

Crypto-assets and blockchain-based legal infrastructure under Swiss law: regulatory framework, private-law treatment and emerging challenges

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Abstract: This contribution examines the legal and regulatory framework governing crypto-assets and blockchain-based legal infrastructure under Swiss law. Switzerland follows a technology-neutral and functional regulatory approach that seeks to accommodate innovation while preserving legal certainty, consumer protection, financial stability and market integrity. Against this background, this article first analyses the legal status of crypto-assets in Switzerland, focusing on token classifications under the Swiss Financial Market Supervisory Authority (FINMA) guidelines and their treatment under Swiss banking and financial market law. Particular attention is paid to the qualification of tokens as securities, applicable licensing requirements and anti-money-laundering obligations affecting crypto-related activities. The contribution then describes current regulatory developments relating to stablecoins and central bank digital currencies, including the prospects of a Swiss wholesale CBDC, and examines their systemic implications for the broader crypto ecosystem.

Beyond financial regulation, this article explores the emergence of blockchain as a legal infrastructure, addressing the evidentiary value of on-chain records, the legal treatment of DAOs and the rise of blockchain-based dispute resolution mechanisms. A further section is devoted to the tokenisation of real-world assets, analysing both its private-law implications and the private international law challenges arising from cross-border tokenised transactions. The contribution then turns to the legal treatment of smart contracts and automated contracting under Swiss law, highlighting the limits of code-based execution and the continued relevance of traditional contract law requirements. Finally, the article briefly considers the limited role of regulatory sandboxes and experimental frameworks in Switzerland as instruments of innovation policy. Overall, the contribution argues that the Swiss approach offers a coherent and adaptable model while underscoring the need for continued adjustment of the legal framework as technology evolves.

Keywords: *crypto-assets, decentralised autonomous organisation (DAO), DLT securities, financial market regulation, on-chain dispute resolution, smart contract, stablecoins and CBDC, tokenisation*

1. Legal and regulatory status of crypto-assets in Switzerland

Crypto-assets have progressively entered the scope of Swiss financial market regulation while retaining a strong anchoring in private-law concepts. Before addressing their monetary impact and technological implications, it is therefore necessary to outline their current legal and regulatory treatment in Switzerland. This article examines the qualification of crypto-assets under Swiss law, the licensing and regulatory requirements applicable to activities involving tokens, and the supervisory approach adopted by the Swiss Financial Market Supervisory Authority (FINMA).

1.1 Introductory remarks

Swiss authorities at the federal,¹ cantonal² and communal level³ acknowledge the potential of distributed ledger technology (DLT) in general and blockchain in particular for the financial services industry (see Haeberli, Oesterhelt and Werlock, 2025, pp. 458 et seq.; Werlen and Weber, 2023) and other sectors of the economy, such as the shipping or the energy sector (see Article 1153a of the Swiss *Code of Obligations*, hereafter CO⁴; furthermore, see Suissenégoce, 2025).

Therefore, it is not surprising that Switzerland was an early adopter of blockchain and has proven its open stance towards the technology time and again. As early as 2018, the Swiss Federal Council (2018) released a comprehensive report on the legal framework for DLT and blockchain. The report concluded that the existing Swiss legal framework is, for the most part, well-suited to address issues arising from new technologies such as DLT. Nevertheless, the report identified a need for targeted adjustments, particularly in the areas of private law, financial market regulation and insolvency law (Swiss Federal Council, 2018). This led to a preliminary draft for a new “umbrella legislation” that would amend several existing federal acts to ensure their compatibility with this new technology (Swiss Federal Council, 2019a). The preliminary draft for a *DLT Act* (*Vorentwurf; avant-projet*) dated 22 March 2019 was followed by a Final Draft (*Entwurf; projet*; see Swiss Federal Council, 2019b) and a so-called Dispatch (*Botschaft; Message*) on 27 November 2019 where the main line of reasoning behind the legal amendments was sketched (Swiss Federal Council, 2019c).

The Swiss Federal Parliament approved the *DLT Act* on 25 September 2020, introducing new ‘DLT securities’ (i.e., ledger-based securities) into Swiss law, amending the CO as well as other federal acts, and enabling the tokenisation of rights, claims and financial instruments on DLTs (see Section 4 below). Furthermore, the *DLT Act* introduced a new licensing category called ‘DLT trading facility’ under the *Financial Market Infrastructure Act 2015* (FinMIA), and provided clarifications regarding the treatment of

¹ This not only includes the Swiss Federal Council as the executive branch of government but also specific supervisory authorities such as FINMA.

² E.g., the Canton of Zug, home of the Crypto Valley, where tax authorities accept payments in cryptocurrencies (Kanton Zug, 2023). The Zug Institute for Blockchain Research (ZIBR) at the University of Lucerne has been substantially financed by the Canton of Zug.

³ E.g., Lugano with its Plan B, a citywide initiative by the City of Lugano and Tether (2022) to make Lugano a hub for Bitcoin, blockchain and decentralised technologies.

⁴ The *Federal Act on the Amendment of the Swiss Civil Code*; cf. Articles 973d et seq. of the CO.

crypto-assets in Swiss insolvency proceedings under the Swiss *Federal Debt Enforcement and Bankruptcy Act (Bankruptcy Act) 1889* (hereafter, BA). The amendments enabling the creation of ledger-based securities entered into force on 1 February 2021. The remaining provisions of the *DLT Act*, along with its implementing ordinance, were enacted by the Swiss Federal Council on 18 June 2021 and entered into force on 1 August 2021 (Swiss Federal Council, 2021). In the area of financial markets, the FINMA has already begun issuing guidelines on the regulatory treatment of initial coin offerings in 2018 (FINMA, 2018) (see Section 1.2.1 below).

1.2 Terminology and classifications of crypto-assets

While Swiss law does not define terms such as ‘blockchain’, ‘crypto-asset’, ‘cryptocurrency’ or ‘digital currency’ (Haeberli, Oesterhelt and Wherlock, 2025, p. 459; Eggen, 2025, no. 3), it does provide legal definitions and classifications for various aspects of blockchain technology and its applications. To begin with, the FINMA has issued guidelines outlining the regulatory classification of tokens (see Section 1.2.1 below). In addition, following the adoption of the *DLT Act*, several new legal definitions concerning different crypto-assets were introduced into Swiss law, such as the concept of ‘crypto-asset’ (see Section 1.2.2.1 below) and the new category of securities referred to as ‘DLT securities’ (see Section 1.2.2.2 below).

1.2.1 Token classification under FINMA guidelines

The FINMA was among the first regulators worldwide (Elliptic, 2022; Gardos, 2018) to introduce a systematic classification of tokens into distinct groups (on current global trends from a Swiss perspective, see Contratto, 2023). With the publication of its *Guidelines for enquiries regarding the regulatory framework for initial coin offerings* on 16 February 2018, the FINMA sought to enhance legal certainty by classifying tokens into three groups, each—in principle—subject to the same regulatory framework (FINMA, 2018; furthermore, Werlen and Weber, 2023):

- Payment tokens (‘cryptocurrencies’, according to the FINMA) are intended to serve as a means of payment for acquiring goods or services or as a means for value transfer, either currently or in the future.
- Utility tokens provide digital access to an application or service via a blockchain-based platform.
- Asset tokens represent, for example, a debt or equity claim against the issuer. They may confer rights to future earnings or capital flows, such as

stocks, bonds or derivatives. Tokens that enable the trading of physical assets on a blockchain also fall into this category.

- The FINMA further acknowledges that these classifications are not mutually exclusive and therefore recognises the existence of hybrid tokens, which combine the characteristics of multiple categories. (FINMA, 2018, no. 3.1)

It should be noted that this classification was later adopted by the Swiss legislator, notably to determine the legal qualification of tokens under civil law (Swiss Federal Council, 2018).

1.2.2 Further classifications under the Swiss *Federal Banking and Financial Markets Act*

The classification in the FINMA (2018) is generally regarded as one of the cornerstones of the broader treatment of crypto-assets in Swiss financial market regulation (for further details, see Schärli, 2024). However, this classification per se does not determine the legal treatment of tokens. Rather, it serves as a conceptual bridge to the classifications established under financial market acts and provides guidance on which specific legal requirements may be applicable (Schärli, 2024).

1.2.2.1 Crypto-assets

One of the definitions that may trigger the application of banking regulations is that of ‘crypto-assets’ (*kryptobasierte Vermögenswerte; cryptoactifs*) introduced in the (revised) *Federal Ordinance on Banks and Savings Institutions* (BO).⁵ These are defined as assets that are, *de facto* or by intention of their issuer, primarily used as (i) payment instruments or (ii) instruments for the transfer of money or value (BO, Article 5a; see also the *Banking Act*, Article 1b, paras. 1 and 16).⁶ This definition is pivotal in determining whether the acceptance or custody of such assets triggers a licensing requirement under Swiss banking law (see Section 1.3 below).

⁵ No official translation available, see German version *Verordnung über die Banken und Sparkassen* (2014; amendment in force as of 1 August 2021).

⁶ The category defined in Article 5a of the BO represents a subcategory of “crypto-assets in the broader sense”, as the article itself explicitly states that it provides a definition of crypto-assets in the sense of Article 1b, para. 1, lit. a of the BA. Crypto-assets that do not meet the requirements of Article 5a of the BO trigger the authorisation requirement under Article 1a of the BA (the “normal” banking licence).

1.2.2.2 DLT securities

The *DLT Act* introduced an innovative and entirely electronic form of securities called ‘DLT securities’ in Article 2, lit. b^{bis} of the *FinMIA*. DLT securities represent a new category of negotiable securities designed to enable the transfer and tokenisation of rights, claims and financial instruments (e.g., bonds, shares, derivatives or structured products) (Swiss Federal Council, 2019c, pp. 309 et seq.; Haeberli, Oesterhelt and Wherlock, 2025, p. 461). In this context, tokenisation is understood as the legal linkage of a (transferable) right with a token, whereby this right can be asserted and transferred exclusively by the person entitled by the token (Gaberthüel and Grivel, 2022; Kramer and Meier, 2020a; Iffland and Läser, 2018) (see Section 4 below). This new category of securities establishes a legal foundation for asset tokenisation, giving the investors the same legal protections as those provided for traditional paper securities and digital securities (Chabbey and Kramer, 2021). For instance, the offering of DLT securities may trigger the duty to publish a prospectus under Article 35, para. 1^{bis} of the *Financial Services Act* (*FinSA*). Thus, the introduction of DLT securities as a legal category expands the scope of Swiss law and increases legal certainty for both issuers and investors.

Under Swiss law, the category of DLT securities encompasses both ledger-based securities within the meaning of Article 973d of the *CO* (*Registerwertrechte; droits-valeurs inscrits*) and other uncertificated securities that are held in distributed electronic registers which give creditors power of disposal over the security (‘uncertificated ledger-based securities’) (*FinMIA*, Article 2, lit. b^{bis}). Therefore, all ledger-based securities under Article 973d of the *CO* qualify as DLT securities. However, the category of DLT securities is broader.

Ledger-based securities constitute the core construct specifically designed by the legislator to enable the issuance and transfer of securities entirely on DLT infrastructures. Because ledger-based securities can represent different types of underlying rights, such as contractual claims under bonds or membership rights in a corporation, certain asset tokens—and, in specific cases, utility tokens—may therefore also qualify as DLT securities (Swiss Federal Council, 2019c, pp. 309 et seq.). However, cryptocurrencies such as bitcoin, as well as certain⁷ stablecoins, are excluded from being issued as

⁷ Note that stablecoins *can* be structured ledger-based securities, thereby certifying a directly transferable claim against the issuer, which raises the question of whether they could be classified as DLT securities under Article 2, para. 2, lit. b^{bis} of the *FinMIA* and Article 3, lit. b of the *FinSA* (for further detail, see Zellweger-Gutknecht *et al.*, 2025, p. 210).

DLT securities, as they do not embody a claim or right against a defined issuer (Swiss Federal Council, 2019c, pp. 309 et seq.).

Under Swiss law, a ledger-based security is created when the parties agree to grant the creditor a right embodied in a DLT-based securities registry that meets the statutory requirements of Article 973d of the CO [furthermore, FinMIA, Article 73d and *Financial Market Infrastructure Ordinance* (FinMIO), Articles 58f et seq.; see also Vraca, 2024, pp. 73–109; Kramer and Meier, 2020a]. This requires: (i) a constitutive agreement to issue the right as a ledger-based security (registration agreement); (ii) registration of the right in a DLT-based securities registry that ensures integrity, consistency and protection against unauthorised modification (CO, Article 973d, para. 2) and (iii) technical rules governing the power of disposal over ledger-based security. The content of the rights, the functioning of the ledger and the registration agreement are recorded in the ledger or in linked accompanying data (CO, Article 973d, para. 2). The DLT-based securities registry must use technological processes to give the creditors, but not the obligor, power of disposal over their rights (CO, Article 973d, para. 2). Once created, a ledger-based security is legally equivalent to a traditional security and may be transferred through the technical mechanisms of the register rather than through paper-based transfer or intermediated systems. The transfer of ledger-based securities is governed by the terms of the registration agreement (CO, Article 973f), which ensures a high level of legal certainty.

The holder of the ledger-based security (i.e., the person identified in the registry as creditor of the right) is deemed to be its owner (CO, Article 973e, para. 1). As a result, the transfer of a ledger-based security entails the transfer of ownership of the underlying right. Specifically, the underlying right may be exercised and transferred to others exclusively through this DLT-based securities registry. Under Article 973d of the CO, the technical rules governing the functioning and disposal of rights on the DLT-based securities registry are legally binding, which ensures legal certainty and enables the registry to serve as the authoritative source for determining ownership and transfers.

1.3 Regulatory requirements and licensing of crypto activities

Swiss financial market regulations do not yet provide a comprehensive or unified framework for crypto-assets. The *DLT Act* was limited to targeted amendments of existing laws, mainly in the area of financial market law, while also introducing certain adjustments in civil law, in order to

accommodate the unique characteristics of crypto-assets and to address the most pressing challenges raised by DLT.

As a result, certain activities in the crypto space may trigger multiple legal consequences under different financial market statutes, while others may fall within existing regulatory “sandboxes” or benefit from lighter supervisory requirements (e.g., Werlen and Weber, 2023). Moreover, specific rules have been tailored to distinct types of crypto-assets, and several issue-specific acts also apply to them.

1.3.1 Qualification of tokens as securities

The offering and sale of crypto-assets are not necessarily subject to Swiss financial market regulations. However, tokens may fall under securities law if they qualify as securities under Swiss legislation (i.e., standardised, mass-tradable instruments such as certificated or uncertificated securities, derivatives or intermediated securities; cf. FinSA, Article 3, lit. b; on this qualification, see Schärli, 2024). While neither statutory guidance nor case-law defines when tokens qualify as securities, the guidelines provided in the FINMA (2018) offer a degree of legal certainty. Thus, whereas token classification requires a case-by-case analysis, in general, the FINMA distinguishes between different types of tokens and evaluates whether they constitute securities based on their characteristics and functions:

- *Payment tokens* (e.g., bitcoin or ether) are not treated as securities. The rationale is that payment tokens do not grant their holders any rights against an issuer or a third party. Instead, they serve primarily as a means of exchange and a potential store of value. Similarly, payment tokens are generally not considered financial instruments under Article 3, lit. a of the FinSA (FINMA, 2018, no. 3.2.1).
- *Utility tokens* are not classified as securities if their sole purpose is to grant digital access to a service or application and this functionality is already available at issuance (for so-called ‘pre-functional tokens’, see FINMA, 2018, no. 3.2.3; Eggen, 2018, p. 565). However, utility tokens that have an investment or capital market connection may simultaneously exhibit the characteristics of an asset token, thereby bringing them into the scrutiny of securities law (FINMA, 2018, no. 3.2.2).
- *Asset tokens* may qualify as securities if they represent uncertificated securities or derivatives that are standardised and suitable for mass trading. For example, tokens that grant future purchase claims in pre-financing scenarios could be treated as securities (FINMA, 2018, no. 3.2.3; Eggen, 2018, p. 565).

- *Stablecoins* may qualify as securities depending on their structure. If a stablecoin is linked to underlying assets (e.g., commodities or securities) and grants the holder contractual claims (such as redemption rights), it may be classified as a derivative or security under Swiss law (FINMA, 2019, no. 2.2). Conversely, if its primary function is price stabilisation rather than investment, it will generally not be treated as a security (FINMA, 2019, no. 2.2.2).

1.3.2 Licensing requirements and other regulatory obligations

Certain activities involving tokens that qualify as securities under Swiss law (see Section 1.3.1 above) may trigger regulatory obligations under three principal frameworks:

- *The Financial Institutions Act* (FinIA),
- *The Financial Market Infrastructure Act* (FinMIA) and
- *The Financial Services Act* (FinSA).

Individuals and legal entities that create or trade tokenised securities on behalf of clients in a professional capacity may be deemed securities firms (within the meaning of Article 41 of the FinIA) and must obtain a FinIA licence; if such tokens also qualify as financial instruments, additional obligations under FinSA may apply (particularly if the entity acts as a financial service provider) (Haeberli, Oesterhelt and Wherlock, 2025, p. 463). For instance, issuing asset tokens linked to a company's or project's performance may constitute a regulated activity and trigger prospectus requirements under Articles 35 et seq. of the FinSA. However, if these activities are conducted on a purely cross-border basis (without personnel or a branch in Switzerland), a FinIA licence is not required in general; the FinSA can still apply if financial services are provided to clients in Switzerland (Haeberli, Oesterhelt and Wherlock, 2025, p. 464).

Operating a token trading platform in Switzerland may also give rise to licensing obligations under the FinMIA. Only licensed banks, securities firms or recognised foreign trading venues may operate as 'organised trading facilities' (OTFs) pursuant to Article 42 of the FinMIA (in detail, see Humbel, 2021; 2019, pp. 454 et seq.)—that is, platforms enabling multilateral or bilateral trading of securities or other financial instruments, whether through discretionary or non-discretionary rules. Even if the tokens traded are not classified as securities, a platform may still fall within the definition of an OTF if the tokens are considered other financial instruments under the FinSA (Haeberli, Oesterhelt and Wherlock, 2025, p. 464).

The custody of crypto-assets can also trigger licensing obligations under Swiss financial market regulation. Entities that hold crypto-assets on behalf of clients may generally be deemed financial intermediaries and must comply with prudential requirements depending on their business model and risk profile. The FINMA considers the custody of crypto-assets to entail risks comparable to the custody of traditional financial instruments, including operational and cyber risks, and therefore requires adequate organisational and segregation measures. Where custody is combined with the ability of the custodian to dispose of client assets (e.g., in staking or lending structures), banking or securities regulations may be triggered, and custody may even qualify as deposit-taking under Article 1, para. 2 of the BA (FINMA, 2019; 2018) (see Section 1.3.3 below for the precise AML implications of custody activities).

Finally, it should be noted that a legislative reform project is currently under discussion which provides for the creation of two new licensing categories: one for ‘payment instrument institutions’, intended to replace the existing ‘fintech licence’ and to authorise the issuance of certain stablecoins, and another for ‘crypto institutions’ providing services related to other cryptocurrencies (Swiss Federal Council, 2025a). This reform aims to adapt the Swiss prudential licensing framework to business models specific to the crypto ecosystem and to address regulatory gaps identified in practice.

1.3.3 AML regulations

In Switzerland, the issuance and trading of payment tokens may fall under anti-money laundering (AML) regulations, depending on whether the activity qualifies as financial intermediation under the *Anti-Money Laundering Act (Switzerland) 1997* (hereafter, AMLA).

Swiss law distinguishes between two broad categories of financial intermediaries. The first includes banking sector entities (banks, insurance institutions and securities firms) subject to a comprehensive prudential regulation (AMLA, Article 2, para. 2). The second category comprises non-banking intermediaries, such as individuals or companies that professionally accept or manage third-party assets, assist in investments or assist the transfer of such assets (AMLA, Article 2, para. 3). Anyone engaging in such an activity must affiliate with a Swiss self-regulatory organisation (SRO; AMLA, Article 14, para. 1) and comply with standard AML obligations, including verifying the customer’s identity, identifying beneficial owners and understanding the nature and purpose of the business relationship (AMLA, Articles 3 et seq.).

In the context of tokens, the application of AML obligations depends on specific activity. According to the FINMA, the issuance of payment tokens or stablecoins qualifies as financial intermediation, as it involves the creation of a means of payment (FINMA, 2024, no. 3). In contrast, the simple sale of payment tokens or their use to purchase goods or services does not, by itself, trigger AML obligations (FINMA, 2018, nos. 3.6 et seq.; Haeberli, Oesterhelt and Wherlock, 2025, p. 466). However, under the (revised) Swiss *Anti-Money Laundering Ordinance* (AMLO), services that facilitate the transfer of digital currencies may be subject to AMLA if they are provided as part of an ongoing business relationship under Article 4, para. 1, lit. b of the AMLO (*dauernde Geschäftsbeziehung; relation d'affaires durable*) (FINMA, 2018, no. 3.7).

2. Impact of CBDCs and stablecoins regulation on the crypto ecosystem

After clarifying the current legal and regulatory status of crypto-assets in Switzerland, attention should be directed to the emergence of monetary innovations that are progressively reshaping this landscape. Ongoing work on central bank digital currencies and the evolving regulatory approach to stablecoins have the potential to significantly impact the Swiss crypto ecosystem.

2.1 Towards a Swiss (wholesale) CBDC

In Switzerland, payment tokens are not recognised as legal tender and, therefore, do not qualify as such in the strict legal sense.⁸ Some legal scholars, however, suggest that widely used tokens that are accepted by the public and fulfil the typical functions of money could be considered “money” in a broader sense (see, e.g., Müller, Reutlinger and Kaiser, 2018, p. 80).

The Swiss National Bank (SNB) has not issued a retail or wholesale CBDC, but is exploring digital central bank money through several initiatives. The collaborative *Project Helvetia* tested integrating wholesale CBDCs into a DLT infrastructure for settling tokenised assets between financial institutions, demonstrating feasibility (Swiss National Bank *et al.*, 2020; 2022). In *Project Jura*, the SNB, along with Banque de France and the BIS Innovation Hub, explored cross-border transactions via wholesale CBDCs to

⁸ The *Federal Act on Currency and Payment Instruments 1999* determines legal tender in Switzerland.

improve security and efficiency (Swiss National Bank *et al.*, 2021). Another international collaboration called *Project Mariana* extended this work, studying automated market-makers and cross-border interoperability of wholesale CBDCs to enhance FX trading, settlement and future adaptability (Swiss National Bank *et al.*, 2023).

The SNB does not, at least for now, appear to have plans to issue a retail CBDC for the general public.

2.2 Tightening regulatory net for stablecoins

In response to a growing number of enquiries regarding the issuance of stablecoins (namely, tokens designed to minimise volatility by linking to stable assets, such as fiat currencies, real estate or commodities, or by using algorithmic mechanisms) in Switzerland, the FINMA issued on 11 September 2019 the *Supplement to the guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)* (FINMA, 2019), addressing this issue. Further guidance followed on 26 July 2024, outlining the risks and requirements for stablecoin issuers and related financial institutions (FINMA, 2024).

The FINMA does not issue a blanket rule on licensing for stablecoins. Instead, the classification and licensing requirements depend on their specific characteristics. The FINMA's assessment follows three key principles: "substance over form" (economic reality prevails over labels); "same risks, same rules" (similar risks are regulated consistently) and a "case-by-case analysis" of each stablecoin's features (FINMA, 2019). Depending on these characteristics, a banking licence under the BA or a licence under the *Collective Investment Schemes Act* (CISA) may be required.

Distinguishing between a deposit under banking law and a collective investment scheme hinges on whether the underlying assets are managed for the account and at the risk of the stablecoin holder (which points to a collective investment scheme) or for the account and at the risk of the issuer (which is indicative of a deposit; FINMA, 2024, no. 2; 2019, no. 2.2.1). Since there are no dedicated Swiss regulations for stablecoins, each stablecoin must be evaluated individually, considering factors such as whether it is backed by a single asset or a basket, the type of assets and whether holders have a contractual redemption right or merely an ownership claim (FINMA, 2019, no. 2.2). For example, a stablecoin pegged to fiat currency at a fixed ratio (e.g., 1 token equals 1 CHF) or backed by precious metals held by

banks that provide holders with a redemption claim may, depending on their specific structure, require the issuer to obtain a banking licence (FINMA, 2019, no. 2.2.1). Conversely, if a stablecoin is linked to currencies, securities or commodities in a way that provides holders with a redemption claim and the underlying assets are managed on behalf of token holders, the FINMA may classify it as a collective investment scheme under the CISA (FINMA, 2019, nos. 2.2 and 2.2.3 for stablecoins linked to real estate; furthermore, see Schärli, 2024), with token holders bearing risks related to asset management, including fluctuations, interest rate changes or counterparty exposure.

2.3 Systemic impact on the broader ecosystem

The stringent approach taken by the FINMA regarding stablecoins has been widely criticised by members of the Swiss crypto ecosystem as, in their view, it curtails the ability of the Swiss crypto economy to remain competitive internationally. As they see it, the AML rules set forth by the FINMA exceed the international standard (including what is required under the rules set by the Financial Action Task Force; Swiss Blockchain Federation, 2024), thus rendering the issuance of stablecoins in Switzerland commercially unfeasible, as the identification requirements would essentially undercut the transferability of such stablecoins (Swiss Blockchain Federation, 2024).

3. Legal treatment of on-chain legal infrastructure and blockchain-based organisations

Beyond the monetary dimension of crypto markets, blockchain technologies increasingly support legal functions directly on-chain. The following part therefore examines the legal treatment of these emerging infrastructures, including the probative value of on-chain records, the private-law status of DAOs and blockchain-based dispute resolution systems.

3.1 Recognition of the probative value of on-chain records

In Switzerland, there is currently no general statutory recognition or specific regulatory framework governing the on-chain legal infrastructure. In Swiss law, the use of blockchain as a certification mechanism does not in itself constitute an electronic signature within the meaning of the *Federal Act on Electronic Signatures* (FAES). Only a qualified electronic signature based on

a recognised certificate is legally equivalent to a handwritten signature (CO, Article 14, para. 2^{bis}). Nevertheless, blockchain-based hashing, timestamping or anchoring mechanisms may be used to demonstrate the integrity and effective chronology of data, and may therefore be admitted as technical evidence within the free system of evidence under Swiss civil procedure [*Civil Procedure Code (Switzerland) 2008* (CPC), Article 168], and the same applies in Swiss criminal procedure [*Criminal Procedure Code (Switzerland) 2007* (CrimPC), Article 139]. However, blockchain records do not enjoy any statutory presumption of authenticity or integrity, in contrast to qualified electronic signatures under the FAES regime. Their evidentiary value depends on factual assessment and expert evidence where necessary, and judges remain free to assess their evidentiary weight *in concreto*.

At this stage, the *Justitia 4.0* project, which aims to digitalise court proceedings and electronic communication within the Swiss justice system (Projekt Justitia 4.0, no date), does not foresee amendments to the FAES regime or changes to the evidentiary rules that would specifically recognise blockchain-based certification as equivalent to a qualified electronic signature. However, the systematic digitalisation of judicial communication may indirectly contribute to a broader acceptance of blockchain-based certification mechanisms in practice, even if no formal legislative recognition is currently envisaged.

3.2 Legal treatment of decentralised autonomous organisations

Swiss law does not contain specific rules on the legal effects of smart contracts (see Section 5 below). Similarly, there are no specific rules that recognise on-chain organisations such as ‘decentralised autonomous organisations’ (DAOs). DAOs can be described as blockchain-based digital organisations in which governance is executed through smart contracts and both ownership and decision-making are collectively exercised by the community of token holders. They coordinate human and financial resources to pursue shared objectives and generally operate with a flat hierarchy rather than a centralised management body (Guillaume, 2025). Switzerland is not among the very few states that have already adopted specific rules on DAOs, allowing the creation of ‘regulated DAOs’ (e.g., the US states of Vermont and New Hampshire, or the Marshall Islands). As a result, when a DAO interacts with the Swiss legal order, it must first be determined whether it should be characterised as a company or as a contractual arrangement.

Under the *Private International Law Act 1987* (PILA), DAOs should, in principle, be qualified as companies (PILA, Article 150; see Guillaume, 2024, pp. 141–145), which triggers the application of the law of the state of incorporation (PILA, Article 154, para. 1). However, this generally leads to a dead end because the state of incorporation is usually non-identifiable, except in the case of regulated DAOs. The subsidiary connecting factor allows for the application of the law of the state of administration (PILA, Article 154, para. 2), which may be identifiable in some circumstances, for example, where it is possible to determine a location where those taking the most important governance decisions (often the founding members) systematically act. However, in most cases, neither of these connecting factors leads to a clear determination of the applicable law (Guillaume, 2025, pp. 42–47).

If a court or authority nevertheless concludes that Swiss law applies and that the DAO can qualify as a company, it must still determine which Swiss company form it is functionally equivalent to, considering its intrinsic characteristics. Most Swiss authors propose qualifying DAOs as simple partnerships (*einfache Gesellschaft*; *société simple*) within the meaning of Article 530 of the CO, which operate as the residual form of company under Swiss law when the requirements of other statutory forms are not met (Furrer, 2024; Reiser and Wächli, 2024, pp. 761–767; Meyer, 2023; Schuppli and Jafari, 2021; Gyr, 2017). Simple partnerships have no legal personality, cannot litigate in their own name and expose all partners to unlimited personal liability. For this reason, many DAO founders in Switzerland seek to shield themselves from potential liability by interposing a separate company as a legal wrapper for the DAO [such as associations under Articles 60 et seq. of the *Civil Code* (CC) and foundations under Articles 80 et seq. of the CC; see Guillaume, 2025, pp. 44–45; for further details on the former, see Kunz and Haslebach, 2025; for the latter, see Humbel, 2025]. However, as none of these legal persons were created bearing the idiosyncratic features of DAOs in mind, at the very best, they only partially fit the needs and the purpose of DAOs. This raises the question of whether Switzerland should introduce a dedicated legal form for DAOs (see Guillaume and Riva, 2025, pp. 140–142; Weber, 2025; Reiser and Wächli, 2024, pp. 872–876).

3.3 On-chain dispute resolution systems

A further dimension of on-chain legal infrastructure concerns dispute resolution mechanisms that operate directly on blockchain systems, commonly referred to as ‘blockchain dispute resolution’, or BDR (Guillaume and Riva, 2023). The dispute resolution process of a BDR mechanism is conducted entirely on-chain, from the transmission of the dispute to the dispute resolution platform via smart contract, to the automatic enforcement of the outcome, also executed by smart contract. The dispute resolution system itself can be designed in different ways. Today, the only BDR mechanism operating in practice is Kleros, a platform that resolves disputes through a jury composed of members of the Kleros DAO (i.e., token holders of the DAO) who are selected by random draw (Kleros, 2026; Guillaume and Riva, 2023, pp. 613–621). The dispute resolution system put in place preserves the pseudonymity of both the parties involved in the dispute and the jurors. It allows actors of the crypto economy to resolve their disputes on-chain without having to bring the case before state courts, thereby avoiding complex private international law questions (jurisdiction, applicable law) and the risks linked to the (non-)enforcement of state decisions on-chain (Guillaume, 2024).

However, if the outcome must be enforced off-chain, the availability of compulsory enforcement will depend on the rules applicable in the state where enforcement is sought. In particular, the question arises as to whether the outcome can be qualified as an arbitral award or as a settlement agreement under the law of that state, thereby triggering the potential application of the *New York Convention 1958* or the *Singapore Convention 2018*, respectively. In Switzerland, qualifying such an outcome as an arbitral award is not possible, and the *Singapore Convention* is not in force. As a result, the creditor will need to submit its claim before Swiss courts to obtain an enforceable judgment (Guillaume and Riva, 2023, pp. 632–638).

4. Tokenisation of real-world assets

Beyond the organisational layer of blockchain-based systems, a key development lies in the tokenisation of rights under private law. The next section, therefore, turns to the private-law foundations of tokenisation in Switzerland, with a focus on the legal regime applicable to ledger-based securities.

4.1 Private-law treatment of real-world asset tokenisation

With the entry into force of the *DLT Act*, the Swiss legislator introduced a new framework enabling the tokenisation of any right capable of being embodied in a physical security (*Wertpapier; papier-valeur*). Such rights may now be recorded in a distributed electronic register and thereby become ledger-based securities (see Section 1.2.2.2 above). This includes all contractual rights, particularly claims, irrespective of whether they are widely distributed or fungible. As a result, a broad range of underlyings may be tokenised under Swiss law, such as equity securities (shares and participation certificates), debt securities, units in collective investment schemes, structured products, derivatives or bonds (Derungs, 2024; Kramer and Meier, 2020b). This typically covers asset tokens (Derungs, 2024), investment tokens and, in certain cases, utility tokens. In particular, the shares of a Swiss company limited by shares (*Aktiengesellschaft; société anonyme*) may be issued in tokenised form and governed by the legal regime applicable to uncertificated securities or ledger-based securities (CO, Article 622, para. 1, Articles 973c and 973d; e.g., Capital Markets and Technology Association (CMTA), 2024; Vraca, 2024; Gaberthüel and Grivel, 2022; Iffland and Läser, 2018). For corporations, tokenisation offers an attractive alternative to intermediated securities (the *Federal Act on Intermediated Securities 2008*, or FISA), where shares are credited to securities accounts held with professional custodians.

While crypto-assets, such as asset tokens, can be constituted as ledger-based securities, the private-law status of crypto-assets that do not embody an underlying right (such as cryptocurrencies) remains uncertain, and legal uncertainty persists with respect to their transfer and enforcement (Eggen, 2025, no. 10; Wyss, 2025). Not surprisingly, some authors propose extending the scope of the application of uncertificated ledger-based securities to include crypto-assets that do not confer subjective rights (Eggen, 2025; Wyss, 2025). Similarly, Swiss private law currently does not allow for the direct tokenisation and transfer of real estate; however, in this context, indirect tokenisation through uncertificated ledger-based securities under Articles 973d et seq. of the CO is discussed in the literature (Burri, Mikkonen and Spillmann, 2023).

4.2 Private international law issues in cross-border tokenisation

When tokenised shares or other ledger-based securities circulate across borders, questions of private international law become central, particularly with respect to the determination of the applicable law governing their issuance, transfer and enforcement. While the corporate law aspects of tokenised shares remain governed by the law of the issuing company (PILA, Articles 154 and 155), questions relating to the transfer, priority and third-party effects of tokenised securities are dealt with in Article 105 and the newly enacted Article 145a of the PILA. Provisions specifically addressing private international law issues relating to tokenised securities have been introduced by the *DLT Act* in the Swiss PILA.

Whether a claim is embodied in a security, such as a ledger-based security, is in principle determined by the law designated in the instrument (PILA, Article 145a, para. 1). The issuer may therefore freely choose the applicable law (e.g., in the registration agreement), and this choice is enforceable against third parties (Kuhn, 2021, p. 126). In the absence of such a choice, the applicable law is that of the issuer's seat. The designated law also governs the transfer of an underlying claim (PILA, Article 145a, para. 1).

In contrast, security interests over a ledger-based security follow a different connecting factor. The pledging of such a security is governed by the law chosen by the parties (PILA, Article 105, para. 1); however, this choice of law is not opposable to third parties. If no choice of law has been made, then the applicable law is that of the habitual residence of the pledgee (PILA, Article 105, para. 2).

5. Legal and regulatory approach to smart contracts and automated contracting

These limits also show that the legal effects of tokenisation ultimately depend not only on the underlying rights, but also on the technological mechanisms through which these rights are automated and performed. This naturally leads to the question of how Swiss law approaches smart contracts and automated contracting. The following section therefore examines both the legal and regulatory treatment of smart contracts in Switzerland, including their contractual validity, enforceability and interaction with supervisory

requirements, and analyses the extent to which technological automation can give rise to legally binding effects under Swiss law.

5.1 Technology-neutral regulatory approach to smart contracts

The legal effects of a smart contract depend not only on its specific features but also on the law governing it. Switzerland is not among the few jurisdictions that have adopted specific legislation on smart contracts (e.g., the US states of Illinois and Wyoming), and there is therefore no dedicated statutory regime. Their legal treatment is determined by the general principles of Swiss contract law, which are based on technology neutrality. This technology-neutral approach is also reflected at the regulatory level.

Prima facie, Swiss law and regulators do not follow a technology-specific approach to smart contracts and automated contracting. The FINMA (2016, p. 26) has repeatedly confirmed that it maintains a technology-neutral stance towards new technological developments and business models, so as neither to encourage nor obstruct them. This approach was also confirmed in the Swiss Federal Council's Dispatch to the *DLT Act* (Swiss Federal Council, 2019c). Although the *DLT Act* was adopted in response to DLT-based developments, it did not regulate a specific technology but rather the underlying functional features (Swiss Federal Council, 2019c). Smart contracts and automated contracting are addressed in the same manner: there are currently no technology-specific statutory rules applicable to them.

5.2 Private-law treatment of smart contracts

This general framework also applies to the assessment of the contractual validity of smart contracts. The conditions encoded in smart contracts may be recognised as valid contracts when the requirements for contract formation are fulfilled and when this reflects the agreement of the parties. However, concluding a contract exclusively in a programming language raises practical difficulties, particularly with respect to verifying the legal capacity and capacity to act of the parties involved and where mandatory form requirements must be complied with (Gyr, 2019, pp. 105–164). Automated execution through code does not, in itself, prevent contractual qualification. Smart contracts may, for instance, be used to buy or sell a digital asset controlled through a private key (e.g., cryptocurrencies, tokens or NFTs). A smart contract may contain an offer addressed to specific persons or to an indeterminate group of potential counterparties. The contract is concluded

upon acceptance of the offer, which may be formalised, for example, by sending cryptocurrency to the smart contract address via a blockchain transaction. Nonetheless, the conclusion and performance of such electronic contracts remain subject to mandatory rules, including consumer protection, financial regulation and AML requirements.

Furthermore, even if a contract is concluded electronically, it must remain possible for the parties to contest, rescind or invalidate it on the grounds of error, fraud, impossibility or unlawfulness (Gyr, 2019, pp. 165–176). This may, however, raise practical difficulties in public blockchains, which are censorship-resistant precisely because of their decentralised architecture. In practice, this means that invalidating or reversing a smart contract will generally require the cooperation of the parties, as no single actor can unilaterally alter or interrupt the execution of code on a public blockchain.

Questions of enforcement remain particularly complex: while smart contracts can autonomously perform obligations that are natively digital (e.g., the transfer of digital assets such as tokens), the enforcement of obligations that cannot be executed on-chain (e.g., the transfer of possession of a physical asset purchased on-chain and paid for in cryptocurrencies) still depends on the applicable procedural rules and the competent authorities of the state where enforcement is sought. Where, as in Switzerland, the legal effects of smart contracts are not expressly defined by statutes, it is advisable to back the smart contract with a traditional off-chain contract to ensure legal certainty regarding the contractual obligations that ultimately need to be enforced off-chain.

However, from a Swiss perspective, smart contracts are still predominantly perceived as mechanisms that automate contractual performance rather than as autonomous legal instruments, although part of the doctrine argues that they could, in certain circumstances, qualify as contracts in their own right (e.g., Specogna, 2023, pp. 26–29; Guillaume, 2021, pp. 43–46; Carron and Botteron, 2018; Müller, 2018; Trüb, 2018; Weber, 2018; Jaccard, 2017). In such cases, the smart contract is backed by a traditional off-chain contract reflecting the parties' agreement and is used solely to automate the execution of one specific contractual obligation.

6. Regulatory sandboxes and experimental frameworks

While smart contracts illustrate how private autonomy can be technologically automated within the existing legal framework, regulatory authorities also play a role in shaping the conditions under which new business models and technological applications may emerge. Against this background, the following section examines the Swiss approach to regulatory sandboxes and experimental frameworks that enable innovation to be tested within controlled environments under regulatory supervision.

Switzerland has not implemented sandbox exemptions specifically for DLT or crypto-assets but has established broader fintech-friendly regulations to lower market-entry barriers, structured around a three-pillar framework.

The first pillar is a sandbox-like exemption permitting companies to accept public deposits without a banking licence under strict conditions: the total deposits must not exceed CHF 1 million, be non-interest-bearing and uninvested, and depositors must be informed in writing that the company is not subject to the FINMA supervision and that the deposits are uninsured (BO, Article 6, para. 2). Exceeding the CHF 1 million threshold triggers a duty to notify the FINMA within 10 days and apply for a banking licence (BO, Article 6, para. 4).

The second pillar is the settlement accounts exemption, which covers client funds held by asset managers, securities firms or similar entities solely for transaction settlement. Funds must be non-interest-bearing and transferred within 60 days (BO, Article 5, para. 3, lit. c). The FINMA has clarified that this exemption does not extend to cryptocurrency traders operating akin to FX dealers (for further detail, see Haeberli, Oesterhelt and Wherlock, 2025, p. 467).

The third pillar is a simplified fintech licence that allows companies to accept up to CHF 100 million in non-invested, non-interest-bearing deposits (BA, Article 1b). Lending or mortgage services are not permitted, making this licence particularly suited for crowdfunding platforms (Haeberli, Oesterhelt and Wherlock, 2025, p. 467). The BO sets reduced requirements for capital, governance and risk management to facilitate market entry (BO, Articles 7a, 8a, 14a et seq.).⁹

⁹ The Swiss Federal Council (2025b) plans to amend this licence and to substitute it with a new kind of licence for “payment instrument institutions”.

In addition, the *DLT Act* created a new category of ‘DLT trading facility’, which constitutes a functional experimental framework enabling integrated trading, clearing and settlement of DLT-based securities under FINMA supervision (FinMIA, Articles 73a et seq.; see also FinMIO-FINMA, 2015). While not formally designated as a sandbox, this regime allows market participants to test new models of secondary markets for tokenised assets within a regulated environment. Conceived to accommodate the atomistic execution of smart contracts on blockchains within a single licence instead of several, this model has however failed to break through in practice. The FINMA authorised the first DLT-based trading facility in Switzerland as late as March 2025.

Finally, the Swiss National Bank explores digital central bank money through several pilot initiatives, although these do not constitute regulatory sandboxes (see Section 2.1 above).

7. Conclusion

Switzerland has adopted a pragmatic regulatory approach to blockchain. It was quick to respond without being overeager. Instead of creating an entirely new framework for crypto-assets or on-chain institutions, as other jurisdictions have done, Swiss lawmakers adapted existing laws to address key issues such as tokenisation, market infrastructure and insolvency. By providing legal certainty through guidelines on token classification and addressing known challenges in existing laws via the *DLT Act*, Switzerland has established the foundation for a thriving crypto economy.

However, as crypto space continues to evolve, so does the need to adapt the regulatory framework. This applies particularly to the tokenisation of real-world assets beyond the scope of ledger-based securities and to the legal regime for DAOs.

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