custodial relationships involving staking. Indeed, some of the duties have added relevance in the context of staking.

However, there is a unique aspect of staking that is dissimilar from most securities custodial relationships: slashing.

In some ways, slashing is aligned with the concept embedded in UCC Section 8-511, which provides that customer claims to financial assets may be subordinate to those of certain secured parties. When a digital asset custodian stakes a digital asset, it effectively commits that digital asset to support the obligation to validate promptly and accurately. UCC Section 8-511 does not provide that even a clear pledge threatens the integrity of a Financial Asset Election.³⁸ Just the opposite: it specifically contemplates that there can be assets subject to a Financial Asset Election and pledged to a third party. Accordingly, slashing is by no means at odds with an effective Financial Asset Election.

Conclusion

For the reasons discussed above, staking should not undermine an otherwise valid Financial Asset Election. Rather, a digital asset custodian that offers staking as an additional service should in many cases be able to agree with its customer to treat the custodied digital assets as financial assets credited to a securities account at a securities intermediary. Such a valid election should lead a bankruptcy or other court to conclude that the digital assets are not property of the digital asset custodian and thus not a part of its estate. Rather, with limited exceptions, such digital assets should be reserved for customers to the extent necessary to satisfy customer claims.

However, we note that the analysis of these issues can depend on a wide variety of facts, including the actions and locations of the customer or custodian, the technical specifications of staking on a certain blockchain and any attendant agreements between the various parties. Small differences in facts can affect a legal analysis and conclusion. We note this chapter is not legal advice and that any analysis would need to be completed on a case-by-case basis.

* * *

Endnotes

- 1. For the purposes of this chapter, the term "digital assets" refers to assets that are not securities and that, in their native form, are recorded and transferred on a distributed ledger.
- 2. This is a bit of a misnomer since the bankruptcy court or other insolvency official would still be required to process these assets under a jurisdiction's bankruptcy regime. For example, the return of custodied digital assets to customers, even when those digital assets do *not* form part of the custodian's bankruptcy estate, would still be processed as part of the insolvency proceedings. In addition, access to the digital assets may be subject to the automatic stay and other provisions of the U.S. Bankruptcy Code (the "Bankruptcy Code") if, for example, the custodian has a security interest in them.
- 3. The UCC is a uniform act promulgated by the American Law Institute and the Uniform Law Commission that sets forth rules to be adopted as legislation by the states governing various types of commercial transactions. All 50 states and the District of Columbia have ratified some version of the UCC; however, some states have amended provisions of the uniform act. For the purposes of this chapter, we analyse the UCC as approved by the American Law Institute and the Uniform Law Commission.
- 4. The definition of "security" under the UCC does not affect whether an asset is a security for regulatory purposes (such as for purposes of the U.S. Securities Act of 1933 or the U.S. Securities Exchange Act of 1934) and this chapter does not address such regulatory analysis.
- 5. See Part III.C.

- 6. See Part III.A.
- 7. What is a Blockchain Consensus Algorithm?, BINANCE ACAD. (updated Mar. 16, 2022), https://academy.binance.com/en/articles/what-is-a-blockchain-consensus-algorithm ("A consensus algorithm is a mechanism that allows users or machines to coordinate in a distributed setting. It needs to ensure that all agents in the system can agree on a single source of truth, even if some agents fail."); *Digital Assets and the Future of Finance: Understanding the Challenges and Benefits of Financial Innovation in the United States, Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. 158 (2021) ("Distributed ledgers are simultaneously hosted across multiple systems with no central authority. Recording a transaction requires consensus in accordance with the distributed ledger's technology: for example, via a computationally intensive cryptographic problem (*i.e.*, 'proof of work') or validation by the community of digital asset owners (*i.e.*, 'proof of stake').").
- 8. See SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM 3 (2008), available at https://bitcoin.org/bitcoin.pdf (hereinafter "**BITCOIN WHITE PAPER**").
- 9. *Id.* ("The proof-of-work involves scanning for a value that when hashed, such as with SHA-256, the hash begins with a number of zero bits. The average work required is exponential in the number of zero bits required and can be verified by executing a single hash.").
- 10. *Id.* ("The steps to run the network are as follows: 1) New transactions are broadcast to all nodes. 2) Each node collects new transactions into a block. 3) Each node works on finding a difficult proof-of-work for its block. 4) When a node finds a proof-of-work, it broadcasts the block to all nodes. 5) Nodes accept the block only if all transactions in it are valid and not already spent. 6) Nodes express their acceptance of the block by working on creating the next block in the chain, using the hash of the accepted block as the previous hash.").
- 11. Id.
- 12. *Native Cryptocurrency*, PC MAG., https://www.pcmag.com/encyclopedia/term/nativecryptocurrency (last visited Aug. 3, 2022) ("[Native cryptocurrency means a] blockchain's inherent digital currency. . . . Ethereum's native crypto is ether (ETH); however, along with NFTs and numerous other smart contract-based tokens, Ethereum hosts countless non-native cryptocurrencies. Every independent blockchain has its own native crypto that is used to reward miners and validators for adding blocks to the blockchain and as a payment medium for transaction fees.").
- 13. BITCOIN WHITE PAPER, *supra* note 9, at 4 ("By convention, the first transaction in a block is a special transaction that starts a new coin owned by the creator of the block. This adds an incentive for nodes to support the network, and provides a way to initially distribute coins into circulation, since there is no central authority to issue them. The steady addition of a constant of amount of new coins is analogous to gold miners expending resources to add gold to circulation. In our case, it is CPU time and electricity that is expended. The incentive can also be funded with transaction fees.").
- 14. This chapter describes a simplified PoS consensus mechanism. However, there are many variations on proof-of-stake mechanisms. *See* Cryptopedia Staff, *Varieties of Proof of Stake: LPoS, PPoS, HPoS, PoV*, GEMINI (updated Jan. 20, 2022).
- See, e.g., Validator FAQ, POLYGON (updated Aug. 3, 2022), https://docs.polygon. technology/docs/maintain/validate/faq/validator-faq; Proof-of-Stake (POS), ETHEREUM, https://ethereum.org/en/developers/docs/consensus-mechanisms/pos/ (last visited Aug. 3, 2022); Cardano Nodes, CARDANO, https://docs.cardano.org/new-to-cardano/cardanonodes (last visited Aug. 3, 2022).

- See, e.g., Validator FAQ, POLYGON (updated Aug. 3, 2022), https://docs.polygon. technology/docs/maintain/validate/faq/validator-faq; Proof-of-Stake (POS), ETHEREUM, https://ethereum.org/en/developers/docs/consensus-mechanisms/pos/ (last visited Aug. 3, 2022); How to Delegate and Earn Rewards?, CARDANO, https://docs.cardano.org/ new-to-cardano/how-to-delegate (last visited Aug. 3, 2022).
- 17. See, e.g., FAQ, POLYGON (updated Aug. 3, 2022), https://docs.polygon.technology/docs/ home/faq/ ("If [challenge to a Validator's work is successful], there is a huge economic disincentive/financial punishment to the colluding parties as their stakes are slashed. Also, the public challenger is rewarded with slashed stakes of the fraudulent sidechain actors."); Proof-of-Stake (POS), ETHEREUM, https://ethereum.org/en/developers/docs/ consensus-mechanisms/pos/ (last visited Aug. 3, 2022) ("To prevent [personal gain or sabotage], validators miss out on ether rewards if they fail to participate when called upon, and their existing stake can be destroyed if they behave dishonestly."). But c.f. Why Cardano Does Not Need Slashing, CARDANIANS (Apr. 3, 2021), https://cardanians. io/en/why-cardano-does-not-need-slashing-152.
- 18. See, e.g., The Merge, ETHEREUM (updated July 25, 2022), https://ethereum.org/ en/upgrades/merge/#after-the-merge (describing the concept of "unbonding" as "withdrawing").
- 19. Cardano FAQs, COINBASE (updated Feb. 2022), https://docs.cloud.coinbase.com/ delegation-guides/docs/cardano-faqs (describing how staked ADA in Cardano cannot be "unbonded" until the end of an epoch period); Stake Account Structure, SOLANA, https://docs.solana.com/staking/stake-accounts (last visited Aug. 3, 2022) (describing how there is a "cooldown" period before delegations of staked SOL can be "deactivated"). Sometimes custodians that offer staking services may allow unbonding immediately by paying a fee. Digital Assets and the Future of Finance: Understanding the Challenges and Benefits of Financial Innovation in the United States, Hearing Before the H. Comm. on Fin. Servs., 117th Cong. 103 (2021).
- 20. A custodian or Validator could alternatively borrow the digital assets and stake them for its own benefit. We do not address such alternative arrangement in this chapter.
- 21. The Bankruptcy Code applies to most corporations and LLCs, but would not generally apply to entities with a bank or similar charter.
- 22. 11 U.S.C. § 541.
- 23. In re FCX, Inc., 853 F.2d 1149, 1153 (4th Cir. 1988).
- 24. Collier on Bankruptcy, ¶ 541.03; *see also Butner v. United States*, 440 U.S. 48, 55 (1979) ("Unless some federal interest requires a different result, there is no reason why [the debtor's interests in personal property] should be analyzed differently simply because an interested party is involved in a bankruptcy proceeding.").
- 25. UCC §§ 8-102(a)(9) (defining "financial asset" as, in part, "any property that is held by a securities intermediary for another person in a securities account if the securities intermediary has expressly agreed with the other person that the property is to be treated as a financial asset under this Article [8]"); 8-501(a) ("Securities account" means an account to which a financial asset is or may be credited in accordance with an agreement under which the person maintaining the account undertakes to treat the person for whom the account is maintained as entitled to exercise the rights that comprise the financial asset."); and 8-102(a)(14) (defining a "securities intermediary" as, in part, "a person, including a bank or broker, that in the ordinary course of its business maintains securities accounts for others and is acting in that capacity").

- 26. UCC § 8-102(a)(7) (""Entitlement holder' means a person identified in the records of a securities intermediary as the person having a security entitlement against the securities intermediary. If a person acquires a security entitlement by virtue of Section 8-501(b) (2) or (3), that person is the entitlement holder.").
- 27. The agreement between a digital asset custodian and a customer may provide that the customer grants a security interest in the digital assets to the digital asset custodian. This is not the type of security interest that is relevant for UCC Section 8-511, as it is granted by the entitlement holder to the securities intermediary, not by the securities intermediary to another party.
- 28. A security interest can also arise automatically if credit is extended in connection with the acquisition of a financial asset. *See* UCC § 9-206. However, such a situation is highly unlikely in the custodial relationship discussed here.
- 29. UCC § 8-103 cmt. 1.
- 30. UCC § 8-102(a)(9). The definition of "financial asset" also includes "an obligation of a person or a share, participation, or other interest in a person or in property or an enterprise of a person, which is, or is of a type, dealt in or traded on financial markets, or which is recognized in any area in which it is issued or dealt in as a medium for investment." UCC § 8-102(a)(9)(ii). While some digital assets might fall within the parameters of this definition, it may very well be that certain digital assets would not fit within these parameters. In addition, recently promulgated amendments to the UCC, which are expected to be enacted on a state-by-state basis in the near future, provide that "controllable electronic records" (which include certain digital assets) may be financial assets only if the parties agree pursuant to Section 8-102(a)(9)(iii). *See* UCC § 8-103(h) cmt. 8 (Unif. L. Comm'n 2022).
- 31. UCC § 8-102(a)(14).
- 32. See also UCC § 8-102 cmt. 14 (Unif. L. Comm'n 2022) ("For example, a cryptocurrency exchange that holds only cryptocurrencies (and not securities) for customers might be a securities intermediary.").
- 33. UCC § 8-102 cmt. 9; see also UCC § 8-102 cmt. 17 ("In a sense, then, the entirety of Part 5 is the definition of security entitlement."); 72 N.Y. Jur. 2d Investment Securities § 25 (2013); UCC, REVISED ART. 8, INVESTMENT SECURITIES, OFFICIAL TEXT WITH COMMENTS 19 (Am. L. Inst. & Nat'l Conf. of Comm'rs on Unif. State L. 1994) ("[A] person has a security entitlement governed by Part 5 only if the relationship in question falls within the definition of 'securities account.""); 9A HAWKLAND UCC SERIES § 9-102:12 [Rev] (2013) ("[A] secured party who acquired a security interest in a security entitlement would thereby acquire as part of the security interest all of the rights specified in Part 5 of Article 8.").
- 34. See UCC §§ 8-504 (Duty of Securities Intermediary to Maintain Financial Asset); 8-505 (Duty of Securities Intermediary with respect to Payments and Distributions); 8-506 (Duty of Securities Intermediary to Exercise Rights as directed by Entitlement Holder), 8-507 (Duty of Securities Intermediary to comply with Entitlement Order); and 8-508 (Duty of Securities Intermediary to change Entitlement Holder's Position to Other Form of Security Holding).
- 35. UCC § 8-102 cmt. 9 (Unif. L. Comm'n 2022).
- 36. See, e.g., The Amendment (and Voting) Process, GITLAB, https://tezos.gitlab.io/active/ voting.html (last visited Aug. 3, 2022) (describing the voting process for on-chain changes to the economic protocol of Tezos); Understanding Dash Governance, DASH,

https://docs.dash.org/en/stable/governance/understanding.html (last visited Aug. 3, 2022) (laying out the governance and voting process for Dash digital asset).

- 37. UCC § 8-102(a)(8).
- 38. In addition, UCC Section 8-504(b) specifically provides that an entitlement holder may "otherwise agree[]" to allow its securities intermediary to pledge its financial assets.

* * *

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