

Blockchain-based Negotiable Instruments: with Particular Reference to Bills of Lading and Investment Securities

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1 Meaning of “Blockchain-based Negotiable Instruments”

This paper will consider what the choice-of-law rules should be for issues pertaining to blockchain-based negotiable instruments.

The concept of “negotiable instruments” refers to instruments representing relative rights (namely, entitlements that may be asserted against a certain person) such as rights to claim the performance of obligations and corporate membership rights. Which instruments fall under this description depends on the applicable law. It covers, for example, “Wertpapier,” defined by the Swiss Code of Obligations (Obligationenrecht) as any document with which a right is linked in such a way that it can neither be asserted nor transferred to others without the document (Article 965). The concept of “negotiable instruments” as used in this paper is broader than the same expression as ordinarily understood in English law. Under the latter, “negotiable instruments” ordinarily mean the instruments which allow a *bona fide* transferee to acquire a better title than what the transferor had. In this narrow sense, bills of lading are not negotiable instruments under English law¹ although they are under German and Japanese law.² As this paper will examine negotiable instruments in the wider sense,³ it will cover bills of lading and investment securities within its scope of analysis.

1 The Law Commission, *Digital assets: electronic trade documents: A consultation paper (Consultation Paper 254)* (Crown 2021), para. 3.15.

2 § 932 of the German Civil Code (Bürgerliches Gesetzbuch (BGB)); Articles 520–5, 520–15 and Article 520–20 of the Japanese Civil Code.

3 It is also acknowledged in England that there are broad and narrow senses of negotiability: Law Commission (n 1), para. 3.9.

The concept of “blockchain-based negotiable instruments” refers to tokens issued on a blockchain which are meant to serve as negotiable instruments. This paper’s main focus is on blockchain-based bills of lading and blockchain-based investment securities (called crypto-securities). This paper will not make any particular mention of promissory notes, bills of exchange or cheques since no notable trend for issuing them on blockchains is observed as of the time of writing (August 2021), but they are not excluded from its scope. Intrinsic or “native” tokens (namely, tokens of self-anchored value) such as cryptocurrencies are outside the scope of this paper⁴ since they do not represent any relative rights.

2 Social Significance and Legal Hurdle

Negotiable instruments are useful to facilitate the assignment (either an outright transfer or an assignment by way of pledging) of the rights they represent. The assignment of such rights would, without negotiable instruments, have to follow cumbersome steps, including steps necessary for securing the *erga omnes* effect (the effect against the whole world). Negotiable instruments could, through their possession and transfer, simplify the steps for assignment.

Negotiable instruments in paper form are a clumsy tool as they are costly and time-consuming to handle and there is a risk of loss. The clumsiness could be reduced by digitization. There are, however, technological and legal hurdles.

The technological hurdle is how to guarantee the uniqueness of a negotiable instrument in an electronic environment. A negotiable instrument must be a unique object to ensure that only one person is entitled to assert the right represented by it. But the nature of an electronic record is such that it can be easily copied to create indistinguishable duplicates. Prior to the arrival of the blockchain technology or distributed ledger technology (DLT), the uniqueness of an electronic form of negotiable instrument could only be guaranteed by means of a central register. In this architecture, the trusted intermediary who maintains the register decides which records are true. Now, with the blockchain technology, it has become possible for the first time in history to reach a consensus on a single true version of electronic records on a decentralised platform. A token on a blockchain is subject to the exclusive control of the holder of the corresponding private key, with the result that no two persons could claim to hold the same token. In this architecture, the uniqueness of an

4 Except to the extent they shed a useful light on analysis. See section 5.6.3 *infra*.

electronic record can be guaranteed without the need to put trust in intermediaries. Like paper-based negotiable instruments, blockchain-based negotiable instruments may be traded on a peer-to-peer basis. Tokens serving the role of negotiable instruments will lay the foundation for a vital aspect of the token economy.

The remaining hurdle to the digitization of negotiable instruments is the absence of a good legal infrastructure. Unless the applicable law recognises blockchain-based tokens as negotiable instruments, they cannot be handled with confidence. Even if the parties to a transfer of such tokens have agreed to treat them as being equivalent to paper-based negotiable instruments, it would not be sufficient since third parties are not bound by their agreement. Whether the token economy will fly or not, therefore, depends much on the development of a good legal infrastructure. The latter concerns both substantive rules and choice-of-law rules. In what follows, this paper will first examine the emerging substantive rules for blockchain-based negotiable instruments. The remainder of this paper will then turn to the choice-of-law question.

3 Emerging Substantive Rules

3.1 *Bills of Lading*

Bills of lading are negotiable instruments, issued by the carrier of goods, which represent the right to claim the delivery of goods from the carrier. They are the backbone of seaborne trade in goods.

Since paper-based bills of lading are slow to be transmitted, they often do not arrive at the port of destination until after the goods have arrived. Consequently, the goods often have to be delivered without the presentation of bills of lading, which in turn can cause a myriad of problems. As such difficulties could be avoided with the use of electronic bills of lading, there were a number of attempts to digitise in the past decades. Prior to the invention of the blockchain technology, a central register was the only conceivable architecture for digitization. Due to its design as a closed system, a central-register bill of lading does not work seamlessly unless all the parties who have stakes become registered members. This membership requirement has been a major obstacle to the spread of electronic bills of lading. A breakthrough may, however, be in the offing with the advent of blockchain, which has made it possible to issue electronic bills of lading on a platform for the use of which no permission is required.⁵

5 See Koji Takahashi, "Electronic bill of lading on blockchain" (*Blockchain, Cryptocurrency, Crypto-asset and the Law*, 18 October 2015) <<https://bit.ly/3t3Hudo>>.

A paper-based bill of lading would be a mere piece of paper in the absence of recognition that it is legally a bill of lading.⁶ Likewise, an electronic bill of lading would be a mere electronic record unless there is recognition that it is legally equivalent to a paper bill of lading. An agreement between the carrier and one of the cargo interests to treat an electronic record as equivalent to a paper bill of lading would not be sufficient since it is not binding on third parties.⁷ The past projects of electronic bills of lading have been beset by the lack of legal recognition, which has resulted in the reluctance of banks to accept electronic bills of lading as adequate collateral. In most legal systems, the lack of legislative support continues to this day. Under Japanese law, for example, the provision on the creation of bills of lading (Article 758(1) of the Commercial Code) is silent on the possibility of using electronic records in contrast to the provision on seawaybills⁸ (Article 770(3) of the same Code) which expressly acknowledges the possibility of providing an electronic record. Recently, however, some States have reformed their laws to give recognition to electronic bills of lading, including those based on blockchains. Some of such legal systems, as well as a few international instruments, will be examined below.

3.1.1 German Law

German law recognises a qualified electronic record as a bill of lading. When its Commercial Code (*Handelsgesetzbuch*) was reformed in 2013, provisions on electronic bills of lading were introduced in § 516. Paragraph 2 of that section provides that an electronic record which fulfils the same functions as a bill of lading is equivalent to a bill of lading, provided that it is ensured that the authenticity and integrity of the record are maintained. Paragraph 3 empowers the Ministry of Justice and Consumer Protection to issue an ordinance (*Rechtsverordnung*) to regulate the details of an electronic bill of lading. The Ministerial ordinance has not yet been issued but that should not stop the courts from recognising an electronic record as a bill of lading if it

6 This does not mean that a statutory definition of “bill of lading” is necessary for legal recognition. Under English law, to determine whether a document is a bill of lading, a court will consider certain characteristics of the document, including whether it is titled “bill of lading” and whether it contains information ordinarily found in a bill of lading. Law Commission (n 1), para. 3.32.

7 For a view to the same effect, see *id.*, para. 2.37.

8 Seawaybills, unlike bills of lading, are non-negotiable instruments since they do not represent the right to claim the delivery of goods but are mere evidence of the receipt of goods and the terms of a carriage contract.

meets the requirements as provided in paragraph 2.⁹ As these requirements are expressed in technology agnostic language, blockchain-based tokens are not excluded from the qualified electronic records.¹⁰ The electronic records recognised as bills of lading are subject to the provisions applicable to paper-based bills of lading (§§ 929 *et seq.* of the Civil Code (Bürgerliches Gesetzbuch)), including the provision permitting *bona fide* acquisition (§ 932).¹¹

3.1.2 Swiss Law

Swiss law allows a bill of lading to be issued in the form of a blockchain-based token. Switzerland enacted in 2020 the Federal Act on the Adaptation of Federal Law to Developments in Distributed Ledger Technology (Bundesgesetz zur Anpassung des Bundesrechts an Entwicklungen der Technik verteilter elektronischer Register) (hereinafter “DLT Act”). The Act made a number of changes to the Code of Obligations with effect from 1 February 2021.

Of particular relevance to bills of lading is Article 1153a. It was inserted by the DLT Act and provides that documents of title to goods such as bills of lading may be issued in the form of “ledger-based securities”¹² (*Registerwertrechte, droits-valeurs inscrits*) (paragraph 1). The “ledger-based securities” are defined by Article 973d, also inserted by the DLT Act, as a right which, in accordance with an agreement between the parties, is registered in a “securities ledger” (*Wertrechtregister, registre de droits-valeurs*) and may be exercised and transferred to others only via the securities ledger (paragraph 1). The technical requirements of a securities ledger are laid down (paragraph 2), including the requirements that its integrity is protected against unauthorised changes and that creditors must be able to view the ledger entries without the involvement of a third party. Although the Code of Obligation does not use the words “blockchain” or “distributed ledger,” the official explanatory note for the DLT Act cites some examples of public and private blockchains which the Federal

9 David Saive, *Das elektronische Konnossement: Umsetzung der Anforderungen aus § 516 Abs. 2 HGB durch funktionsäquivalente Blockchain-Token* (Mohr Siebeck 2020), 64. For a contrary view, see Clyde & Co. LLP, *The legal status of electronic bills of lading: A report for the ICC Banking Commission* (ICC Banking 2018), 37 [Tim Schommer].

10 On one interpretation, the use of a private blockchain is required to fulfil these requirements: Saive (n 9), 190.

11 *Id.*, 79.

12 This is the expression used in the unofficial English translation of the Code published at the official publication site for Swiss federal law (https://www.fedlex.admin.ch/eli/cc/27/317_321_377/en; Federal Act on the Amendment of the Swiss Civil Code (Part Five: The Code of Obligations) of 30 March 1911, SR 220) (“Swiss Code of Obligations”).

Council believes would satisfy the requirement of integrity.¹³ There is, therefore, no doubt that blockchain-based negotiable instruments may qualify as “ledger-based securities.”

The DLT Act also inserted in the Code of Obligations other provisions on various aspects of ledger-based securities, which would also be applicable to blockchain-based bills of lading. These include provisions permitting *bona fide* acquisition (Article 973e(3)) and provisions detailing the procedure for a cancellation declaration (Kraftloserklärung) (Article 973h). The latter would be useful where the private key for a blockchain-based bill of lading is lost.

The official explanatory note for the DLT Act states that Article 1153a is in line with the Rotterdam Rules (United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea), which Switzerland has signed but not yet ratified.¹⁴ We will now turn to this Convention.

3.1.3 Rotterdam Rules

The Rotterdam Rules is an international convention adopted by the United Nations in 2008. Though not yet in force at the time of writing (August 2021), it embraces “negotiable electronic transport record” (Articles 8, 50 and 51(4)), a concept which covers electronic bills of lading. One of the underlying principles of the Rotterdam Rules is technological neutrality: the law should neither require nor assume the adoption of a particular technology. It follows that blockchain-based tokens are not excluded *a priori* from the concept of “negotiable electronic transport record.” But only an electronic record that fulfils the prescribed requirements (laid down in Article 9) may qualify as such. These requirements are a manifestation of the principle of functional equivalence, a principle which treats only an electronic record fulfilling the essential functions of a paper document as legally equivalent to the latter. If these requirements are satisfied,¹⁵ blockchain-based bills of lading are admissible under the Rotterdam Rules.

13 Botschaft zum Bundesgesetz zur Anpassung des Bundesrechts an Entwicklungen der Technik verteilter elektronischer Register (27 November 2019), BB1 2020 233, (The Act entered into force 1 February 2021, RO 2021 33), 281.

14 *Id.*, 291.

15 For an analysis, see Koji Takahashi, “Blockchain Technology and Electronic Bills of Lading” (2016) 22 *Journal of International Maritime Law* 202, 207.

3.1.4 UNCITRAL Model Law on Electronic Transferable Records and the National Legislation Based on It

In 2017, the UNCITRAL (United Nations Commission on International Trade Law) adopted the Model Law on Electronic Transferable Records. It lays down the attributes which an electronic record needs to possess for it to be treated as legally equivalent to the corresponding “transferable document.” Defined as a document that entitles the holder to claim the performance of the obligation indicated in it and to transfer the right to performance through its transfer (Article 2), a “transferable document” is broadly synonymous with a paper-based “negotiable instrument” in the sense used in this paper. Bills of lading are covered by this concept whereas investment securities, though logically covered, are excluded (Article 1(3)). The Model Law adheres to the principles of technology neutrality and functional equivalence. Accordingly, the attributes of an electronic record that it lays down reflects the function of a “transferable document.” If these are satisfied,¹⁶ a blockchain-based bill of lading is deemed to be legally equivalent to a paper-based bill of lading.

In describing some of these attributes, the Model Law requires the use of a reliable method to establish the exclusive control of an electronic record that replicates a transferable document (Articles 10(1)(b)(i)(ii) and 11(1)(a)). It lists a number of circumstances by reference to which the reliability of a method must be evaluated, including the existence of a declaration by an accreditation body (Article 12(a)(vi)), but it leaves the details of accreditation to national laws. To date, the Model Law has served as the basis for legislation in a few jurisdictions including Bahrain¹⁷ and Singapore.¹⁸ The legislation of these two jurisdictions gives some details as to the procedure, requisites, and effects of accreditation.¹⁹

16 For an analysis, see 高橋宏司「有価証券の電子化のためのブロックチェーン利用の法的課題—船荷証券と UNCITRAL モデル法に着目して—」 in (2020) 5 国際取引法学会年報 24, 29–36 (Koji Takahashi, “Legal Issues Arising from the Use of Blockchains for the Dematerialization of Negotiable Instruments: with a Particular Focus on Bills of Lading and the UNCITRAL Model Law” (2020) 5 Yearbook of the Japanese Association of International Business Law 24, 29–36).

17 The Law No. 55 of 2018 with Respect to Electronic Transferable Records (with effect from 1 February 2019) (“Bahraini legislation”). For an analysis, see Koji Takahashi, “Bahraini legislation based on the UNCITRAL MLETR” (*Blockchain, Cryptocurrency, Crypto-assets and the Law*, 21 March 2019) <<https://bit.ly/3mUpy3w>>.

18 Part 11A of the Singaporean Electronic Transaction Act (with effect from 19 March 2021) (“Singapore legislation”).

19 Articles 15 to 17 of the Bahraini legislation (n 17); Articles 16O(2) and 16Q of the Singapore legislation (n 18).

3.1.5 English Law

At the time of writing (August 2021), English law does not give recognition to electronic bills of lading. The Law Commission has issued a consultation paper²⁰ which contains a draft bill to make provision for trade documents in electronic form to have the same effect as trade documents in paper form. The consultation paper makes a number of remarks on blockchains and DLT. If the proposed bill is enacted, qualified electronic bills of lading would have the same effect as paper bills of lading. It would entail that a person who becomes the lawful holder of an electronic bill of lading has transferred to and vested in him all rights of suit under the contract of carriage (§ 2(1) of the Carriage of Goods by Sea Act 1992). In contrast to German and Swiss law, examined in sections 3.1.1 and 3.1.2 above, a *bona fide* transferee of an electronic bill of lading would not acquire a better title than the transferor since paper bills of lading are generally subject to the *nemo dat* principle²¹ under English law.²²

3.2 Investment Securities

Investment securities include company shares and bonds. When issued on a blockchain, they are referred to by various names such as crypto-securities, tokenised securities, and security tokens. This paper will call them crypto-securities unless the context compels other appellations.²³

Investors today typically hold dematerialised securities through a chain of custodians. They are exposed to custody risks and may, depending on the applicable law,²⁴ be prevented from exercising the rights which investors directly holding shares would be entitled to.²⁵ Since the blockchain technology

20 Law Commission (n 1), Appendix 4.

21 The principle of *nemo dat quod non habet* (no one can give what he has not got) means that a person who does not own property cannot confer it on another: Jonathan Law and Elizabeth A. Martin (eds), *Dictionary of Law* (6th edn, Oxford: OUP 2006), 354.

22 *Id.*, para. 3.15. See also the text accompanying (n 1).

23 For example, in discussing Swiss law, the phrase “ledger-based securities” will be used as it is an English expression adopted in the unofficial translation published at the official site (See (n 12)), though that phrase covers, not just crypto-securities (as will be noted in section 3.2.2 *infra*) but also other blockchain-based negotiable instruments such as bills of lading (as noted in section 3.1.2 *supra*).

24 *Cf.* In some legal systems, intermediaries standing between an investor and the issuer have no legal significance and the investor is treated as the direct owner of the securities: Roy Goode et al., *Explanatory Report of the Hague Securities Convention* (2nd edn, HCCH 2017), para. Int-22.

25 See, for example, the English case of *Eckert v Wickeder* [2013] EWHC 68, in which the investors holding shares through a chain of intermediaries were denied entitlement to a remedy – either to have a shareholder resolution cancelled or to receive an order for the purchase of their shares - which would be available to investors directly holding shares.

allows for disintermediation, crypto-securities, like paper-based securities, may be held directly by the investors. A direct link between the issuer and the investors enables the issuer to identify the investors in real time and enables the investors to exercise their rights straightforwardly. In addition, if combined with smart contract functionality, a complex capital structure of a company can be administered automatically, without human intervention.²⁶

Crypto-securities would be nothing but an electronic record unless they are recognised as legally equivalent to paper-based securities. An agreement between the issuer and an investor to treat them as equivalent to paper-based securities would not be sufficient since it is not binding on third parties. In some legal systems, crypto-securities may be recognised as legally equivalent to paper-based securities based on the interpretation of the existing law. In Austria, for example, the practice of issuing crypto-securities is premised on the understanding that they are securities under the existing law.²⁷ But legal uncertainty is likely to set in where there is no specific legislation. Thus in Japan, opinion is divided over the conditions under which a negotiable instrument may be created. A leading opinion considers that there must at least be customary law authorising the creation of a negotiable instrument.²⁸ This hurdle would be high for blockchain-based negotiable instruments since the practice of using blockchains for the purpose of emulating negotiable instruments is as yet far from established. Recently, a few States have introduced legislation that recognises crypto-securities. Three such legal systems will be examined below.

3.2.1 Liechtenstein Law

In Liechtenstein, the Token and TT Service Provider Act (Token- und VT-Dienstleister-Gesetz: TVTG) entered into effect on 1 January 2020. It introduced

There are also other disadvantages investors holding shares through intermediaries may suffer: see Eva Micheler, “Intermediated securities from the perspective of investors: problems, quick fixes and long-term solutions,” in Louise Gullifer and Jennifer Payne (eds), *Intermediation and Beyond* (Oxford: Hart Publishing 2020), 1, 3.

26 Travis Laster & Marcel Rosner, “Distributed Stock Ledgers and Delaware Law” (2018) 73 *The Business Lawyer* 319, 331.

27 The Tokenizer, “The Security Token RegRadar Report” (*The Tokenizer*, July 2021), 57 [Oliver Völkel] <<https://bit.ly/3yBR6xa>> accessed 1 June 2022. For a detailed analysis, see Oliver Völkel, „Initial Coin Offerings aus kapitalmarktrechtlicher Sicht“ (2017) *Zeitschrift für Energie und Technikrecht* 03/2017 103, 105–106.

28 Noted in 成本治男 & 岩井宏樹 「アセット・トークンについて」 in 堀天子 (ed.) 『暗号資産の法的性質と実務』 (2021) 161 金融商事判例 104, 111 (Haruo Narimoto and Hiroki Iwai, “Regarding Asset Tokens,” in Takane Hori (ed), *Legal Nature and Practice of Crypto Assets* (2021) 161 *Financial and Commercial Case Law* 104, 111).

the notion of token defined as a record on a TT (trustworthy technologies) system which represents claims, membership rights or other absolute or relative rights (Article 2(1)(c)). It defines the trustworthy technologies (vertrauenswürdige Technologien: VT) in technology neutral language (Article 2(1)(a)) with the blockchain technology or DLT primarily in mind.²⁹ The TVTG provides that disposition of a token results in the disposition of the right represented by it (Article 7(1)). The Act also provides that the disposition of a token requires the transfer of the token, the agreement between the transferor and the transferee, and the transferor's entitlement to dispose of it (Article 6(2)). According to the Act, the holder of the TT Key, which is meant to be the private key for a blockchain-based token,³⁰ is presumed to be the person entitled to dispose of the token (Article 5(1)). On that basis, the Act permits *bona fide* acquisitions (*Erwerb kraft guten Glaubens*) (Article 9) and the release of obligors by *bona fide* performance (*Befreiungswirkung*) (Article 8(2)). The Act further lays down the procedure for a cancellation declaration (*Kraftloserklärung*) of tokens in case of loss of a TT Key (Article 10).

3.2.2 Swiss Law

In Switzerland, the DLT Act, examined in section 3.1.2 above, amended Article 622(1) of the Code of Obligations. The latter now provides that company shares may be issued as “ledger-based securities” if the company's articles of association so stipulate. As a result, it is now possible to issue blockchain-based shares. The provisions inserted in the Code of Obligations which concern various aspects of ledger-based securities, seen in section 3.1.2 above, would also be applicable to blockchain-based shares.

3.2.3 German Law

In Germany, the Act on Electronic Securities (Gesetz über elektronische Wertpapiere: eWpG) was enacted in 2021. For the time being, its application is limited to bearer bonds (§1), though it may eventually be extended to other securities.³¹ It provides that securities may be issued as “electronic securities” (*elektronisches Wertpapier*) by effecting an entry in an “electronic securities register”

29 See section 2.5 of the Report and Application of the Government to the Parliament of the Principality of Liechtenstein Concerning the Creation of a Law on Tokens and TT Service Providers (Tokens and TT Service Provider Act; TVTG) and the Amendment of Other Laws (No. 54/2019).

30 *Id.*, 2.2.1.

31 Begründung zum Regierungsentwurf des Gesetzes zur Einführung von elektronischen Wertpapieren, BT-Drucksache 19/26925, 24.02.2021, 38 <<https://dserver.bundestag.de/btd/19/269/1926925.pdf>>.

(*elektronisches Wertpapierregister*) (§ 2(1)). It also provides that electronic securities generally have the same legal effect as paper securities (§ 2(1)). The concept of “electronic securities register” covers both central register (*zentrale Register*) and crypto-securities register (*Kryptowertpapierregister*) (§ 4(1)). It is further provided that a crypto-securities register must be kept on a forgery-proof recording system in which the data is logged in time sequence and saved against unauthorised deletion and subsequent changes (§ 16(1)). This provision, though using a technology-neutral expression, clearly envisages blockchains. The eWpG also contains provisions on the transfer of electronic securities (§ 25) and their *bona fide* acquisition (§ 26).

4 Emerging Choice-of-Law Rules

In the foregoing section (section 3), we have examined examples of legislation on substantive rules which give recognition to blockchain-based negotiable instruments. We will now turn our attention to choice-of-law rules.

There are hardly any tailor-made choice-of-law rules for blockchain-based negotiable instruments.³² The Liechtenstein Token and TT Service Provider Act, examined in section 3.2.1 above, only contains what may be read as unilateral choice-of-law rules.³³ Switzerland and Germany have, however, recently

32 The proposed EU Regulation on the law applicable to the third-party effects of assignments of claims (Proposal for a Regulation of the European Parliament and of the Council on the law applicable to the third-party effects of assignments of claims, [2018] COM/2018/096 final, 2018/044 (COD)) contains, in the version amended by the Council on 28 May 2021 (Council of the European Union, “Proposal for a Regulation of the European Parliament and of the Council on the law applicable to the third-party effects of assignments of claims - General approach (9050/21)” (CEU, 28 May 2021) <<https://data.consilium.europa.eu/doc/document/ST-9050-2021-INIT/en/pdf>>), a choice-of-law rule which provides that the law applicable to the assigned claim governs the third-party effects of the assignment of “claims arising out of crypto assets.” *Id.*, Article 4(2)(ba). Financial instruments and electronic money are excluded from this rule. It is not clear whether the concept “claims arising out of crypto assets” covers claims represented by crypto assets serving as blockchain-based negotiable instruments. It remains to be seen whether this proposed rule will make its way into the final text.

33 Tokens and TT Service Provider Act (n 29), Article 3(2) provides that the chapter titled “civil law foundation (Zivilrechtliche Grundlagen)” of the Act is applicable where tokens are generated or issued by a TT Service Provider having its seat or domicile in Liechtenstein or where the parties transacting tokens expressly declare its provisions to be applicable.

introduced in their legislation choice-of-law rules applicable to blockchain-based negotiable instruments. These will be examined below.

4.1 *Swiss Law*

In Switzerland, the DLT Act, examined in sections 3.1.2 and 3.2.2 above, amended the Federal Act on Private International Law (*Bundesgesetz über das Internationale Privatrecht*) with effect from 1 February 2021. The amendment inserted Article 145a, according to which whether a claim (*Forderung*) is represented by a negotiable instrument in paper or an equivalent form is determined by the law designated in the instrument or, failing such a designation, by the law of the State where the issuer has its seat or, in its absence, is habitually resident (paragraph 1). The same rules apply to documents of title to goods such as bills of lading (Article 106(1)) on the rationale that the right to claim the delivery of goods is also a claim (*Forderung*).³⁴ Blockchain-based bills of lading would be a negotiable instrument in a form equivalent to paper for the purpose of these rules. On the other hand, Article 145a has no application to the instruments representing company shares. It is assumed³⁵ that the law applicable to the company (*lex societatis*) determines whether shares can be represented by an instrument and to what extent the transfer of the instrument entails the assignment of the shares.

If the legal system specified by Article 145a(1) links the assignment of a claim to the transfer of the negotiable instrument by which it is represented, the next question that will arise is how the instrument is transferred. According to the official explanatory note for the DLT Act,³⁶ this question is governed by the same law as specified by Article 145a(1) if the instrument is in electronic form. If the instrument is in paper form (*physischer Titel*), that issue is subject to the law of the place where it is located (*lex cartae sitae*) (Article 145a(2) and, with respect to documents of title to goods, Article 106(2)). The Federal Council's DLT Report,³⁷ which laid the groundwork for the DLT Act, states that the *lex cartae sitae* principle has no application where the instrument is recorded on a distributed ledger as its situs is difficult to be envisioned.³⁸

34 The Botschaft (n 13), 298.

35 *Id.*, 299.

36 *Id.*, 300.

37 Swiss Federal Council, "Legal framework for distributed ledger technology and blockchain in Switzerland" (*The Federal Council*, 14 December 2018) <<https://www.news.admin.ch/news/message/attachments/55153.pdf>> (hereafter "Federal Council's DLT Report").

38 *Id.*, para. 5.3.3.6.

The same report observes that in most cases a negotiable instrument will designate a legal system in its terms and conditions.³⁹ The law so designated will usually be the same as the law governing the claim represented by the instrument, though these two laws do not necessarily coincide with each other. The difference may sometimes surface where the instrument represents a claim which arises prior to the creation of the instrument. Thus, it could happen, though infrequently, that a bill of lading contains a choice-of-law clause in favour of one legal system while the contract of carriage contains a choice-of-law clause in favour of another legal system.

The law designated by a negotiable instrument will usually be the same as the law specified in the “registration agreement (Registrierungsvereinbarung),” though they may not, on a strict analysis, necessarily be the same. The Code of Obligations provides that the transfer of ledger-based securities is subject to the stipulations of the registration agreement (Art. 973f) and that the agreement must be recorded in the securities ledger or in a linked accompanying database (Art. 973d(2)). According to the official explanatory note for the DLT Act,⁴⁰ the registration agreement is an agreement to assert or transfer a right only through a tamper-resistant securities ledger. It is further explained that this agreement may be made by means of terms and conditions for the issuance of ledger-based securities.

As regards the pledging of a claim, Article 105, rather than Article 145a, is applicable.⁴¹ The DLT Act extended the application of that Article to the blockchain-based negotiable instruments by inserting therein a provision saying that the rule for the pledging of claims (*Forderungen*) is also applicable to the pledging of other rights, provided they are represented by a book-entry security (*Wertrecht, droit-valeur*), a paper negotiable instrument (*Wertpapier, papier-valeur*) or an equivalent instrument (Article 105(2)).⁴² The rule referred to in this provision states that in the absence of a choice of law by the parties,⁴³ the law of the place of the pledgee’s habitual residence governs the pledging of claims. It is explained in a commentary that this connecting factor was adopted since a pledgee is considered to be an economically decisive person.⁴⁴

39 *Id.*, para. 5.3.3.2.

40 The Botschaft (n 13), 276.

41 *Id.*, 300.

42 *Id.*, 297.

43 The choice of law made by the parties cannot be asserted against third parties (Article 105(1)), though third parties may accept the chosen law if it would work to their advantage: Andreas Bucher (ed), *Commentaire Romand: Loi sur le droit international privé – Convention de Lugano* (Helbing & Lichtenhahn, 2011), 854 [by Louis Gaillard].

44 *Id.*, 855.

A contrast may be made with the pledging of the other rights, which is referred to the law applicable to the right in question (Article 105(2)). According to a commentary, such other rights include the rights of authors and patents, hereditary shares, and land titles.⁴⁵ The same commentary states that the legislature considered that these other rights would not usually be pledged in bulk.⁴⁶ In contradistinction, the legislature apparently considered that rights represented by negotiable instruments would more often be pledged in bulk.

4.2 German Law

The Act on Electronic Securities (eWpG), examined in section 3.2.3 above, contains choice-of-law rules in § 32, which refers to the law of the State supervising the register-keeping entity (*registerführende Stelle*) in whose electronic securities register (*elektronisches Wertpapierregister*) the instrument is entered (paragraph 1). According to an official explanatory note,⁴⁷ the supervising State was chosen as the connecting factor because the general “*lex rei sitae*” principle (enshrined in Article 43(1) of the Introductory Act to the German Civil Code (*Einführungsgesetz zum Bürgerlichen Gesetzbuch: EGBGB*)), which would point to the law of the place of the certificate (“*lex cartae sitae*”) if the securities were in paper form, would make no sense if the instrument is in electronic form, and also because identifying the place of an electronic register is difficult.

After specifying the primary connecting factor in paragraph 1, § 32 goes on to provide subsidiary connecting factors in paragraph 2. Thus, in the cases where the register-keeping entity is not under the supervision of any State, § 32(2) specifies the seat (*Sitz*) of the register-keeping entity as the connecting factor. Again, in the cases where the seat cannot be identified, § 32(2) specifies the seat of the issuer of the electronic securities as the connecting factor. It does not, however, offer a solution where the same register-keeping entity comes under the supervision of more than one State.

What is somewhat puzzling about these provisions is that they presuppose that there is necessarily a register-keeping entity for the electronic securities register. As noted in section 3.2.3 above, the concept of “electronic securities register” (*elektronisches Wertpapierregister*) covers both central register (*zentrale Register*) and crypto-securities register (*Kryptowertpapierregister*) (§ 4(1)). It is easy to see that there is a register-keeping entity for central registers. With respect to crypto-securities registers, the register-keeping entity is

45 *Id.*

46 *Id.*

47 Gesetzentwurf der Bundesregierung (n 31), 69.

defined as someone who is designated as such by the issuer or, failing such a designation, the issuer itself (§ 4(10) and § 16(2)). But it is also provided that the register-keeping entity must ensure that the register accurately reflects the current legal situation at all times (§ 7(2)), which seems to imply that the register-keeping entity is technically equipped to change the register at will. While that possibility may exist with private blockchains (blockchains administered by a specific entity), it would not be possible with public blockchains (blockchains for which there is no specific entity acting as administrator). It seems to follow that a crypto-securities register (*Kryptowertpapierregister*) within the meaning of this Act is necessarily a private blockchain.⁴⁸

5 Discussion on Choice-of-Law Rules

In the foregoing sections (sections 3 and 4), we have examined the substantive rules and choice-of-law rules of some States applicable to blockchain-based negotiable instruments. We will now consider what the choice-of-law rules should be for the issues arising out of such instruments.

5.1 *Architecture of Trading and Holding*

As the choice of law analysis is an exercise of finding appropriate connecting factors to localise the issues in specific jurisdictions, it would be helpful to envision the architecture of holding and trading of blockchain-based negotiable instruments. The representation below is based on the author's understanding of the emerging architecture and prediction towards the future for the trading and holding of blockchain-based bills of lading and crypto-securities. There is, however, a great deal of murkiness in the emerging architecture and a lot of uncertainty over how it will develop.

48 For a similar comment on the draft bill, see Matthias Lehmann, "Stellungnahme zum Referentenentwurf für ein Gesetz über elektronische Wertpapiere (eWpG)" (14 September 2020), 12 <<https://bit.ly/2W7iWDW>>. Dominik Kloka and Georg Langheld, "Gesetz zur Einführung von elektronischen Wertpapieren beschlossen" (*Noerr Newsroom*, 10 May 2021) <<https://bit.ly/3kAcNj1>>, also observes the tension with the decentralization philosophy of the blockchain technology. On the other hand, Thorsten Voß, "Der Regierungsentwurf des eWpG und das Depotrecht – Ein Warnruf" (2021) 1 *Zeitschrift für das Recht der digitalen Wirtschaft* 16, 18, suggests, on the assumption that public blockchains could serve as an electronic securities register, that insurance may be a solution for curbing the risk of civil liability that the register-keeping entity may incur for failing to properly maintain the register.

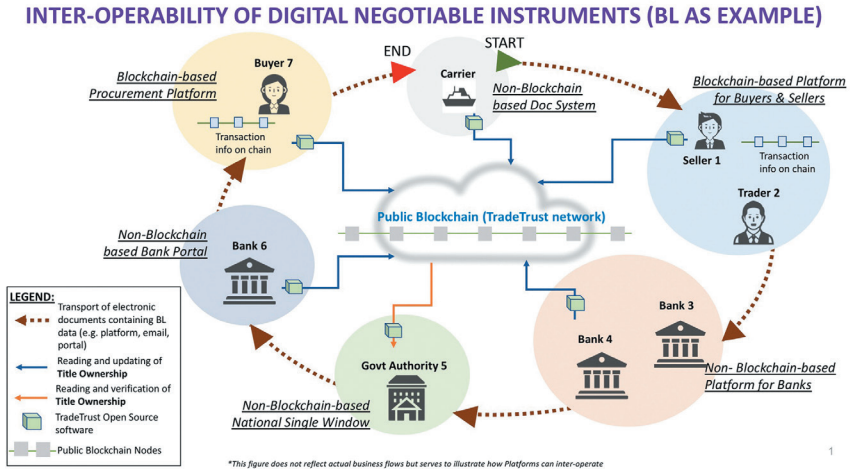


FIGURE 18.1 Inter-operability of digital negotiable instruments
 SOURCE: LOH, S.Y. (2021, MARCH 31). TRADE - ADAPTING TO PRESENT AND FUTURE CHALLENGES, MARITIME TRADE DIGITALISATION – ELECTRONIC BILLS OF LADING [WEBINAR], INFOCOMM MEDIA DEVELOPMENT AUTHORITY OF SINGAPORE. [HTTPS://WWW.MPA.GOV.SG /WEB/PORTAL/HOME/MARITIME-COMPANIES/RESEARCH-DEVELOPMENT /TECHNOLOGY-WEBINARS](https://www.mpa.gov.sg/web/portal/home/maritime-companies/research-development/technology-webinars)

5.1.1 Bills of Lading

Lately, projects using blockchains as a solution to digitise bills of lading have sprung up. Several among them have received approval from the International Group of P&I Clubs, an approval necessary for their insurance coverage to be extended.⁴⁹ Notwithstanding the advantage of a permissionless blockchain architecture as noted in section 3.1 above, some of these projects appear to be member-only systems. One of the models utilising a permissionless blockchain is illustrated in Figure 18.1. The center of this figure shows a public blockchain, which is necessarily permissionless since there is no specific entity to give permissions to its users. But all sensitive information could be hidden from public view, so that the details of bills of lading such as the names of the parties and the content of the cargo are transmitted outside the blockchain by means of conventional methods of communication such as emails. The interface with the blockchain may be provided by a number of commercial entities competing to offer user-friendly services.

49 The Swedish Club, “Electronic (Paperless) Trading” (*The Swedish Club*, 29 March 2021) <<https://bit.ly/3kGUWQm>>.

5.1.2 Crypto-securities

Financial sectors are subject to intensive regulation to safeguard the integrity of the market and to counter money laundering. A conventional regulatory approach relies on the existence of a specific entity which is supervised and held accountable. There is a view that says the involvement of regulated entities is necessary even where blockchains are used to issue and trade securities.⁵⁰ That would not, however, mean that crypto-securities may only be issued on private blockchains administered by a specific entity since there are also other actors whom the regulators may target. These include the providers of an interface with the blockchain, wallet providers, the operators of trading platforms, the issuer of crypto-securities, and the keeper of shareholder or bondholder directories.⁵¹ Compliance with anti-money laundering rules may also be facilitated by innovations in the area of e-identity, which does not have to be granted by financial intermediaries but can be part of the e-government tools.⁵² There is currently the practice of issuing crypto-securities on public blockchains⁵³ and this practice may continue in the future whether in the mainstream or on the fringe.

As the blockchain technology allows for disintermediation, crypto-securities may be issued directly to investors, held by them directly without relying on third party custodians, and traded peer-to-peer or on a defi (decentralised

50 Andrea Pinna and Wiebe Ruttenberg, "Distributed ledger technologies in securities post-trading – Revolution or evolution?" (2016) European Central Bank Occasional Paper Series 172, 23.

51 The directories of shareholders and bondholders may be kept in a separate database from the blockchain on which crypto-tokens are issued. That database may itself take the form of a blockchain, as acknowledged in § 81a(2) of the Final Part (Schlussabteilung) of the Liechtenstein Persons and Companies Act (Personen und Gesellschaftsrecht (PGR) vom 20. Januar 1926). It is not impossible that the same blockchain on which the cryptosecurities are issued is used as directories of shareholders and bondholders, as acknowledged by the Botschaft (n 13), 274. Whenever a blockchain is used as directories of shareholders or bondholders, it will necessarily be a private blockchain to avoid disclosing confidential information such as the identity of the holders: See Olivier Favre et al., "Trends and Developments" (*Schellenberg Wittmer Ltd*, 17 June 2021) <<https://bit.ly/2VgQ77I>>.

52 Pinna and Ruttenberg (n 50), 30.

53 Oliver Völkel and Bryan Hollmann, "Tokenization in Austria" (*Stadler Völkel*, 2021), 2 <<https://bit.ly/2ULzXmK>> states that the Ethereum blockchain, a major public blockchain, is most frequently used for the purpose of tokenization. The Bitbond, the first of regulated crypto-securities in Germany, was offered on the Stellar blockchain, another example of public blockchain (para. 7.2.1 of Bitbond, "Securities Prospectus of Bitbond Finance GmbH, Berlin" (*Bitbond*, 30 January 2019) <<https://www.bitbondsto.com/files/bitbond-sto-prospectus.pdf>>).

Issuance and Trading of Security Tokens

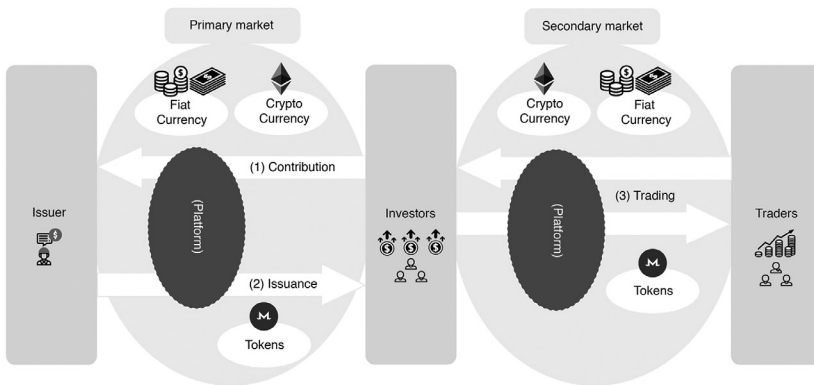


FIGURE 18.2 Issuance and trading of security tokens

finance) platform. If, however, issuers and traders wish for a high liquidity environment to issue and trade crypto assets, they may prefer using centralised platforms (see Figure 18.2). Centralised platforms include crypto-assets exchanges, traditional securities exchanges, and multilateral trading facilities. Their availability depends on the applicable regulatory regimes.

The current uncertainty over the architecture of trading and holding crypto-securities⁵⁴ is particularly acute on the side of the secondary market. Where crypto-securities are traded on a peer-to-peer basis or on a defi platform, no intermediaries would be needed (See Figure 18.3).

Where, on the other hand, a centralised trading platform is used, the architecture will vary considerably. Thus, if the crypto-securities are listed on a crypto-assets exchange or a similar trading platform, the retail investors may directly participate in trading.⁵⁵ If the crypto-securities are listed on a

54 Also acknowledged by the Proposal for the Regulation of the European Parliament and of the Council on a pilot regime for market infrastructures based on distributed ledger technology, [2020] 2020/0267 (COD), Recital (3).

55 The Swiss DLT Act introduced, with effect from 1 August 2021, a new chapter (Ch. 4a in Title 2) in the Financial Market Infrastructure Act (Bundesgesetz über die Finanzmarktinfrastrukturen und das Marktverhalten im Effekten- und Derivatehandel (Finanzmarktinfrastrukturgesetz, FinfraG) vom 19. Juni 2015, SR 958.1) to create a new license category for “DLT trading facilities” (*DLT-Handelssysteme*) which, unlike the pre-existing trading platforms licensed in Switzerland, allow retail investors to trade crypto-securities directly (Article 73c(1)(e)). For an analysis, see Manuel Meyer and Yves Mauchle, “Switzerland” (2021) *Butterworths Journal of International Banking and Financial Law* 157, 159.

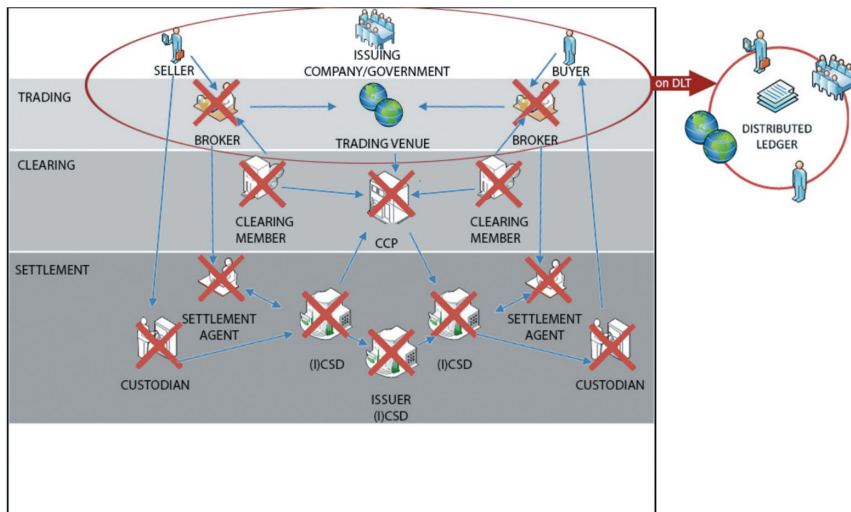


FIGURE 18.3 Trading on a distributed ledger
 SOURCE: DIAGRAM 4 FROM PINNA & RUTTENBERG, “DISTRIBUTED LEDGER TECHNOLOGIES IN SECURITIES POST-TRADING” SUPRA NOTE 50, P. 31

traditional securities exchange or a multilateral trading facility (MTF), the retail investors may only be able to participate in trading through their brokers. Some trading platforms may dispense with intermediaries for post-trading phases (see Figure 18.4) by adopting a distributed ledger settlement process which may be combined with a smart contract functionality. In some cases, crypto-securities may be held by a central securities depository (CSD) with possibly a layer of custodians between the latter and retail investors.

5.2 The Lineup of Issues for Choice of Law

Blockchain-based negotiable instruments will raise a number of issues for which the governing law needs to be determined. The lineup is as sketched out below.⁵⁶

To begin with, there are issues of creation and cancellation of a blockchain-based negotiable instrument. Most fundamentally, there is the issue of whether a blockchain-based token may be created to serve as a negotiable

⁵⁶ This lineup is not meant to be exhaustive. Additionally, there is, for example, the issue of what impact, if any, the rescission or termination of the underlying contract has on the assignment of the right which has been effected through the transfer of a negotiable instrument. There is also the issue, unique to a blockchain-based instrument, of what effects a hard-fork of the blockchain has on the represented right.

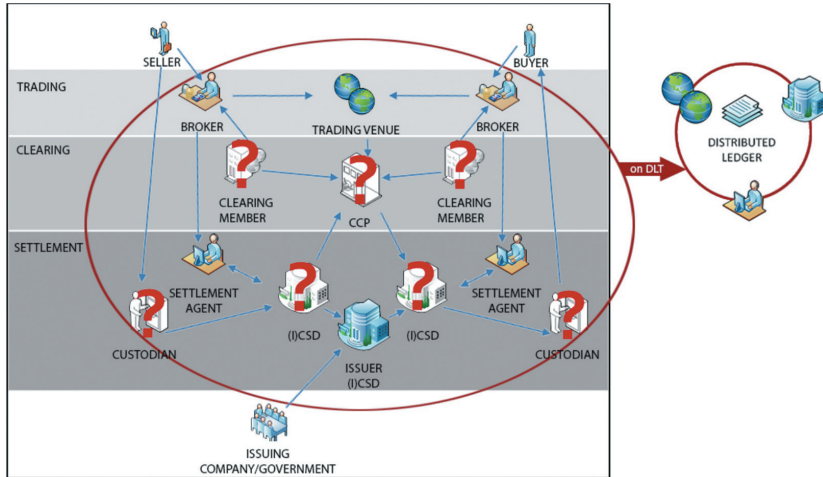


FIGURE 18.4 Post-trade clearing and settlement on a distributed ledger
 SOURCE: DIAGRAM 3 FROM PINNA & RUTTENBERG, “DISTRIBUTED LEDGER TECHNOLOGIES IN SECURITIES POST-TRADING” *SUPRA* NOTE 50, P. 29

instrument to represent the right in question.⁵⁷ This issue may be understood to comprise a sequence of sub-issues: whether a negotiable instrument may be created for the right in question; whether a negotiable instrument may be in electronic form; and whether the electronic negotiable instrument may take the form of a blockchain-based token. The flip side of issue 1 is issue 2: whether a blockchain-based negotiable instrument may, in case of loss of the private key, be cancelled. Where a paper-based negotiable instrument is lost, stolen or destroyed, some legal systems provide for procedures for a cancellation declaration (*Kraftloserklärung*) of the instrument, so that the beneficiary could assert the right represented by it without the possession of it.⁵⁸ The

57 See *e.g.*, § 516(2) of the German Commercial Code (Handelsgesetzbuch), mentioned in section 3.1.1 *supra*; Article 1153a of the Swiss Code of Obligations (n 12), mentioned in section 3.1.2 *supra*; Article 2(1)(c) of the Tokens and TT Service Provider Act (n 29), mentioned in section 3.2.1 *supra*; Article 622(1) of the Swiss Code of Obligations (n 12), mentioned in section 3.2.2 *supra*; and § 2(1) of the German Act on Electronic Securities (Gesetzes zur Einführung von elektronischen Wertpapieren vom 3. Juni 2021 (BGBl. I S. 1423) (“eWpG”)), mentioned in section 3.2.3 *supra*.

58 See *e.g.*, Article 973h of the Swiss Code of Obligations (n 12), mentioned in section 3.1.2 *supra*, and Article 10 of the Tokens and TT Service Provider Act (n 29), mentioned in section 3.2.1 *supra*. Such procedures do not generally exist in common law jurisdictions. With respect to the cancellation of bills of lading, see Koji Takahashi, “Judicial Decree to Terminate the Validity of Lost Bills of Lading” (2008) 39 *Journal of Maritime Law & Commerce* 551, 552.

issue whether such procedures are available would also arise with a blockchain-based negotiable instrument.

The legal systems which recognise blockchain-based negotiable instruments would associate with them certain effects concerning the assertion and discharge of the rights represented by them. The issues which may arise in this connection⁵⁹ include 3 whether, for the exercise of the right represented by such an instrument, it is necessary to become a holder of the instrument. There is also the issue 4: in what circumstances, if any, the obligor is discharged from its obligation by providing performance to the holder of such an instrument should it be proven that the latter is not the owner of the right represented by it.⁶⁰

The legal systems which recognise blockchain-based negotiable instruments would also associate with them certain effects concerning the assignment of the rights represented by them. The basic issue which will arise in this connection is 5 what are the requisites for the right represented by such an instrument to be assigned, in particular whether it is necessary and/or sufficient for the instrument to be transferred to the assignee. Under some legal systems, the qualification of an instrument as a negotiable instrument may mean that its transfer is both necessary and sufficient to assign the right represented by it, leaving only the question of what the requisites are for the transfer of the instrument.⁶¹ But that would not be the only conceivable model since the “representation” of a right by an instrument could have diverse implications.

59 These issues are excluded from the scope of the Rome I Regulation (Regulation (EC) No 593/2008 of the European Parliament and of the Council of 17 June 2008 on the law applicable to contractual obligations (Rome I), [2008] OJ L177/6 (“Rome I Regulation”)) since they concern obligations arising out of the negotiable character of a negotiable instrument (*id.*, Article 1(2)(d)). Under this provision, the word “negotiable” seems to be used in a sense broader than that which describes the character of an instrument that allows a *bona fide* transferee to acquire a better title than what the transferor had. For the meaning of broader and the narrower senses, see section 1 *supra*. For a contrary view under Article 1(2)(c) of the Rome Convention (The Convention of 19 June 1980 on the Law Applicable to Contractual Obligations, [1980] OJ L1980/266/1), see William Tetley, with the assistance of Robert C. Wilkins, *International Conflict of Laws: Common, Civil and Maritime* (Montreal: Blais 1994), 309, 311–312. In this book, it is argued that a bill of lading is not subject to the exclusion of Article 1(2)(c) because it is not a negotiable instrument in either the common law or the civil law (except under the German theory). It should be noted, however, that the Rome I Regulation (n 59) seems to acknowledge that bills of lading possess negotiable character (see Rome I Regulation (n 59), Recital (9)).

60 See *e.g.*, Article 8(2) of the Tokens and TT Service Provider Act (n 29), mentioned in section 3.2.1 *supra*.

61 See *e.g.*, *id.*, Article 6(2) mentioned in section 3.2.1 *supra*.

Another issue of particular importance is the possibility of *bona fide* acquisition, that is to say 6 whether and under what conditions a *bona fide* transferee of an instrument may acquire a better title than the transferor.⁶²

5.3 *Solution Suggested by this Paper*

This paper suggests that the *lex creationis* should be applied to determine the issues from 1 to 4. The *lex creationis* is the law under which the right represented by the negotiable instrument is created, such as the law applicable to the underlying claim. For example, with respect to the right to claim the delivery of goods represented by a bill of lading, it is the governing law of the carriage contract.⁶³ With respect to the right to claim the payment of a sum of money represented by a bond,⁶⁴ it is the governing law of the bond, which would usually be specified in the prospectus. With respect to the membership right represented by a company share, it is the *lex societatis*, which would, depending on the applicable choice-of-law rules, be the law of the place of incorporation or the law of the real seat of the company.

With respect to issues 5 and 6, this paper suggests that the *lex creationis* should as a general rule be applicable in relation to all negotiable instruments (including bills of lading and investment securities) issued on a blockchain, subject to exceptions for the following two categories of cases: Firstly, where a permissioned blockchain is used to issue the negotiable instrument and there is consent to a choice-of-law clause by all its users, the law specified by the clause should prevail over the *lex creationis*. Secondly, where crypto-securities

62 See *e.g.*, § 932 of the German Civil Code (n 2), mentioned in section 3.1.1 *supra*; § 26 of the eWpG (n 57), mentioned in section 3.2.3 *supra*; Article 973e(3) of the Swiss Code of Obligations (n 12), mentioned in section 3.1.2 *supra*; and Article 9 of the Tokens and TT Service Provider Act (n 29), mentioned in section 3.2.1 *supra*.

63 As determined by Article 5 of the Rome I Regulation (n 59), if the latter is applicable. The determination of the governing law of a carriage contract is not excluded from the scope of the Regulation even where the right to claim the delivery of goods under the contract is represented by a bill of lading since that obligation does not arise out of the negotiable character of a bill of lading (See *id.*, Article 1(2)(d)).

64 It includes a convertible bond until it is converted into equity: See para. 522 of UNCITRAL, “UNCITRAL Model Law on Secured Transactions: Guide to Enactment” (UNCITRAL, 2017) <https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/mlst_guide_to_enactment_e.pdf>. It also includes a profit participation certificate (Genussschein) which represents a profit participation right (Genussrecht), *i.e.*, the right that is granted by a corporation and limited to monetary claims (with membership rights such as voting rights being excluded) (Klaus Weber (ed), *Creifeld's Rechtswörterbuch* (26th edn., München: C.H. Beck 2021)). According to Völkel and Hollmann (n 53), 2, Genussrecht is currently the most popular right to be tokenised in Austria.

are held with an intermediary, the governing law should be determined in accordance with the existing choice-of-law rules for securities held with an intermediary. In the situations which fall within both of these two categories, the rule for the second category should take precedence.

What follows will first elucidate the meaning of “*lex creationis*” and then offer the basic reason for the solution suggested above.

5.4 *The Meaning of “lex creationis”*

Professor Ooi, a long-term proponent of applying the *lex creationis* for the proprietary aspects of securities – whether certificated or held with an intermediary – extends her proposition to crypto-securities in her latest paper.⁶⁵ Given the prominence of Professor Ooi’s writings in this field of law, it is worth noting that what is meant by the *lex creationis* in her paper does not seem to be exactly identical to the same expression used in the present paper. Both papers understand the concept of *lex creationis* as referring to the law under which the object in question is created.⁶⁶ The object in question seems, however, different: while the present paper looks to the right represented by a negotiable instrument, Professor Ooi’s paper appears (at least in some places) to look to the token or other medium representing the right. This is gleaned from the observation in her paper that “the law of the system” is a manifestation of the *lex creationis*.⁶⁷ The meaning of “the law of the system” is said to be different depending on the type of securities – whether certificated, intermediated, or in the form of crypto-securities. For intermediated securities, it is said to be the law of the intermediated system and for crypto-securities, it is said to be the law of the “cryptosecurities system.” The latter is described as a system that allows for the crypto-securities to be created and issued within it.⁶⁸ Professor Ooi argues that the law of that system should be applicable to the proprietary aspects of crypto-securities. Whatever exactly is meant by the law of the “cryptosecurities system,” it does not appear to be necessarily the same as the *lex creationis* of the right represented by crypto-securities.

65 Maisie Ooi, “Choice of Law in the Shifting Sands of Securities Trading,” in Andrew Dickinson and Edwin Peel (eds), *A Conflict of Laws Companion* (Oxford: Oxford University Press 2021), 199.

66 *Id.*

67 *Id.*, 220.

68 *Id.* It is, however, also said elsewhere (*id.*, 219) that the law of the cryptosecurities system “is the law “with which the cryptosecurities have their most significant connection.”

5.5 *The Basic Reason for the Suggestion*

As noted in section 5.3 above, this paper suggests that the *lex creationis*, the law under which the right represented by a blockchain-based negotiable instrument is created, should be applied to determine all the issues from 1 to 4 and, subject to two rules of exception, issues 5 and 6. This suggestion basically rests on the ground that all these issues concern the state-of-being (namely, creation, extinction, and all intervening dispositions such as transfers and encumbrances) of the right in question. To determine the state-of-being of a right by applying the law under which it is created is not only logical but would also usually meet the expectation of the interested parties. The point will be expounded below with respect to each of the issues from 1 to 6.

The issue 1 whether a blockchain-based token may be created to serve as a negotiable instrument to represent the right in question concerns the state-of-being of the right. The point might be better appreciated if the issue is re-phrased as “whether the right in question may be represented by a blockchain-based token serving the role of a negotiable instrument.” So re-phrased, it would also be appreciated that the answer should be the same⁶⁹ irrespective of whether the negotiable instrument is in paper or electronic form and irrespective of whether it is recorded in a central register or distributed ledger.

Issue 2 should be dealt with in the same way as issue 1 since it is the flip side of the latter. Again, the issue concerns the state-of-being of the represented right. With respect to a paper-based bill of lading which is lost, stolen or destroyed, a leading scholarly opinion in Japan favours the application of the law of the country in which the port of discharge is situated to determine the issue corresponding to 2.⁷⁰ This opinion is based on the idea that the way in which a right may be asserted is closely connected to the law of the place where it is to be asserted. Another scholarly opinion favours the application of the law governing the carriage contract on the ground that how the loss of a bill of lading may be remedied is a question that affects the right against the carrier in terms of how it may be asserted.⁷¹ The latter opinion accords with this paper’s suggestion in both conclusion and reasoning.

69 A leading scholarly opinion in Japan with respect to paper-based bills of lading also favours the application of the law governing the contract of carriage (noted in 佐野寛『国際取引法』(Hiroshi Sano, *International Trade Law* (4th edn, Yuhikaku 2014), 157).

70 As noted in Takahashi (n 58), 560, though this opinion is not shared by the author.

71 As noted in 高橋宏司「船荷証券の除権決定のための公示催告手続の国際裁判管轄」(Koji Takahashi, “Jurisdiction to Issue a Decree Terminating the Validity of Lost Bills of Lading” (2008) 199 *Kaijiho Kenkyu Kaishi* 2, 5).

Issues 3 and 4 pertain to the assertion and discharge of the right represented by a blockchain-based negotiable instrument and, accordingly, concern the state-of-being of that right.

Likewise, issues 5 and 6 pertain to the assignment of the represented right and, again, concern the state-of-being of that right. Since any purported assignment of the same right outside the blockchain may, depending on the applicable choice-of-law rules, also be subject to the *lex creationis*, a divergence between on-chain and off-chain transactions may be avoided.

Issues 5 and 6 pertaining to the assignment of the represented right should be distinguished from the question what effect, if any, bills of lading have on the disposition of real rights in the goods. Bills of lading represent the right to claim the delivery of goods under a contract of carriage, rather than real rights in the goods.⁷² Nonetheless, the applicable law may associate with them certain effects concerning real rights in the goods.⁷³ Thus, the transfer of a bill of lading may have the effect of passing property in goods under some legal systems.⁷⁴ Under other legal systems, the transfer of a bill of lading perfects the passing of property in goods by conferring on the transferee an *erga omnes* title, a title which can be asserted against all persons.⁷⁵ The issue of what effect, if any, bills of lading have on the disposition of real rights in goods concerns the state-of-being of the real rights and should be determined by the *lex situs* of the goods, regardless of the medium of the bills of lading.⁷⁶

72 Also noted in the Federal Council's DLT Report (n 37), para. 5:3:3.4 (fn. 343).

73 *Id.*

74 The repealed English Bills of Lading Act 1855 (1855 c. 111) stated in the opening of section 1 that "[e]very Consignee of Goods named in a Bill of Lading, and every Endorsee of a Bill of Lading to whom the Property in the Goods therein mentioned shall pass, upon or *by reason of* such Consignment or Endorsement" (emphasis supplied).

75 As is the position under Japanese law by virtue of the combined effect of Article 178 of the Japanese Civil Code (n 2) and Article 763 of the Japanese Commercial Code (Act No. 48 of 9 March 1899). The former provides that the passing of property in movable goods may not be asserted against third parties unless the goods have been delivered to the transferee. The latter provides that the delivery of a bill of lading to its lawful holder has the same legal effect as the delivery of the goods represented by it.

76 For the same view in the context of paper-based bills of lading, see *e.g.*, 嶋拓哉「物的権利関係の準拠法と運送証券の発行」(Takuya Shima, "The Law Applicable to Real Rights and the Issuance of Documents of Title to Goods" (2014) 64 Hokkaido University Law Review 1, 38). The Federal Act on Private International Law of Switzerland ("PILA") provides that if several persons assert a real right in goods, some directly, others on the basis of a title document, the law applicable to the goods themselves determines whose right prevails (Federal Act on Private International Law (PILA) of 18 December 1987, SR 291, Article 106(3)).

5.6 *Considerations Relevant Only to Issues 5 and 6*

This paper's suggestion that the *lex creationis* should be applicable would not be so controversial with respect to issues 1 to 4. There is, however, more room for disagreement with its suggestion for issues 5 and 6 that, as a general rule, the *lex creationis* should be applicable. It is because there are considerations, other than the state-of-being of the right argument, which are relevant to issues 5 and 6. Focusing on these issues,⁷⁷ the following analysis will examine three of these considerations.

5.6.1 Whether the Lex Rei Sitae Principle Should Be Followed

Where the negotiable instrument is in paper form, a conventional view would apply the law of the place where the instrument is situated (*lex cartae sitae*), rather than the *lex creationis* of the represented right, to determine the issues corresponding to 5 and 6.⁷⁸ The *lex cartae sitae* is a manifestation of the *lex rei sitae* principle, a principle whereby the property aspects of an asset are to be decided by the law of the place where the asset is situated. The latter is a well-established principle for tangible assets and is justified for promoting legal certainty since the location of a tangible asset is easily ascertainable. As the right represented by a negotiable instrument is not tangible, the conventional view may be understood as fictionally treating the location of the negotiable instrument as the situs of the represented right. Since the economic value of a negotiable instrument, being a mere piece of paper, is miniscule, it would make no practical sense to treat a negotiable instrument itself as an object of assignment. Practically, the transfer of a negotiable instrument is only meaningful if it has some effects concerning the assignment of the represented right.

77 Making a separate treatment of these issues would not be unconventional in the choice-of-law analysis for paper-based securities, as may be observed in the distinction of the Wertpapiersachstatut (the law applicable to the real right aspects of a negotiable instrument) from the Wertpapierrechtsstatut (the law applicable to the rights represented by a negotiable instrument). For this distinction, see *e.g.*, Stefan Grundmann and Moritz Renner (eds), *Bankvertragsrecht 2: Commercial Banking: Zahlungs- und Kreditgeschäft* (5th edn, De Gruyter 2014), 482 [Renner].

78 See *e.g.*, Louis d'Avout, "Property and Proprietary Rights," in Jürgen Basedow et al. (eds), *Encyclopedia of Private International Law* (Edward Elgar 2017), 1429 at para. III.1.(c), which makes an observation on the basis of an examination of national laws that the *lex creationis* governs the technique of transferring an asset and where that law provides for a document permitting transfer, the *lex situs* of the document governs the transfer. See also Article 106(2) of the Swiss PILA (n 76) as well as the Botschaft (n 13), 300 on Article 145a of the same Act (examined in section 4.1 *supra*), para. (2) of which is only applicable to paper instruments. A leading scholarly opinion in Japan with respect to paper-based bills of lading also favours the *lex cartae sitae* (noted by Sano (n 69), 157).

This conventional view may be defended as promoting legal certainty as long as the location of the negotiable instrument is easily ascertainable. That is the case where the negotiable instrument is in paper form and held directly by the beneficiary.⁷⁹ The conventional view is harder to be defended where the negotiable instrument is in electronic form.⁸⁰ Where the electronic negotiable instrument is recorded in a central register, it might still be possible to resort to another fiction of treating the location of the register as the situs of the instrument. Such a fiction, however, would not work with blockchain-based negotiable instruments as they are recorded in distributed ledgers for which there is no single location.⁸¹ It seems, therefore, appropriate to abandon the *lex rei sitae* principle where the negotiable instrument is issued on a blockchain.

5.6.2 Whether a Bulk Assignment Should Be Facilitated

Investment securities may be assigned in bulk since they are, unlike documents of title to goods, fungible. This raises the question whether the choice-of-law rules for crypto-securities should facilitate a bulk assignment, namely the assignment of a diverse portfolio of securities.

The application of the *lex creationis* would undermine the efficiency of a bulk assignment. It would impose a significant burden on the assignee, who would have to check and comply with the law governing each of the securities comprising the portfolio. It would even make it practically impossible to pledge a pool of securities which changes composition over time. There is a view that criticises the *lex creationis* rule for this reason.⁸² There is even an argument that says the application of different laws to a diverse portfolio would undo much of the benefit of the blockchain technology.⁸³ And there is a call for a choice-of-law approach that specifies a single law to govern the entire portfolio

79 As securities certificates become immobilised and centralised with the development of the intermediate holding system, it has become less easy to ascertain their location.

80 The Japanese Commercial Code (n 75) used to contain a provision (Article 483), which provided that certain other provisions of the same Code were applicable to the transfer taking place in Japan of the shares and bonds issued by a foreign company. This provision, though not being a choice-of-law rule *per se*, could be seen as manifesting the notion that the *lex cartae sitae* should be the applicable law. It was repealed in 2004 by a law reform to facilitate the digitization of securities.

81 As examined in sections 4.1 and 4.2 *supra*, similar observations have influenced the Swiss and German legislature in devising their choice-of-law solutions.

82 嶋拓哉「抵触法の観点からみたペーパーレス証券決済」(Takuya Shima, “Paperless Securities Settlement from the Perspectives of Conflict of Laws,” in 千葉恵美子 (ed.) 『キャッシュレス決済と法規整』 (Emiko Chiba (ed), *Cashless Payment and Regulations* (Minjuhō Kenkyūkai 2019), 414, 435).

83 Philipp Paech, “Securities, Intermediation and the Blockchain – An Inevitable Choice between Liquidity and Legal Certainty?” (2016) 21 *Uniform Law Review* 612, 636.

of crypto-securities.⁸⁴ One such choice-of-law rule would be to apply the law of the place where the assignor is habitually resident or has its seat. This connecting factor would, however, encounter difficulties where there is a chain of assignments.⁸⁵ An alternative choice-of-law rule would be to apply the law of the place where the assignee is habitually resident or has its seat. As examined in section 4.1 above, a similar rule is adopted by Article 105(2) of the Federal Act on Private International Law of Switzerland, though it is only concerned with an assignment by way of pledging as opposed to an outright transfer.

There is, on the other hand, a view that casts doubt on whether the need to facilitate a bulk assignment is relevant to crypto-securities.⁸⁶ Which viewpoint is right? The works of the UNCITRAL seem instructive. The Model Law on Secured Transactions (2016) provides as a general rule that the law applicable to the creation and effects of a security right in an intangible asset is the law of the State in which the grantor is located (Article 86).⁸⁷ For non-intermediated securities, however, the Model Law provides for exceptions to the general rule. Thus, the law applicable to the creation and effects of a security right in non-intermediated equity securities is the law under which the issuer is constituted (Article 100(1)) and the law applicable to the creation and effect of a security right in non-intermediated debt securities is the law governing the securities (Article 100(2)). These rules accordingly designate the *lex creationis* of the rights represented by the non-intermediated securities.⁸⁸ Their rationale is to be found in an earlier work of the UNCITRAL, the Legislative Guide on Secured Transactions (2007). This guide states⁸⁹ that where it is customary to conduct due diligence on each receivable to be assigned, a choice-of-law rule applying the law governing the receivable would work well while that rule would raise

84 Mark Kalderon, Ferdisha Snagg, and Claire Harrop, "Distributed ledgers: A Future in Financial Services?" (2016) 31 *Journal of International Banking Law and Regulation* 243, 248.

85 Financial Markets Law Committee, "Distributed Ledger Technology and Governing Law: Issues of Legal Uncertainty" (FMLC, March 2018), para. 6.22 <http://fmlc.org/wp-content/uploads/2018/05/dlt_paper.pdf> ("FMLC Report"). For this criticism as it applies to the assignment of receivables outside the context of negotiable instruments, see Trevor C. Hartley, "Choice of Law Regarding the Voluntary Assignment of Contractual Obligations under the Rome I Regulation" (2011) 60 *International and Comparative Law Quarterly* 29, 55.

86 The FMLC Report (n 85). It does not give reasons beyond mentioning the DLT environment.

87 This rule is also consistent with Articles 22 and 30 of the United Nations Convention on the Assignment of Receivables in International Trade (New York, 2001), 12 December 2001.

88 Equity securities are shares and the debt securities include bonds: UNCITRAL, *Guide to Enactment* (n 64), para. 519.

89 UNCITRAL, "UNCITRAL Legislative Guide on Secured Transactions" (UNCITRAL, 2010), 394 <https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/09-82670_ebook-guide_09-04-10english.pdf> accessed 1 June 2022.

difficulties in a bulk assignment where due diligence on each receivable would be either too costly or impossible. It may be inferred from this statement that the provisions of Article 100 of the Model Law are based on the presumption that where non-intermediated securities are assigned, a bulk assignment is not customary. Unless and until a contrary trading practice develops, it seems prudent to also adopt this presumption for crypto-securities⁹⁰ and allow due diligence to be conducted on each of the securities involved on the basis of the *lex creationis*. Since Article 100 makes no distinction between certificated and uncertificated securities,⁹¹ it may, on a literal interpretation, be read to cover crypto-securities,⁹² except where they are held with an intermediary.⁹³ A separate consideration applies where crypto-securities are held with an intermediary. As detailed later in section 5.7.2, this paper suggests a rule of exception for that category of cases.

5.6.3 Whether a Divergence with Intrinsic Tokens Should Be Avoided

As stated in section 1 above, this paper does not deal with intrinsic tokens (namely, tokens of self-anchored value) such as cryptocurrencies since they do not represent any relative rights. But they do give rise to issues pertaining to assignment,⁹⁴ which correspond to issues 5 and 6. This may lead one to think that the choice-of-law rules for these two types of tokens should be aligned.⁹⁵ From this point of view, there is a criticism of the choice-of-law rule applying

90 It must be acknowledged that this position is contrary to the idea presumably underpinning Article 105(2) of the Swiss PILA (n 76), examined in section 4.1 *supra*.

91 UNCITRAL, *Guide to Enactment* (n 64), para. 515.

92 Koji Takahashi, "Implications of Blockchain Technology for the UNCITRAL Works," in the United Nations Commission on International Trade Law (ed), *Modernizing International Trade Law to Support Innovation and Sustainable Development* (United Nations 2017), 81, 87.

93 Intermediated securities are excluded from the scope of the Model Law (Article 1(3)(c)) for the reason that the choice-of-law question is treated by the Hague Securities Convention (the Convention of 5 July 2006 on the Law Applicable to Certain Rights in Respect of Securities held with an Intermediary): UNCITRAL, *Guide to Enactment* (n 64), para. 26.

94 For an analysis on substantive rules on these issues, see *e.g.*, Koji Takahashi, "Cryptocurrencies Entrusted to an Exchange Provider: Shielded from the Provider's Bankruptcy?" in Charl Hugo (ed), *Annual Banking Law Update 2018: Recent Legal Developments of Special Interest to Banks* (JUTA 2018), 1, 6.

95 For an analysis on that assumption, see *e.g.*, 森下哲朗「仮想通貨に関する国際的な法的問題に関する考察」金融法務研究会『仮想通貨に関する私法上・監督法上の諸問題の検討』(2019) pp. 53, 76 (Tetsuo Morishita, "Consideration of International Legal Issues on Virtual Currencies," in Financial Law Study Group, *Examination of Problems in Private Law and Supervision Law Regarding Virtual Currencies* (2019) 53, 76). For a contrary view, see Ooi (n 65), 212.

the *lex creationis* for creating a divergence with intrinsic tokens.⁹⁶ No matter what choice-of-law rules are adopted for intrinsic tokens, the *lex creationis* rule would create a divergence for the simple reason that the *lex creationis* of the represented right cannot be envisaged for intrinsic tokens.

It seems, however, possible to defend the *lex creationis* rule since, despite the apparent similarity, there is a significant difference between the issues raised by these two types of tokens. Unlike the issues raised by intrinsic tokens which concern the assignment of the tokens themselves, the issues raised by tokens serving the role of a negotiable instrument concern the assignment of the represented right. The transfer of a negotiable instrument is only the means to assign the right. Since the gravity of the issues is centered on the state-of-being of the represented right, the application of the *lex creationis* seems defensible.

5.7 *The Rules of Exception for Issues 5 and 6*

The preceding analysis has offered the basic reason for the *lex creationis* rule in relation to all the issues from 1 to 6 (in section 5.5 above) and sought to defend it from possible criticisms in the context of issues 5 and 6 (in section 5.6 above). As noted in section 5.3 above, this paper suggests making exceptions to the *lex creationis* rule for issues 5 and 6 in the following two categories of cases. Firstly, where a permissioned blockchain is used to issue a negotiable instrument and there is consent to a choice-of-law clause by all its users, the law specified by the clause should prevail over the *lex creationis*. Secondly, where crypto-securities are held with an intermediary,⁹⁷ the governing law should be determined in accordance with the existing choice-of-law rules for securities held with an intermediary. In the situations which fall within both of these two categories, it is suggested that the rule for the second category should take precedence.

Another possible idea is to make a third rule of exception which, for the category of cases where crypto-securities are traded on a centralised platform, refers to the law of the jurisdiction regulating the platform. This rule would promote legal certainty since traders using a centralised platform should usually be aware of the the regulatory regime of the platform. Whether the

96 See *e.g.*, Shima (n 82).

97 Where the crypto-securities are listed and traded on a crypto-assets exchange, the provider of the exchange is not an intermediary in this sense since the retail investors may directly participate in trading (see the text accompanying (n 55)). Where, on the other hand, the crypto-securities are listed on a traditional securities exchange or a multilateral trading facility (MTF), the retail investors may only be able to participate in trading through their brokers. Whether the provider of a crypto-assets exchange may act as a broker will depend on the applicable regulatory regime. If it does, it is an intermediary within the meaning of the present discussion.

introduction of this rule is warranted depends, however, on how the architecture of trading will develop and in particular whether any of the situations coming under this category falls outside the second category. What follows will elaborate on the rules of exception for the first and second categories.

5.7.1 Where a Permissioned Blockchain is Used and There is Consent to a Choice-of-Law Clause by all Its Users

Where a private blockchain is used to issue a negotiable instrument,⁹⁸ there is a specific entity acting as its administrator. The administrator may make the blockchain “closed” by requiring anyone wishing to use it to obtain its permission. In granting permission, the administrator may require all users to give their consent to the terms and conditions it has fixed. In the terms and conditions, the administrator may include a choice-of-law clause. If such a clause may be construed as addressing issues 5 and 6, it should be given effect⁹⁹ since it would foster legal certainty more than the application of the *lex creationis* does. To that extent, the general choice-of-law rule in favour of the *lex creationis* should be replaced.

Some of the proponents who support giving effect to such a choice-of-law clause argue that the freedom of choice should be restricted.¹⁰⁰ Seeing the danger that an uninhibited choice of law might be used to avoid regulatory rules, it is argued that the chosen law should be approved by regulators or alternatively that the choice of a legal system having no connection to the DLT enterprise should not be permitted.¹⁰¹ The need for restriction on the freedom of choice seems, however, doubtful since the law applicable to issues 5 and 6 should have no bearing on the application of regulatory rules (such as the rules imposing licensing or registration requirements on the issuance of crypto-securities or the brokering of their trading). The process of determining the applicable regulatory rules¹⁰² is quite different from the choice-of-law rules for private-law issues.

In many cases, even where a private blockchain is used, there will be no choice-of-law clause addressing issues 5 and 6. Thus, there may be no terms

98 Concerning the question whether the blockchain on which crypto-securities are issued must necessarily be a private blockchain, see a brief discussion in section 5.1.2 *supra*.

99 See also the FMLC Report (n 85), paras. 6.5 and 6.7; Paech (n 83), 636; Morishita (n 95), 77; Shima (n 82), 435.

100 See *e.g.*, the FMLC Report (n 85), paras. 6.8 and 6.9; Morishita (n 95), 78; Shima (n 82), 434.

101 The FMLC Report (n 85), paras. 6.8 and 6.9.

102 For an analysis, see Koji Takahashi, “Prescriptive Jurisdiction in Securities Regulations: Transformation from the ICO (Initial Coin Offering) to the STO (Security Token Offering) and the IEO (Initial Exchange Offering)” (2020) 45 *Ilkam Law Review* 31, 33.

and conditions fixed for using the blockchain. Even if there are, these may not contain a choice-of-law clause. Even if there is a choice-of-law clause, it may be construed as only addressing contractual issues on the use of the blockchain. In light of this, it might be thought that the rule of exception to the *lex creationis* rule should be broader and cover all cases where private blockchains are used to issue negotiable instruments. Since private blockchains are invariably administered, such a choice-of-law rule might rely on a connecting factor defined by reference to the administrator. For example, it might specify the law of the place where the administrator is habitually resident or has its seat. Alternatively, it might specify the law of the jurisdiction supervising the administrator.

A difficulty such choice-of-law rules may encounter is the identification of a single administrator. The governance of blockchains varies considerably. Many are operated by a consortium of entities who share the role of administration or divide it among themselves. A connecting factor which relies on a single administrator would not work with such blockchains.¹⁰³ And it may not be always clear in the eyes of the users of the blockchain whether it is administered by a single entity or operated by a consortium of entities. Even where a single administrator is identified, a choice-of-law rule specifying the law of the place where the administrator is habitually resident or has its seat would be difficult to apply if the administrator operates from multiple places. A choice-of-law rule specifying the law of the jurisdiction supervising the administrator would be unworkable where the administrator comes under the supervision of more than one jurisdiction.¹⁰⁴

For these reasons, it may be said that the *lex creationis* rule is superior, in terms of transparency, to any choice-of-law rules which rely on a connecting factor defined on the basis of the administrator of a private blockchain. It follows that the exception to the *lex creationis* rule should be limited to the cases where the negotiable instrument is issued on a permissioned blockchain with its terms and conditions including a choice-of-law clause for issues 5 and 6.

5.7.2 Where Crypto-Securities Are Held with an Intermediary

It is possible that in some cases crypto-securities are held with an intermediary. They may be held, for example, by a central securities depository (CSD) possibly with a layer of custodians between the latter and retail investors. What other situations fall within this category of cases depends on how the

103 For a similar view, see the FMLC Report (n 85), 6.17.

104 As noted in section 4.2 *supra* in relation to a similar choice-of-law rule (§ 32(1)) contained in the eWpG (n 57).

architecture of holding and trading crypto-securities will develop. There is a view that says crypto-securities in this category of cases should be subject to the same choice-of-law rules as exist today for securities held with an intermediary.¹⁰⁵

The existing choice-of-law rules for intermediated securities are not internationally unified. There is a divide between, on the one hand, the instruments of the European Union which specify the applicable law by reference to the place of the relevant account¹⁰⁶ and, on the other, the Hague Securities Convention¹⁰⁷ which follows the contractual PRIMA (Place of the Relevant Intermediary Approach) (Art. 4). These approaches are subject to their own share of criticisms. Thus, against the EU approach, it is noted that legal certainty is lacking with the localization of the relevant account¹⁰⁸ especially where a multinational intermediary is involved. The account-by-account approach of the Hague Convention is criticised for giving rise to the so-called double interests problem.¹⁰⁹ Notwithstanding these criticisms and the lack of international uniformity, should the existing choice-of-law rules be extended by analogy to crypto-securities held with an intermediary? To address this question, the following considerations also seem material.

As noted in section 3.2 above, one of the advantages of the blockchain technology lies in its capability to create a direct link between the issuer and the holder of securities. This advantage would be fortified by the application of the *lex creationis* since it would allow the issuer to ascertain the owner of crypto-securities with relative ease. That advantage is, however, forsaken where the crypto-securities are held with an intermediary: under some legal

105 See *e.g.*, Christiane Wendehorst, “Digitalgüter im Internationalen Privatrecht” (2020) *Praxis des Internationalen Privat- und Verfahrensrechts* 490, 497; Shima (n 82), 435.

106 Article 9(2) of the Settlement Finality Directive (Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems, [1998] OJ L166/45), Article 24 of the Winding-up Directive (Directive 2001/24/EC of the European Parliament and of the Council of 4 April 2001 on the reorganisation and winding up of credit institutions, [2001] OJ L125/15), and Article 9(1) of the Financial Collateral Directive (Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial collateral arrangements, [2002] OJ L168/43).

107 At the time of writing (August 2021), there are only few contracting States. But these include influential States like the United States and Switzerland.

108 See *e.g.*, Paech (n 83), 623. See also the European Commission, “Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the applicable law to the proprietary effects of transactions in securities,” (COM/2018/089 final), para. 3.1.

109 See *e.g.*, Maisie Ooi, “The Hague Securities Convention: a critical reading of the road map” (2005) *Lloyd’s Maritime and Commercial Law Quarterly* 467, 484.

systems, the investor's recourse in the intermediated system primarily lies with a claim against its immediate intermediary rather than the exercise of the right represented by the securities against the issuer. This means that the argument for applying the *lex creationis* is so much the weaker. Furthermore, it should be recalled that while the *lex creationis* rule represents an approach that looks through the tiers of intermediaries to the level of the issuer, that approach was rejected by the drafters of the Hague Securities Convention¹¹⁰ because of the frequency of portfolio transactions which is observed with securities held with an intermediary. The same consideration would be relevant to crypto-securities held with an intermediary. Additionally, one may note that where crypto-securities and traditional securities are held by the same intermediary, the application of the same law would have the advantage of simplicity.¹¹¹

Although the relevant considerations seen in the above paragraphs pull in opposite directions, it may be concluded on balance that the existing choice-of-law rules for securities held with an intermediary should be extended by analogy to crypto-securities held with an intermediary.

6 Final Remarks

This paper has considered a solution for the choice-of-law issues arising from blockchain-based negotiable instruments, in particular the issues from 1 to 6 listed in section 5.2 above. It has suggested in section 5.3 above that the *lex creationis* of the right represented by the instrument should be applied to issues 1 to 4. With respect to issues 5 and 6, which concern the assignment of the represented right, the *lex creationis* should also be applicable as a general rule albeit subject to the two rules of exception as detailed in section 5.7 above.

The relative importance of the rules of exception will depend on how the trading practice will develop in the future. If, for example, the use of permissioned blockchains with a choice-of-law clause in their terms and conditions grows, the rule of exception for that category will commensurately grow in its importance.

The solution suggested by this paper may also need to be revised depending on how the practice and architecture of trading will develop. If, for example, a bulk assignment becomes an important practice for non-intermediated crypto-securities to such an extent that it is no longer customary to conduct due diligence on each of the crypto-securities to be assigned, the argument

110 Goode et al. (n 24), para. Int-38.

111 Wendehorst (n 105), 490, 497.

for choice-of-law rules facilitating a bulk assignment will earn more strength.¹¹² Again, depending on how the architecture of trading will develop, it may become warranted to introduce a third rule of exception applying the law of the jurisdiction regulating the centralised trading platform.¹¹³

The blockchain technology has made it possible to emulate paper-based negotiable instruments in an electronic environment. As tokens serving the role of negotiable instruments lay the foundation for a vital aspect of the token economy, it is one of the most promising areas of application of the blockchain technology. For that kind of economy to fly, it is essential to have a good legal infrastructure in terms of both substantive rules and choice-of-law rules. As of the time of writing (August 2021), it is still early days and the available legal materials are scarce. Hopefully, the analysis presented by this paper, though partly tentative due to the nascent state of market development, will stimulate further debate in this important area of law.

112 See section 5.6.2 *supra*.

113 See section 5.7 *supra*.