



# Understanding the tokenisation of assets in financial markets



This Toolkit note was written by Iota Kaousar Nassr, under the supervision of Robert Patalano and with assistance by Nikki Kaur, Pamela Duffin and Edward Smiley. It was reviewed by the Committee on Financial Markets (CMF), and it was declassified by the CMF on 23 July 2021. It builds on the report *Regulatory Approaches to the Tokenisation of Assets* by the CMF's Experts Group on Finance and Digitalisation. The note was prepared for publication by the OECD Secretariat.

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## Understanding the tokenisation of assets in financial markets

Asset tokenisation can generally be described as the digital representation of physical assets on distributed ledgers (also referred to as digital twins) or the issuance of native tokens on the blockchain. Although initially associated with mostly non-compliant initial coin offerings over the period 2017-18, currently tokenisation represents one of the most prominent cases of distributed ledger technologies in financial markets. This Toolkit note identifies the different approaches that policy makers have adopted around tokenised assets and the markets for such instruments, and provides examples of these approaches. These approaches are not mutually exclusive and policy makers may differ in the way they address asset tokenisation, participants of tokenised markets, and risks arising in these markets. This Toolkit note does not classify approaches into categories, but rather describes elements and characteristics of different jurisdictional approaches to asset tokenisation, some of which can co-exist.

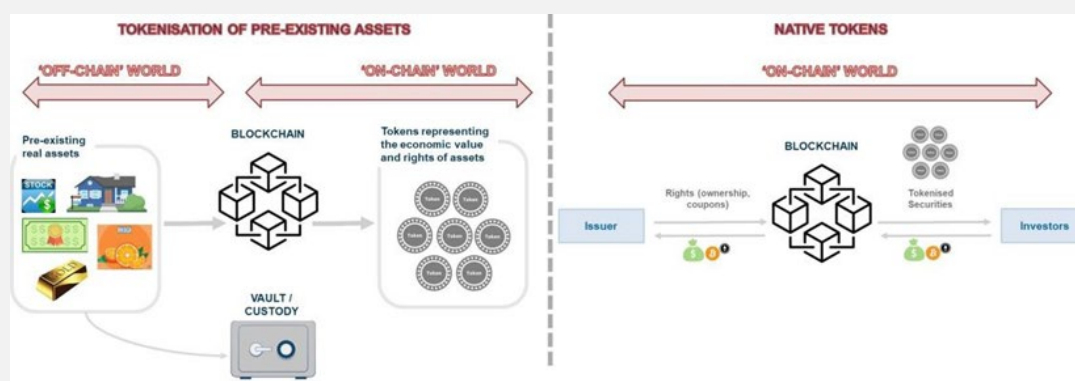
Asset tokenisation can generally be described as the digital representation of physical assets on distributed ledgers (also referred to as digital twins) or the issuance of native tokens on the blockchain. Tokenisation came to the forefront during 2017-18, with the emergence of initial coin offerings (OECD, 2019<sup>[1]</sup>). Since then, the tokenisation of assets has evolved into one of the most prominent use-cases of distributed ledger technologies (DLTs) in financial markets.

Most applications today are pilots or at an experimental stage with respect to possible implications for the functioning of the markets and for market participants, as this technology continues to evolve. Tokenised asset classes can include securities (e.g. stocks, bonds), commodities (e.g. gold), and other non-financial assets (e.g. real estate).<sup>1</sup>

### Box 1. Asset tokenisation in a nutshell

The tokenisation of assets involves the digital representation of physical assets on distributed ledgers, or the issuance of traditional asset classes in tokenised form. In the first case, the economic value and rights derived from pre-existing real assets is linked or embedded on DLT-based tokens, acting as a store of value. Tokens issued exist on the chain ('digital twin') while the real assets on the back of which the tokens are issued continue to exist in the "off-chain" world. In the second case, asset tokenisation involves the creation of a trading instrument through a blockchain and the issuance of tokens that are native to the blockchain, built directly on-chain and living exclusively on the distributed ledger.

**Figure 2. Stylised representation of asset tokenisation**



**Note:** The term "native" is used here in the sense of residing on the blockchain (e.g. tokens built using ERC20).

**Source:** (OECD, 2020<sup>[2]</sup>).

<sup>1</sup> This Toolkit note focuses on tokenised assets that are financial market products and within the purview of financial policy makers. This does not include 'utility' tokens or other similar forms depending on each jurisdiction's definition. Given the implications for central banks and monetary policy, this note does not discuss regulatory approaches to central bank digital currencies.

## Potential benefits and risks of asset tokenisation

The application of DLTs and smart contracts in asset tokenisation has the potential to provide benefits such as: efficiency gains driven by automation and disintermediation; transparency; improved liquidity potential; enhanced tradability of traditionally illiquid assets; and faster and potentially more efficient clearing and settlement processes post-trade. Asset tokenisation could provide an additional way to achieve fractional ownership of assets, thereby lowering barriers to investment and promoting more inclusive access by retail investors to some previously unaffordable or insufficiently divisive asset classes. The flow of private financing from capital owners to small and medium sized enterprises (SMEs) could be eased and facilitated, ultimately enhancing access to financing for SMEs.

At the same time, the application of DLTs in tokenised markets may give rise to risks and challenges stemming from the novel nature of the business models and processes involved in tokenisation, as well as the innovative character of the technology. Operational vulnerabilities include scalability due to the significant throughput required in global financial markets; potential uncertainty over settlement finality (i.e. final and irrevocable settlement of payment instructions with deterministic finality); interoperability between different networks that will allow for connectivity of different infrastructures; interoperability of DLT-based infrastructure with traditional infrastructure; network stability, market infrastructure robustness and cyber-threats. These risks are exacerbated by rapid advances in the field of quantum computing and cryptography.

Governance risks of fully decentralised ledgers arise from difficulty in identifying a sole owner or node accountable for the full network. The absence of a single accountable point is an important challenge to regulating DLT networks and assigning responsibility for failure in the network. The legal status of smart contracts has yet to be defined in many jurisdictions, and the potential lack of enforceability of such contracts gives rise to important financial consumer protection concerns. The auditability of the code of smart contracts and relevant permissions to change the code are other areas of concern. Questions also arise around data protection and privacy. These include questions relating to digital IDs; storage of data and regulations applicable to its usage; and other investor and consumer protection and market integrity issues. Risks related to anti-money laundering and counter-terrorism financing (AML/CFT) are prominent in DLT-based systems and high in tokenised markets based on public permissionless networks (OECD, 2020<sup>[2]</sup>).

## Regulatory approaches to tokenisation

Tokenised assets that fall under the purview of financial market regulators should comply with regulatory requirements that promote financial stability, financial consumer protection and market integrity while promoting competition (OECD, 2021<sup>[3]</sup>). Tokenisation has been approached differently by policy makers across jurisdictions, depending on the stage of development of the market for tokenised assets and its pace of evolution. Other considerations include the overall financial architecture, the number of policy makers involved and their respective mandates, and the overall domestic strategy *vis-à-vis* FinTech. Some blockchain-based products may be sitting at the intersection of payments, regulated securities markets and financial market infrastructures (FMIs) and may require co-ordination by authorities involved at the national level. Similarly, competition issues may not be included in the mandates of financial regulators in many jurisdictions, thus requiring co-operation at the national level. Collaboration at the international level is also critical, given the global nature of tokenised asset markets.

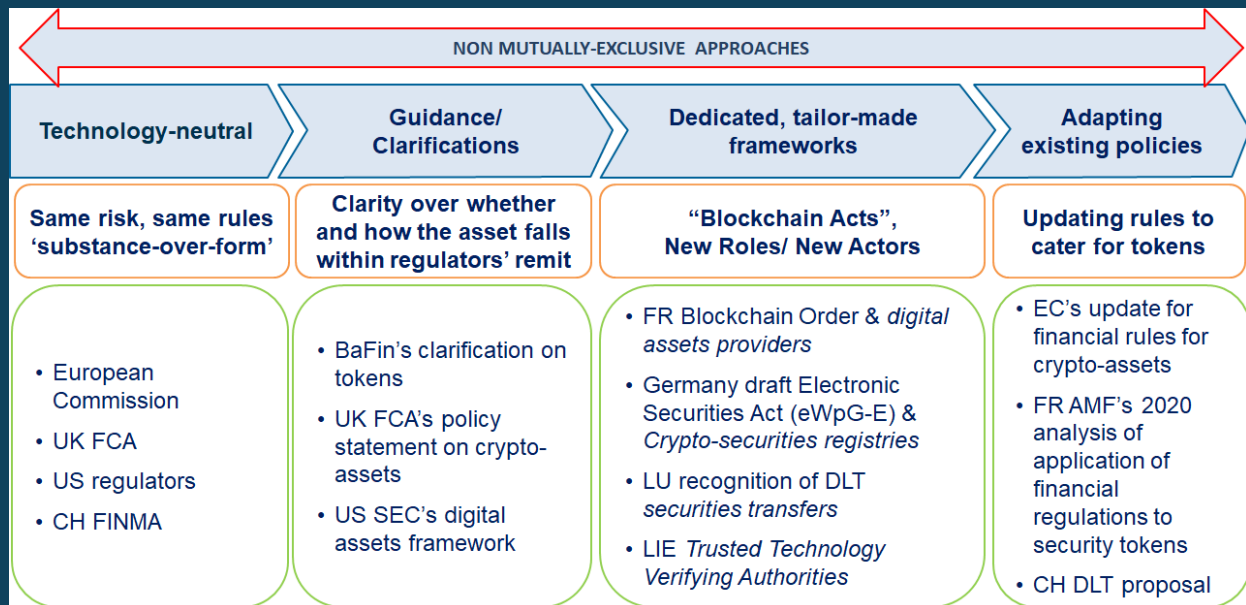
The main types of regulatory approaches consist of applying existing financial regulations to tokenised assets; introducing new, tailor-made regulatory frameworks or adapting existing rules to accommodate the application of DLTs in tokenisation. Policy makers in most jurisdictions with active tokenised markets have adopted a technology-neutral approach to tokenisation markets and products, with the same rules applying to the same types of activities and risks irrespective of the technology through which the activity is provided.

At the same time, policy makers addressed any perceived ambiguity by market participants by providing guidance on the applicable regulatory framework. The provision of clarity at the early stages of development of this market focused on frameworks to explain whether and how tokens or digital assets are regulated/unregulated (e.g. the United States (US) Security and Exchange Commission (SEC) FinHub staff framework on digital assets, the United Kingdom (UK) Financial Conduct Authority (FCA)'s policy statement on crypto assets), and has since evolved to include other activities and participants (e.g. custodians).

Policy makers in a number of jurisdictions have opted for bespoke, tailor-made rules for (parts of) tokenised assets and their markets (e.g. the European Commission's (EC) proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto Assets (MiCA), or the Electronic Securities Act or 'eWpG-E' in Germany to allow for an electronic alternative to paper-based debt securities). Others adjusted their existing frameworks and/or introduced new roles related to tokenisation (e.g. digital asset providers in France, decentralised crypto security registers in Germany, and verifying authorities in Liechtenstein). Holistic frameworks such as 'Blockchain Acts' covering DLT

activity in financial markets have also been introduced in some countries (e.g. France, Luxembourg and Switzerland).

**Figure 2. Regulatory approaches to tokenisation**



**Note:** UK Financial Conduct Authority (FCA), Swiss Financial Market Supervisory Authority (FINMA), German Federal Financial Supervisory Authority (BaFin), US Securities and Exchange Commission (SEC), European Commission (EC), French Autorité des marchés financiers (FR AMF).

### ***A technology-neutral approach to tokenisation policies: 'Substance over form'***

Most jurisdictions with active tokenised markets adopt a technology-neutral regulatory approach for financial services, which also applies to tokenised assets and their markets (e.g. EC, FCA, US regulators). Under a technology-neutral principle, the regulatory perimeter and subsequent treatment of financial products and activities are not influenced by the technology through which the product/service or activity is provided. DLT allows for the creation of native tokenised securities and tokenisation of existing securities that could be described as a form of cryptography-enabled dematerialised securities based and recorded on DLTs, instead of electronic book-entries in securities registries of central securities depositories (OECD, 2020<sup>[2]</sup>). Tokenisation in these jurisdictions could therefore be seen as merely replacing one digital technology with another, as requirements are set without having a specific technology in mind.

Indicatively, the UK FCA has an explicit policy of technological neutrality and has adopted this approach in policy making for crypto-assets (FCA, 2019<sup>[4]</sup>). The Swiss Financial Market Supervisory Authority (FINMA) has technological



neutrality as one of its three fundamental principles when it comes to regulating FinTech, including asset tokenisation activity<sup>2</sup> (FINMA, 2016<sup>[5]</sup>). Similarly, the Polish Financial Services Authority (FSA) published a supervisory position in December 2020, stating an approach to regulating crypto-assets based on the “substance over form” principle for issuers of tokens that have the economic functions of regulated financial instruments. The EC adopted a similar approach as tech-neutrality which is defined as “the same activity is subject to the same regulation, irrespective of the way the service is delivered”. This was one of the three core principles used when setting the area’s policy on Fintech regulation (European Commission, 2017<sup>[6]</sup>)<sup>3</sup>. This principle is applied to the EC’s policies around markets for crypto-assets, including tokenisation markets. The European Securities Markets Authority (ESMA) considers it important to take a technology-neutral approach, to ensure that similar activities and assets are subject to the same or very similar standards regardless of their form<sup>4</sup> (ESMA, 2020).

### ***Guidance and clarifications are increasingly valuable to market participants***

Industry participants, investors, and financial consumers all call for greater clarity around the regulatory and supervisory frameworks applied to tokenised assets and markets, even in the case of technology-neutral approach to rulemaking. Market participants may not fully understand if tokenised assets fall within the regulatory perimeter, or have intentionally attempted to avoid compliance with existing laws, resulting in high risk exposure, potential engagement in illegal activities, and undermining of the smooth operation of marketplaces for tokenised assets.

As with all financial instruments, guidance and clarification on the regulatory perimeter and applicable regulations can help protect financial consumers and other market participants, and promote market integrity. This was the case at early stages of development of tokenisation activity through initial coin offerings (ICOs), when guidance, positions, warnings and clarifications were issued by numerous jurisdictions (OECD, 2019<sup>[1]</sup>) , in many cases reminding participants that their activities were (or could potentially be) subject to the pre-existing regulatory regime. Regulators across the globe continue to issue guidance addressing perceived ambiguity by some market participants around the way tokenised asset activity is regulated and supervised in some jurisdictions. For example, the FCA’s policy statement on crypto-assets clarified

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<sup>2</sup> The other two principles are legal certainty and principle-based regulation.

<sup>3</sup> The other two principles are proportionality and market integrity.

<sup>4</sup> Information provided by ESMA.

where and how participant activities fall within the scope of the regulators' remit and for which authorisation is required (FCA, 2019<sup>[4]</sup>) (see Annex).

The Federal Financial Supervisory Authority of Germany (BaFin) has issued clarification around tokens, explaining that certain types of assets represent a security class of their own (*sui generis*) as they converted traditional untradeable investments into MiFID securities that can be traded on the financial markets through tokenisation, and therefore must be classified as securities (BaFin, 2019<sup>[7]</sup>). In the same vein, in February 2020 the French Market Authority (AMF) launched a review and analysis of pre-existing financial regulations applicable to security tokens (AMF, 2020<sup>[8]</sup>). In 2019, staff of the FinHub at the US SEC published an instructive framework to assist market participants in determining whether a particular digital asset is an investment contract and therefore a security. The framework's term 'digital asset' refers to an asset that is issued and transferred using DLTs, including, but not limited to so-called virtual currencies, coins and tokens (SEC, 2019<sup>[9]</sup>).

### ***Adoption of dedicated, tailored-made frameworks for tokenised assets***

Policy makers in several jurisdictions have opted for specific, tailor-made rules for (parts of) tokenised asset markets and DLT-enabled markets more broadly, often in spite of a technology-neutral approach to financial regulation. Examples include France, Luxembourg, Malta, Switzerland and Germany relative to the issuance of electronic and DLT-based securities (see Annex).

France introduced a framework for the issuance of native tokenised assets very early in the development of tokenised asset markets, which constitutes a notable example of novel policies specifically tailored to the use of DLTs in finance. The 2017 Blockchain Order is a regulatory framework established in French law to govern the representation and transmission of unlisted financial securities via DLTs (French Parliament, 2017<sup>[10]</sup>). This law extended a 2016 Act that allowed the use of DLTs for the recording of issuance and sale of SME mini-bonds (French Parliament, 2016<sup>[11]</sup>), giving the possibility to other securities (unlisted equity and debt) to be issued, registered and transferred using DLTs instead of traditional securities accounts.

In March 2019, Luxembourg enacted a law similar to the French Blockchain Order recognising token transfers via DLTs as equivalent to transfers between securities accounts (Parliament of Luxembourg, 2019<sup>[12]</sup>). This allows for the dematerialisation of securities other than bonds, as even shares could be issued in native tokenised security form without the need for a corresponding certificate. Issuance of tokenised bonds as bearer securities does not necessarily require the issuance of a corresponding certificate for each bond,

given that possession accords ownership. A new draft bill of law<sup>5</sup> shall allow central account keepers and settlement organisations in Luxembourg to have legal certainty concerning the use of DLT for issuing and circulating dematerialised securities. It will, however, not be possible for entities such as issuers to issue tokens on their own since it is mandatory to use the services of a central account keeper or settlement organisation (see Annex).

The Law of Tokens and TT Service Providers or the Liechtenstein Blockchain Act came into force on 1 January 2020 making Liechtenstein a prominent case of a jurisdiction with a comprehensive regulatory framework for a tokenised economy (Government of Liechtenstein, 2019<sup>[13]</sup>). Interestingly, policy makers in this case introduced the term Trustworthy Technologies (TT) to describe DLT or other technologies that do not require trusted central parties as a basis for trust. Different types of professional TT service providers and their functions are introduced in the Liechtenstein Blockchain Act, several of which intend to cover new actors involved in asset tokenisation and who may not be covered by existing regulation as they reflect innovative aspects of DLT-based processes. A notable example is the role of the 'physical validator' (see Annex).

In 24 September 2020, the EC announced a comprehensive package of legislative proposals for the regulation of crypto-assets which updates certain financial rules and creates a legal framework for regulatory sandboxes for the use of DLTs in securities trading and settlement (European Commission, 2020<sup>[14]</sup>) (see Annex). The aim of the proposal is to address fragmentation within the EU, increase investment and alleviate constraints to SME financing, safeguard investor and consumer protection. Its driving force has been the importance of legal certainty and clarity of regulatory regime in areas pertaining to blockchain-based applications.

### ***Introducing new roles for new actors in asset tokenisation***

Given the novel nature of some DLT-based business models and processes, it may be difficult to know with certainty whether tokenisation is fully captured by the regulatory perimeter (OECD, 2020<sup>[2]</sup>). Potential gaps in the regulatory treatment of tokenisation may give rise to regulatory arbitrage opportunities and/or novel risks that stem from the application of innovative DLT technologies. It is therefore important to identify whether existing regulation may need to apply to new actors present in tokenised asset markets and/or whether adjustments to existing policies may be necessary. Examples of such policies include the digital asset service providers in France, the decentralised crypto-securities registers in Germany, as well as the abovementioned trusted verifying authorities or physical validators in Liechtenstein.

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<sup>5</sup> N° 7637 proposing to amend the Law of 5 April 1993 on the financial sector as well as the Law of 6 April 2013 on dematerialised securities.

French regulators introduced a bespoke framework governing the activities of secondary market crypto-asset intermediaries called Digital Asset Providers or DASPs (Loi PACTE enacted in May 2019) (French Parliament, 2019<sup>[15]</sup>) (AMF, 2019<sup>[16]</sup>). The framework sets up an optional license for DASPs issued by the AMF. Such a licence becomes mandatory if the intermediary provides digital asset custody services and/or buying or selling digital assets for legal tender services in France. In these cases, DASPs are required to register with the AMF, with the Autorité de Contrôle Prudentiel et de Résolution (ACPR)'s assent. DASPs have several obligations around cybersecurity, capital requirements, and insurance; requirements specific to the provision of custodial services (e.g. to restore control of digital assets held in custody); and the need to abide by AML/CFT regulations. Importantly, this framework improves access to banking services for approved DASP (among others, such as issuers of ICOs granted an optional visa by the AMF). Intermediaries can appeal with the ACPR in case of unjustified refusal of access to banking services (French Government, 2019<sup>[17]</sup>).

In August 2020, the German Ministry of Finance and Germany Ministry of Justice and Consumer Protection introduced an electronic securities draft bill stipulating that crypto securities registers are being introduced as an alternative to paper certificates alongside central registers (see Annex). A licensed register administrator is required to ensure responsibility as the entity providing register management services.

The crypto security register must be maintained on a decentralised, forgery-proof recording system in which data are recorded in time sequence, received, and stored in a manner protected against unauthorised removal and subsequent modification<sup>6</sup> The licensed register administrator maintains the register and is supposed to be the only individual to alter the content of the register based on instructions of the beneficial owners or a depository. Whether this can be ensured when using a decentralised infrastructure remains to be tested in practice.

While register administrators for central registers must be a licensed CSD (subject to the Central Securities Depository Regulation/ CSDR), registry administrators for crypto securities registers require a newly introduced license under the German Banking Act (KWG). Importantly, acting as registry administrator does not necessarily constitute custody business in the meaning of the KWG. Since electronic securities are treated as paper-based securities, providing custody services for those securities qualifies as regular custody business rather than the novel crypto custody businesses. Depending on the type of services provided, both custody licensing regimes may apply (Freshfields, 2020<sup>[18]</sup>).

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<sup>6</sup> Information provided by the Bundesbank.

### ***Selectively adjusting existing laws: The Swiss proposal on DLTs***

Jurisdictions like Japan and Switzerland have chosen to address specific issues related to tokenised markets through the selective adjustment of existing laws instead of introducing bespoke regulation applied to products/services. In 2019, the Swiss Federal Council adopted the dispatch (Swiss Federal Council, 2020<sup>[19]</sup>) on federal legislation to adapt federal law on developments in DLT. The proposal aims to increase legal certainty, remove barriers for applications based on DLTs, and reduce risk of abuse. In September 2020, the Swiss parliament adopted the DLT law which is expected to come into force in 2021. A key area of the Swiss proposal is the amendment of securities law to provide a *secure* legal basis for the trading of rights through electronic registers. Furthermore, the segregation of crypto-based assets in the event of bankruptcy is to be clarified by law. Finally, this proposal guides the establishment of a new authorisation category for DLT trading systems in financial market infrastructure law, thereby creating a flexible legal framework for new forms of financial market infrastructure.

### ***Policies around settlement and central bank digital currencies for the post-trade payment leg***

The innovative nature of DLTs and the novelty of their inherent characteristics give rise to unique challenges and risks associated with asset tokenisation which may necessitate the attention of policy makers. These include, *inter alia*, regulatory implications around the payment leg of settlement of tokenised transactions; policies related to custodians of tokenised assets; questions around ownership; and potential challenges in implementing forced action or restrictions in trading of tokenised assets, briefly discussed in this section.

Current regulatory and legal frameworks in some jurisdictions (e.g. EU MiFID and CSDR rules) impose the need for intermediaries/operators to act as the securities settlement system in post-trade processes, which may exclude, or even be incompatible with, the use of decentralised networks/public blockchains (AMF, 2020<sup>[20]</sup>). At least in the European space, DLT platforms listing security tokens must become CSDs themselves or use a third-party intermediary approved as a central depository. DLT platform operators could become licensed CSD, however the costs entailed may be prohibitive and the process of creating intermediaries counter to the very nature of DLT-based systems.

In addition, whether and how platforms for tokenised assets will be allowed to link to the central bank payment infrastructure (tokenised form of central bank currency or CBDC), or rely on private initiative stablecoins is a policy decision that will affect settlement with Delivery versus Payment (DvP). A related issue

concerns the absence of netting of trading in DLT-based atomic settlement, and the potential need for prefunding the account for the trade to occur<sup>7</sup>.

For settlement to be achieved at near real-time and for delivery to be certain in securities transactions (DvP), the securities transacted and corresponding payments must switch ownership simultaneously. For payment to be exchanged without the lengthy processing times or costly fees involving intermediaries off-the-chain, pilot clearing and settlement systems and market participants are using a tokenised form of central bank currency on the blockchain or stablecoins for the payment leg of the transaction (OECD, 2020<sup>[2]</sup>). While many benefits could be achieved with a private stablecoin, the benefit of a wholesale CBDC would be the payment taking place in a risk-free settlement asset. Moreover, the regulatory treatment is preferential for wholesale CBDC, at least in some jurisdictions, such as Switzerland.

In practice, sandbox-based and proof-of-concept projects of tokenised security settlement by the official sector (e.g. Projects Ubin and Jasper) have used tokenised cash whereas private sector initiatives use stablecoins for the payment leg of security settlement in DLT networks. Pilots are underway to investigate how central bank money could be integrated in a DLT-based financial market infrastructure to settle tokenised assets, such as the recent proofs-of-concept by the Swiss National Bank (SNB), the BIS Innovation Hub and SIX (Project Helvetia). In the first proof-of-concept project, the SNB issued a wholesale CBDC, while in the second proof-of-concept, a link between the DLT-FMI (SIX Digital Exchange) and the Swiss RTGS (SIC) is being established.

The SDX platform for digital assets is expected to be launched by the Swiss Stock Exchange in 2021 to support atomic settlement (T+0), keeping the need for collateral management and clearing to a minimum. The exchange will have a fully integrated trading, settlement, and custody infrastructure for digital assets; will use smart contracts for asset servicing; and will integrate beneficial owner accounts. SDX will act as custodian for digital assets, and will allow clients to directly control the intermediated securities they own through their private key (SDX, 2019<sup>[21]</sup>).

In France, the French Central Bank and Société Générale SFH issued in May 2020 EUR 40 million of covered bonds (obligations de financement de l'habitat or OFH) as security tokens directly registered on a public blockchain, using a digital form of euros issued by Banque de France through a blockchain platform (Banque de France, 2020<sup>[22]</sup>) (Société Générale, 2020<sup>[23]</sup>). This transaction proved the feasibility of settlement with DvP using wholesale CBDCs for interbank settlements. This transaction followed an initial issuance of EUR 100

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<sup>7</sup> It should be noted that is also true if settlement would take place at T+0 today, independent of the use of DLTs.



million in security tokens by Societe Generale SFH in April 2019, settled in the traditional manner in fiat currency.

### ***The advantage of CBDCs over stablecoins in tokenised markets***

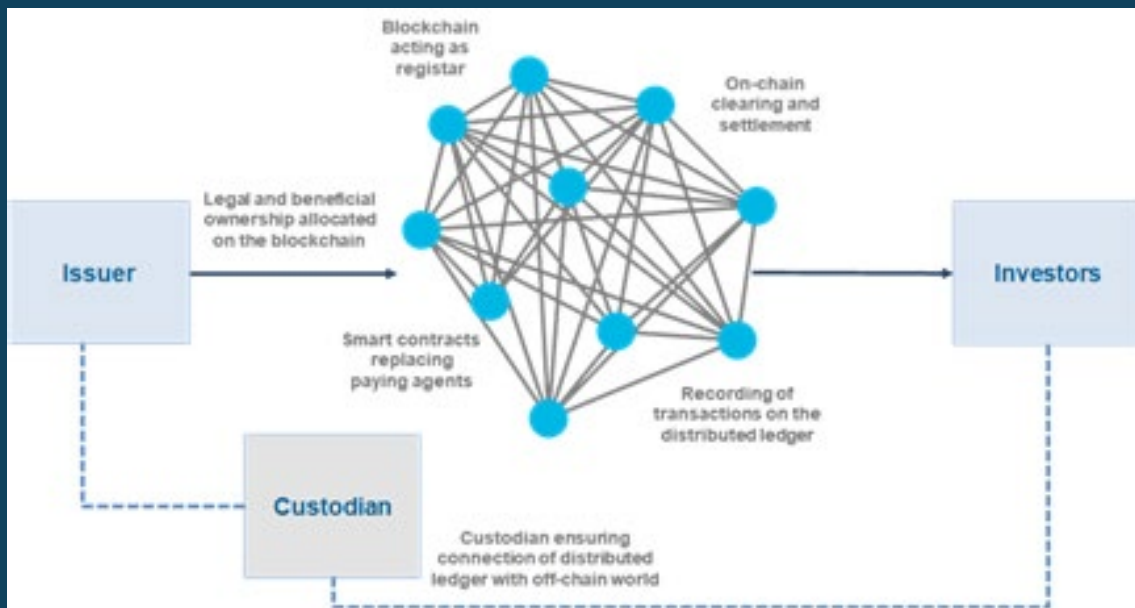
A large part of the purported value creation in tokenised asset markets may be seen in enhanced efficiencies reaped at the post-trade through automation and DLT application. The application of DLTs can enhance efficiency in the settlement process, reduce complexity and shorten the settlement cycle to near real-time (T+0) compared to T+3 or T+2 settlement periods currently being applied. DLT-enabled atomic swaps, involving the wallet-to-wallet exchange of two digital assets simultaneously in a single operation, eliminate the need for collateral management and clearing (Figure 2). As markets develop, there are important considerations regarding clearing and settlement, including around the potential use of CBDCs or other forms of tokenised cash for the payment leg of the settlement process, that will need to be discussed as these markets continue to evolve.

The use of CBDCs for the payment leg of tokenised asset clearing and settlement involves potential advantages compared to stablecoins. As such, the regulatory and policy environment around CBDCs and stablecoins has indirect implications for tokenised asset markets. For example, there is a perceived preference by tokenisation market participants for wholesale CBDCs, as access to the central bank payment infrastructure eliminates credit and liquidity risk.

In addition to settling tokenised assets with a wholesale CBDC or a stablecoin, another option would be to make the DLT infrastructures interoperable with existing payments systems to allow for the settlement of tokenised assets in today's payment infrastructure. Project Helvetia investigated DvP settlement of tokenised assets using a wholesale CBDC (proof-of-concept 1) and a link to the Swiss RTGS (proof-of-concept 2). Using a wholesale CBDC opens up functionalities possible with tokenisation, while at the same time giving rise to operational challenges, as well as governance and policy questions. In contrast, an RTGS-link would entail fewer such challenges as today's payment infrastructure is used, but it would also omit potential benefits of a complete integration (BIS Innovation Hub, 2020<sup>[24]</sup>).

The use of private sector stablecoins could introduce risks to the network, and in particular counterparty risk related to the issuer of the stablecoin. Private initiatives may lack proper audit and assurance over availability of funds backing the stablecoin thereby exposing users to operational or other risks derived from the counterparty. The regulatory treatment of stablecoins might differ which affects the willingness of participants to hold the stablecoin overnight and thus book it into their balance sheet.

Figure 3. Simplified scheme of DLT-based post-trade



Source: (OECD, 2021<sup>[3]</sup>).

### ***Approaches to regulating the role of custodianship in asset tokenisation***

Given that custodianship of tokenised assets is conceptually and operationally different than in traditional financial security markets, the application of existing financial security policies may be challenging in some jurisdictions and some unique challenges raised in DLT-based networks will need to be considered. For example, custodians of tokenised assets do not physically hold the asset itself, cannot prove ownership, and may find it difficult to evidence the existence of the tokenised security for the purposes of regulatory books and records.

The role of custodians in tokenised markets differs from traditional securities markets, as these are expected to provide custody of private keys<sup>8</sup> instead of traditional asset keeping. Therefore, custodians assist in reducing the risk of losing private keys which corresponds to a loss of ownership. Custodians can be non-custodial wallets without access to the private keys<sup>9</sup>. They assist clients by providing a solution for the storing of their own keys, allowing for self-custody by the clients. Although it provides benefits of exclusive ownership of private keys and reduces the risk of hacking, this type of custodian is not necessarily appropriate for all participants, and notably, investors lacking requisite expertise and equipment to safe keep their private keys or

<sup>8</sup> A private key is a form of cryptography that allows a user to access their crypto-assets.

<sup>9</sup> Online and offline or cold versions of non-custodial wallets exist.



institutional investors with increased need for access to the keys (ESMA, 2019<sup>[25]</sup>).

Alternatively, custodians can provide ‘full’ custodial wallets, such as exchanges with direct access and control over the private keys held in custody and consequently over the asset itself. When storing tokens falling within the regulatory perimeter, custodians may be required to obtain relevant permissions depending on the jurisdiction. For example, in the UK permission is required to manage, safeguard, and administer investments (FCA, 2019<sup>[4]</sup>). The German draft legislation introduces a special regime allowing crypto-registrars to be run by entities which are not central securities depositories (CSDs) (see Annex).

Custody of digital assets gives rise to a number of new risks compared to custody of traditional securities. For example, increased risk of fraud or theft, loss of private key necessary to transfer a client’s digital asset securities, or transfer of clients’ digital asset securities to an unknown or unintended address without the ability to reverse a fraudulent or mistaken transaction (SEC, 2019<sup>[9]</sup>). A number of legal and regulatory challenges also arise relative to property rights and ownership (e.g. restitution of ownership, forced transfers). Asset segregation policies may need to be considered in the DLT-based environment.

Questions around custody of tokenised assets become even more pressing given the divergence of approaches taken by courts to determine property rights of investors in crypto-assets more generally, and the legal risks involved. Such risks are most evident in legal cases of insolvency of the custodian (Haentjens, de Graaf and Kokorin, 2020<sup>[26]</sup>).

### ***Ownership, forced transfers and imposed restrictions in tokenised asset trading***

One of the thorny issues that has already been identified in the EU is the absence of obligation of ownership restitution of the tokenised security by custodians when the security is recorded on the distributed ledger. This occurs because there is no recognition of ownership rights if the tokenised securities are registered in an account with the central depository (the DLT in this case), and not with a custodian account keeper. Essentially, the custodian account-keeper has no obligation of restitution with regards to the financial securities recorded in a distributed ledger (AMF, 2020<sup>[8]</sup>). This raises important investor protection risks, as investors do not have total control over their assets. Such concerns are not present in case of non-registered (i.e. bearer) securities, the holding of which constitutes ownership.

Another risk that arises in custody of tokenised assets held by custodial wallets relates to hard forks. Forks create a chain split and when the old chain is

abandoned this action is referred to as network upgrades<sup>10</sup>. In case of a hard fork occurring on a DLT, clients are entitled to receive the benefit arising from the fork but are receiving assets at both branches of the chain (AMF, 2020<sup>[8]</sup>). Custodians may refuse to give assets of one branch to the clients leading to unfair treatment and harm to asset owners. Jurisdictions such as France have addressed this risk by introducing ad hoc regulation, specifically article 722-1, 4° of AMF General Regulation.

Custodians can put client assets at risk if segregation of those assets is inadequate or non-existent. This issue is equivalent to ones faced by custodians of non-DLT based securities. In omnibus account models containing accounts of undisclosed customers on a commingled basis in sub-accounting systems there is no segregation. This means intermediaries aggregate and often net customers' purchase and sale transactions as they place trade orders through one or more omnibus positions maintained at the transfer agent, where this exists. Given that assets in omnibus or 'nominee' accounts are held in the name of the intermediary as opposed to named accounts of the beneficial owners, the investor runs the risks of the custodian, which materialise upon insolvency of the custodian.

Regulators are increasingly considering aspects of tokenised asset custody and other crypto-assets. In 2019, staff of the US SEC Division of Trading and Markets and the Office of the General Counsel of the Financial Industry Regulatory Authority (FINRA) issued a joint statement regarding the broker-dealer custody issue of digital assets (SEC, 2019<sup>[27]</sup>), followed by a no action letter issued on 25 September 2020 that clarifies the statement (SEC, 2020<sup>[28]</sup>)(see Annex).

What remains largely untested at the practical level is the extent to which a regulatory restriction could be implemented on a platform's operations, such as imposing a trading suspension. This issue is particularly challenging in markets based on public permissionless networks. Similarly, in some jurisdictions there is legal and technical uncertainty over a court of law's ability to order and implement changes to the ledger, when nodes are unwilling to effect those changes. An example of forced transfer include the forced separation of assets following a court decision on a divorce.

## What's next for tokenised assets?

Substantial ground has been covered in the past few years regarding the development of markets for tokenised assets, both in terms of regulatory and policy frameworks, as well as in projects undertaken by the industry or pilots run jointly with official sector authorities. In terms of practical applications,

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<sup>10</sup> It should be noted that hard forks and their implications depend largely on the type of DLT used.

several ongoing pilot or commercial use cases aim to examine the extent efficiencies can be achieved by the deployment of DLTs in financial markets.

In terms of policy making activity, greater regulatory clarity is being provided around tokenised markets. New rules are devised for blockchain-based finance and are adapted to cater for new risks arising in DLT-based financial products and services. Importantly, open and engaging dialogue is increasingly taking place between policy makers, the blockchain industry, and the finance industry. Real life experience through pilot projects and industrial application of emerging DLT-based financial products has helped identify shortcomings, risks, and areas of potential innovation.

As decentralised finance and markets for tokenised and crypto-assets develop and grow in size and importance, the attendant policies, regulations, supervision and enforcement will remain important. This will ensure that the safeguards present in traditional financial markets will equally apply in DLT-based systems and networks with a view to protect investors, financial consumers, and safeguard financial stability. Importantly, international collaboration efforts and dialogue will be important given the global and cross-border nature of DLT-based transactions and securities.

## ***Annex. A selection of regulatory approaches to asset tokenisation***

### **Clarity and guidance around the regulatory perimeter and frameworks for tokenised assets**

#### ***The US framework on digital assets***

**Responsible entities:** Securities and Exchange Commission (SEC), Commodity Futures Trading Commission (CFTC), Office of the Comptroller of the Currency (OCC) and other authorities, including FinCEN

**Description:** The SEC has engaged in a large number of enforcement actions<sup>11</sup>, including notable cases against Telegram (SEC, 2019<sup>[29]</sup>) and Kik (SEC, 2019<sup>[30]</sup>), and published an SEC report on The DAO (SEC, 2017<sup>[31]</sup>). The SEC FinHub Staff published in 2019 an instructive framework to assist market participants in determining whether a particular digital asset is an investment contract and therefore a security under US federal security laws (SEC, 2019<sup>[32]</sup>). The term 'digital asset', as used in the framework and subsequent statements, refers to an asset that is issued and/or transferred using DLTs, including, but not limited to so-called virtual currencies, coins, or tokens (SEC, 2019<sup>[33]</sup>) (SEC, 2020<sup>[28]</sup>).

In 2019 alone, at State jurisdiction level, 28 States have introduced legislation relating to Blockchain; 27 bills and resolutions have been enacted or adopted (NCSL, 2020<sup>[34]</sup>). It should be noted, however, that actions in particular States have, in most cases, no effect on treatment of digital assets in other states and have no effect on the applicability of the federal securities laws to the digital asset, regardless of what the State law says (see FinHub Staff letter dated January 27, 2020, available at <https://www.sec.gov/files/staff-comments-to%20nysdfs-1-27-20.pdf>; and Staff statement dated November 9, 2020, available at (<https://www.sec.gov/news/public-statement/statement-im-finhub-wyoming-nal-custody-digital-assets>)).

On December 23, 2020, the SEC issued a statement and a request for comment regarding the custody of digital asset securities by special purpose broker-dealers (SEC, 2020<sup>[35]</sup>). The statement sets forth the SEC's position that, for a period of five years, a broker-dealer operating under the circumstances set forth in the statement will not be subject to an SEC enforcement action on the basis that the broker-dealer deems itself to have obtained and maintained physical possession or control of customer fully paid and excess margin digital asset securities for the purposes of paragraph (b) (1) of Rule 15c3-3 under the Securities Exchange Act of 1934. These circumstances, among other things,

<sup>11</sup> <https://www.sec.gov/spotlight/cybersecurity-enforcement-actions>.

include that the broker dealer limits its business to digital asset securities, establishes and implements policies and procedures reasonably designed to mitigate the risks associated with conducting a business in digital asset securities, and provides customers with certain disclosures regarding the risks of engaging in transactions involving digital asset securities.

In March 2020, the Commodity Futures Trading Commission (CFTC) published interpretive guidance explaining what constitutes the “actual delivery” of a digital asset in the context of a retail commodity transaction. In July 2020, the CFTC announced plans to develop a holistic framework to promote responsible innovation in digital assets as part of its strategic plan for 2020-2024. In October 2020, the CFTC issued an advisory providing guidance to futures commission merchants (FCMs) on how to hold and report certain deposited virtual currency from customers in connection with physically delivered futures contracts or swaps. The advisory also provides guidance that FCMs should follow when designing and maintaining risk management programs concerning the acceptance of virtual currencies as customer funds.

In July 2020, the Office of the Comptroller of the Currency (OCC) published a letter clarifying that national banks and federal savings associations can provide cryptocurrency custody services to their customers (OCC, 2020<sub>[36]</sub>)<sup>12</sup>. In September 2020, the OCC allowed national banks to provide permissible banking services to any lawful business they choose, including cryptocurrency businesses, so long as they effectively manage the risks and comply with applicable law, including those relating to the BSA and AML (OCC, 2020<sub>[37]</sub>). This includes reserves backing stablecoins, provided that the stablecoins are kept in a hosted wallet (i.e. wallets controlled by a trusted third party, contrary to un-hosted wallets controlled by the user who is also the owner of the assets stored). The SEC staff issued a statement issued at the same time as the OCC letter regarding the continued applicability of the federal securities laws, depending on the facts and circumstances.

**Read more:**

<https://www.sec.gov/spotlight/cybersecurity-enforcement-actions>;

<https://www.cftc.gov/PressRoom/PressReleases/8139-20>;

<https://www.cftc.gov/PressRoom/PressReleases/8196-20>;

<https://www.cftc.gov/PressRoom/PressReleases/8291-20>.

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<sup>12</sup> It should be noted this does not apply to the digital asset itself, only to the fiat currency backing the digital asset.

### ***The FCA policy statement on crypto-assets***

**Responsible entity:** Financial Conduct Authority

**Description:** The FCA effectively classifies tokens as regulated (securities or e-money) and unregulated ('utility' tokens). Security tokens have specific characteristics providing rights and obligations akin to specified investments like a share or a debt instrument as set out in the Regulated Activities Order (RAO) and possibly a Financial Instrument under MiFID II, excluding e-money (FCA, 2019<sup>[4]</sup>). The FCA considers a security to refer broadly to an instrument (i.e. a record, written or not) which indicates an ownership position in an entity, a creditor relationship with an entity, or other rights to ownership or profit. This goes beyond native tokenised assets, highlighting some of the requirements and permissions participants such as custodian wallet providers, exchanges, and trading platforms need to consider when carrying regulated activities.

**Read more:** <http://www.fca.org.uk/cp19-03-response-form>.

### ***Supervisory position of the Financial Services Authority of Poland***

The Polish FSA published in December 2020 a position on the classification of crypto assets. According to this position, issuers of tokens that have the economic functions of regulated financial instruments (e.g. bonds, shares, investment fund units, derivative products) should fulfil the same conditions that are obligatory for issuers of products in traditional form. Regulatory clarity is also provided by the Polish FSA through its Innovation Hub programme, where firms planning to offer innovative financial products can obtain explanations regarding the regulatory obligations applicable to these product. In cooperation with the Central Bank, the Polish FSA is raising consumer awareness of risks and fraud from crypto-asset investing, notably through an updated and extended consumer warning issued in January 2021.

**Read more:** [https://www.knf.gov.pl/aktualnosci?articleId=71795&p\\_id=18](https://www.knf.gov.pl/aktualnosci?articleId=71795&p_id=18);  
[https://www.knf.gov.pl/komunikacja/komunikaty?articleId=72242&p\\_id=18](https://www.knf.gov.pl/komunikacja/komunikaty?articleId=72242&p_id=18).

### ***The Case of Japan: STO-issued tokenised securities***

**Responsible entity:** The Financial Services Agency of Japan

**Description:** The Financial Services Agency of Japan introduced changes in policies related to crypto-assets (Okamoto and Takeuchi, 2020<sup>[38]</sup>). Tokens issued to investors in exchange of funds (fiat or crypto) through Security Token Offerings (STOs), and which offer the possibility to receive dividends will be regulated under the Financial Instruments and Exchange Act. The reform introduced regulations on business conduct targeting brokers of security tokens, including solicitation and management. Instruments such as shares, corporate bonds, or other securities considered as high liquid are referred to as

'Type I Securities', remain Type I Securities when tokenised and are subject to the corresponding regulations.

Collective investment schemes or securities that are considered as low liquid are referred to as 'Type II Securities', and are defined as electronically recorded transferable rights (ERTRs) when tokenised. As liquidity increases through tokenisation, these become subject to regulations applying to Type I Securities. Tokenized Type II Securities have relatively low liquidity when held by a limited number of investors (accredited investor category<sup>13</sup>), are thus excluded from ETRTs and subject to regulations applying to Type II Securities, while balancing user protection and innovation. Under the Financial Instruments and Exchange Act, Type II Securities are subject to a less restrictive framework than Type I Securities when it comes to the duty of disclosure.

**Read more:** <https://www.fsa.go.jp/en/refer/councils/virtual-currency/20181221-1.pdf>.

## Adapting existing frameworks to tokens

### Germany: security tokens

**Responsible Entity:** Federal Financial Supervisory Authority (BaFin)

**Description:** In its 2019 clarification, BaFin advised that as the result of the use of DLTs, financial instruments that could be structured or described as capital investments, once tokenised, are not capital investments within the meaning of the German Capital Investment Act (VermAnlG), but MiFID securities within the meaning of the EU Securities Prospectus Act (WpPG) and the German Securities Trading Act (WpHG). This is at least the case if rights are attached to the financial instrument that are similar to shares or membership rights or a property right of a contractual nature and if the financial instrument is freely transferable (BaFin, 2019<sup>[7]</sup>). In the absence of a physical certificate, issues around property and trading protection remained due to the difficulty in applying civil law provisions on these securities. The new bill on electronic securities eWpG seeks to remedy this by granting the same property and trading protection to electronic and paper-based securities alike (Jünemann and Wirtz, 2020<sup>[39]</sup>).

**Read more:**

[https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Fachartikel/2019/fa\\_bj\\_1904\\_Tokenisierung\\_en](https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Fachartikel/2019/fa_bj_1904_Tokenisierung_en).

<sup>13</sup> Includes qualified institutional investors, corporations whose stated capital is not less than YEN 50 million, and individuals who opened a security account one year ago or earlier and whose total balance of investment-type assets and crypto-assets is not less than YEN 100 million.



### ***The introduction of electronic bearer bonds under the Electronic Securities Act (eWpG-E) in Germany***

**Responsible entity:** German Federal Ministry of Finance

**Description:** On 6 May 2021 the German Parliament (Deutscher Bundestag) issued the Electronic Securities Act or 'eWpG-E'. The act creates an alternative to paper-based debt securities by introducing the option of issuing debt securities electronically through an electronic register without a corresponding physical certificate. The eWpG-E effectively allows the registration of securities in electronic registers as equal substitute for the conventional deed required for the creation of bonds until today (DWF, 2020<sub>[40]</sub>). The regulatory treatment of bearer bonds (regarding prospectuses, trading etc.) remains intact.

The eWpG-E introduces a second type of electronic securities register decentralised crypto securities register based on DLTs. Crypto-registers can be run by entities which are not CSDs if they are registered according to the financial services license (DWF, 2020<sub>[40]</sub>). Electronic securities issued in a crypto securities register are defined as 'crypto securities' while securities on a central register are referred to as 'electronic securities' (Freshfields, 2020<sub>[18]</sub>). Global paper certificates will not be necessary for issuance (Globalurkunde) as securities issued under the new draft legislation will be explicitly deemed movables. Property law will apply for the transfer of securities allowing for a bona fide purchase, which is crucial for investor protection and ensuring safe and secure capital markets (Bundesbank, 2020). The bill covers bearer bonds (Inhaberschuldverschreibungen) in the first instance and it foresees that equity instruments (e.g. stock company shares) along with other types of debt instruments and investment fund shares may be introduced at a later stage.

**Read more:**

[https://www.bmjv.de/SharedDocs/Gesetzgebungsverfahren/DE/Einfuehrung\\_elektr\\_Wertpapiere.html](https://www.bmjv.de/SharedDocs/Gesetzgebungsverfahren/DE/Einfuehrung_elektr_Wertpapiere.html).

### ***Luxembourg: Draft bill of law N° 7637 proposing to amend the Law of 5 April 1993 on the financial sector as well as the Law of 6 April 2013 on dematerialised securities***

**Responsible entity:** Luxembourg Government

**Description:** The draft bill of law No 7637 proposed to amend the Law of 5 April 1993 and the Law of 6 April 2013 on the financial sector dematerialised securities, to explicitly allow the use of a secure electronic registration mechanism including DLTs for the issuing of all dematerialised securities. DLTs will be allowed for the registration of dematerialised securities in an issuance account that will verify the number of dematerialised securities in circulation compared to their number at issuance.



The Law of 1 March 2019 permitted the use of DLTs for the registration of previously issued securities in a securities account, in addition to transfers between securities accounts. Once the draft bill of a law is in force, central account keepers and settlement organisations in Luxembourg will have legal certainty concerning the circulation of blockchain or DLT dematerialised securities. Entities cannot however issue tokens on their own as they must use a central account keeper or settlement organisation.

**Read more:** <http://legilux.public.lu/eli/etat/leg/loi/2019/03/01/a111/jo>.

### **Swiss initiatives on tokenised securities and DLT developments**

**Responsible entity:** Swiss Federal Council

**Description:** In November 2019, the Swiss Federal Council adopted the dispatch on federal legislation to adapt federal law to developments in DLTs. The proposal aims to increase legal clarity, remove barriers for DLT-based applications, and reduce the risk of abuse. The National Council Economic Affairs and Taxation Committee (EATC-N) adopted the bill unanimously in the final vote in 11 May 2020 (SIF, 2020<sup>[41]</sup>).

**Read more:**

[https://www.sif.admin.ch/sif/en/home/finanzmarktpolitik/digit\\_financektor/blockchain.html](https://www.sif.admin.ch/sif/en/home/finanzmarktpolitik/digit_financektor/blockchain.html).

## **Identifying and filling the gaps**

### **European Union: ESMA and EBA's case-by-case approach on crypto-assets**

**Responsible entity:** European Securities and Markets Authority (ESMA), European Banking Authority (EBA)

**Description:** EU regulators have been actively monitoring the development of DLT and crypto-assets for several years already. Back in 2017, ESMA published a report on DLT highlighting the potential benefits of the technology and challenges before deploying into financial markets. In 2017 and 2018, ESMA published two Statements on ICOs (ESMA, 2017<sup>[42]</sup>), (ESMA, 2017<sup>[43]</sup>) and the three ESAs published a joint-Warning on Virtual Currencies (VCs) (ESMA, 2018<sup>[44]</sup>).

In 2019, the European Banking Authority (EBA) and the European Securities Market Authority (ESMA) published a report (EBA, 2019<sup>[45]</sup>) and Advice (ESMA, 2019<sup>[25]</sup>) to the European Parliament, Council and Commission. The Advice represents a comprehensive assessment of the applicability of the EU financial securities rules to crypto-assets, clarifies the circumstances under which a given crypto-asset may qualify as a MiFID financial instrument, using a set of practical examples. The Advice highlights that some crypto-assets, such as those with

attached profit rights, are likely to qualify as MiFID financial instruments, in which case they, and the firms undertaking activities involving these instruments, need to comply with the full set of EU financial securities rules. Others, which represent a large portion of those crypto-assets outstanding, are likely to fall outside of the regulated space.

The Advice called on EU policy makers to address gaps that exist in the current rules when applied to crypto-assets. First, where crypto-assets qualify as MiFID financial instruments, some clarifications/ adaptations are needed to allow for an effective application of existing rules, mainly concerning settlement and custody. Second, where crypto-assets do not qualify as MiFID instruments (or e-money for what concerns EBA), there are important risks to consumer protection that need to be addressed. The European Commission used the EBA and ESMA Report and Advice to introduce a draft legislative package that addresses the risks and issues posed by crypto-assets, including stablecoins (see next section).

**Read more:** [https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391\\_crypto\\_advice.pdf](https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391_crypto_advice.pdf);  
[https://www.esma.europa.eu/sites/default/files/library/esma70-156-4305\\_final\\_report\\_mifid\\_ii\\_mifir\\_obligations\\_on\\_market\\_data.pdf](https://www.esma.europa.eu/sites/default/files/library/esma70-156-4305_final_report_mifid_ii_mifir_obligations_on_market_data.pdf).

### ***Tokenised equity and debt under the EC legislative proposals for a legal and regulatory framework for blockchain***

**Responsible entity:** European Commission

**Description:** The proposal reiterates that tokenised equities and bonds are already subject to EU securities market legislation, as they qualify as financial instruments under MiFID. Nevertheless, recognising that MiFID predated the emergence of crypto-assets and DLT, and based on advice the EC has received from ESMA and EBA, the EC proposed a pilot regime for market infrastructures involved in the trade and settlement of transactions involving financial instruments in crypto-asset form. Similar to other sandboxes, the pilot regime will allow for exemptions from existing rules, allowing both regulators and private sector participants to test DLT-enabled products.

**Read more:**  
<https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=2020/2034>.

### ***The French Financial Market Authority (AMF) on security tokens***

**Responsible entity:** Financial Market Authority (AMF)

**Description:** In February 2020, the French market Authority (AMF) launched a review and analysis of the application of existing financial regulations to security tokens (AMF, 2020<sup>[20]</sup>). Such analysis verified the conditions under which the existing regulatory framework could apply to security tokens.

**Read more:** <https://www.amf-france.org/en/news-publications/news-releases/amf-news-releases/amf-publishes-depth-legal-analysis-application-financial-regulations-security-tokens>.

## **Introducing new policies for tokenised assets**

### ***European Commission: Proposal for Regulation of European Parliament and of the Council on Markets in Crypto Assets, and amending the Directive (EU) 2019/1937 (MiCA) and Pilot regime for market infrastructure based on DLT***

**Responsible entity:** European Commission

**Description:** In September 2020, the European Commission adopted a comprehensive package of legislative proposals for the regulation of crypto-assets, updating certain financial market rules for crypto-assets (markets in crypto assets or 'MiCA'), and creating a legal framework for regulatory sandboxes of financial supervisors in the EU using blockchains in the trading and post-trading of securities (the 'pilot regime'). MiCA replaces all other EU rules and national rules currently governing the issuance, trading and storing of crypto-assets, while the pilot regime allows for exemptions from existing rules and allows regulators and companies to test innovative solutions utilising DLTs (European Commission, 2020<sup>[46]</sup>) (European Commission, 2020<sup>[47]</sup>).

The draft Markets in Crypto-assets Regulation (MiCA) and pilot regime were designed to support innovation while protecting consumers, protect, the integrity of crypto-currency exchanges and increase legal certainty around crypto-assets. The proposed regulation covers entities issuing crypto-assets, firms providing services around such assets (e.g. digital wallet operators), and cryptocurrency exchanges. It creates a new EU-wide licensing regime for crypto-asset issuers and service providers, and outlines consumer protection requirements. MiCA also introduces a new EU-wide passport available to market participants licensed under the MiCA regime in their home member state. The proposed bill also regulates issuers of asset-referenced tokens (stablecoins) and e-money tokens and introduces requirements for the issuance of tokens not falling under one of the above categories (utility tokens).

**Read more:** <https://ec.europa.eu/digital-single-market/en/legal-and-regulatory-framework-blockchain>.

### ***The EC Digital Operational Resilience Regulation Proposal (DORA)***

**Responsible entity:** *European Commission*

**Description:** As part of its Digital Financial Strategy and legislative proposal package, the European Commission formulated a legislative proposal that focuses on digital operational resilience in financial services (the Digital Operational Resilience Proposal or DORA) (European Commission, 2020<sup>[48]</sup>). It builds on existing frameworks and communications technology (ICT) risk management requirements already developed by other EU institutions and establishes a clear foundation for EU financial regulators and supervisors to go beyond financial resilience and focus on strengthening their operational resilience. The proposal sets EU wide standards for testing of operational resilience and proposes ICT risk management rules across financial services sectors, ICT incident classification and reporting. The proposed rules bring 'critical ICT third party providers' (CTPPs) (e.g. cloud service providers) within the regulatory perimeter, to be supervised by one of the European Supervisory Authorities (ESAs).

**Read more:** <https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=2020/2034>.

### ***France's bespoke framework for tokens***

**Responsible entity:** French Parliament

**Description:** The Blockchain Order of 2017 established in French law a regulatory framework governing the representation and transmission of unlisted financial securities via DLTs (French Parliament, 2016<sup>[11]</sup>). It extended to other securities (mainly unlisted equity and debt) the potential of using distributed ledgers for the issuance, registration, and transfer of securities as opposed to using traditional securities accounts. France established an innovative framework for token offerings via the PACTE Action Plan for Business Growth and Transformation bill published on 24 May 2019. The PACTE set out an operational framework for tokens that cannot be assimilated to financial instruments, both on the primary market of initial coin offerings (ICOs), and on the secondary market (e.g. custody, fiat-crypto, crypto-crypto exchange).

**Read more:** <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000036171908/>.

### ***The Italian framework defining DLTs and smart contracts***

**Responsible entity:** Ministry of Economic Development, Government of Italy

**Description:** Law No. 12 of 11 February 2019 provides a definition of DLTs and smart contracts. It clarifies that electronic time stamps produced by a DLT have legal effects as per Art. 41 of European Regulation No. 910/214. According to this law, the Agency for Digital Italy should publish technical standards for DLTs to produce the above-mentioned legal effects and for smart contracts to comply with the written form. In June 2020 the Ministry of Economic Development released the “Proposals for the Italian Strategy in the field of technologies based on distributed ledgers and Blockchain”, referred to as the “Italian Strategy” subject to a public consultation from 18 June to 20 July 2020. This document was issued prior to the publication of the Digital Finance Strategy by the EC and contains recommendations around digital tokens managed through DLTs with reference to initial crypto-asset offerings (ICO / STO).

**Read more:**

[https://www.mise.gov.it/images/stories/documenti/Proposte\\_registri\\_condivisi\\_e\\_Blockchain\\_-\\_Sintesi\\_per\\_consultazione\\_pubblica.pdf](https://www.mise.gov.it/images/stories/documenti/Proposte_registri_condivisi_e_Blockchain_-_Sintesi_per_consultazione_pubblica.pdf).

### ***Trusted Technology Verifying Authorities in Liechtenstein***

**Responsible entity:** Government of Liechtenstein

**Description:** The Liechtenstein Blockchain Act introduced such a trusted third party intermediary, called the Physical Validator, recognising the need to bridge the gap between the offline and the online world, and to provide assurance that the underlying right embodied by the token truly exists. The new framework describes as physical validator a professional whose function is to ensure the existence and enforcement of contractual enforcement of rights to property represented in tokens on TT systems as defined by property law. The validator ensures that the party tokenising the right to something represented online is indeed the party who possesses that right offline, allowing for a valid transfer on a TT system such as the blockchain. The physical validator must also ensure that the principal of the token issuer instructing them to tokenise the rights to an object can, at any time, lawfully dispose of the tokenized right so as to avoid a collision of rights in case of a tokenisation of rights to the same object. Finally, the physical validator can also keep the asset in his custody so as to ensure that the transferee of a token representing the right to own a certain asset will be able to obtain the underlying physical object.

**Read more:** [https://www.naegele.law/files/Downloads/TTTL\\_Summary.pdf](https://www.naegele.law/files/Downloads/TTTL_Summary.pdf).

### **Russian Federation: 'Utility' tokens vs. 'digital financial assets'**

**Responsible entity:** Federal Assembly of Russia

**Description:** In July 2020, the Russian Duma adopted the Law on Digital Financial Assets which took effect from 1 January 2021. This law *inter alia* separates utility (or 'product') tokens providing legal claims on services/goods/IP, from 'digital financial assets' akin to tokenised securities. The new launch clarifies regulatory regime applicable to each of the two categories of tokens. On the one hand, utility or 'product' tokens are allowed to be issued through initial coin offerings (ICOs), under an approach similar to the French visa system. On the other hand, tokenised securities or 'digital financial assets' fall under the existing financial securities regulation and its requirements. In the case of ICO issuances, the law introduces detailed requirements including the provision of a whitepaper, disclosure requirements to investors, and an obligation for a dedicated information system. This should be included in the register of the Central Bank including access to asset functionality, continuity of operations, and integrity of information on the register. Participants are subject to qualification and business reputation criteria and must maintain internal control systems.

**Read more:** <https://perma.cc/5KZV-XDDN>.

### **Amending of the Companies Code in Poland and dematerialisation of shares in new Simple Joint-Stock Company (Prost Spółka Akcyjna - P.S.A.)**

**Responsible entity:** Chancellery of the Sejm

**Description:** In March 2021, a new law amending the Commercial Companies Code came into force in Poland, allowing for the registration of shares of a new type of company using blockchain. The provision introduced a new type of capital called Simple Joint-Stock Company (Prosta Spółka Akcyjna - P.S.A.). The adopted provisions create a simplified procedure for dematerialisation of PSA's shares. All Simple Joint-Stock Company shares will be registered in the register of shareholders kept in electronic form by one of the authorized entities (e.g. the National Depository for Securities, custodian banks, notaries). The shareholders register must be in electronic form, such as tokens in a decentralised and distributed database. Entities keeping registers of Simple Joint-Stock Company shareholders will be required to ensure the number of shares registered is consistent with the number of shares issued and to make entries of changes to the data in the register.

**Read more:** <https://prosta-spolka.pl/>;  
<https://www.sejm.gov.pl/Sejm8.nsf/druk.xsp?nr=3236>.

### ***Singapore issues first digital corporate bond pilot in Asia***

**Responsible entity:** Singapore Exchange (SGX), HSBC Bank, Temasek Holdings

**Description:** In September 2020, SGX, HSBC and Temasek issued the first pilot digital syndicated corporate bond in Asia (SDX, 2019<sup>[21]</sup>). SGX's digital asset platform used to issue, deposit, and service bonds allowed for the launch and settlement of a S\$400 million 5.5-year public bond issue and a follow up on S\$100 million tap of the same issue by Olam International. SGX utilised DAML which is the smart contract language created by Digital Asset to model the bond and its distributed workflows for issuance and asset servicing over the bond's lifecycle. SGX's solution used smart contracts to capture the rights and obligations of parties involved in issuance and asset servicing (arrangers, depository agents, legal counsel, and custodians). The digital bond used HSBC's on-chain payments solution allowing for seamless settlement in multiple currencies to facilitate transfer of proceeds between the issuer, arranger, and investor custodian. Key efficiencies reported to have been observed within the pilot include: timely ISIN (identifier) generation, elimination of settlement risk, reduction in primary issuance settlement from 2 to 5 days, automation of coupon and redemption payments, and registrar functionality (SDX, 2019<sup>[21]</sup>).

**Read more:** <https://www.about.hsbc.com.sg/news-and-media/award-win-for-asia-first-digital-bond-issuance>.



## References

- AMF (2020), *Response by the French Financial Market Authority (AMF) to an EC Consultation Document on an EU framework for markets in crypto-assets*, [https://www.amf-france.org/sites/default/files/2020-04/crypto-ue-reponse-amf\\_1.pdf](https://www.amf-france.org/sites/default/files/2020-04/crypto-ue-reponse-amf_1.pdf). [20]
- AMF (2020), *Legal analysis on the application of financial regulations to security tokens and precisions on bulletin board*, 6 March 2020, Autorité des marchés financiers, <https://www.amf-france.org/en/news-publications/news/legal-analysis-application-financial-regulations-security-tokens-and-precisions-bulletin-board>. [8]
- AMF (2019), *Prestataires de services sur actifs numériques : le dispositif PACTE en détail*, Autorité des marchés financiers, <https://www.amf-france.org/en/node/60999>. [16]
- BaFin (2019), *German Federal Financial Supervisory Authority (BaFin) Expert Article on Tokenisation*, 20 May 2019, [https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Fachartikel/2019/fa\\_bj\\_1904\\_Tokenisierung\\_en.html](https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Fachartikel/2019/fa_bj_1904_Tokenisierung_en.html). [7]
- Banque de France (2020), *Avancement de la démarche d'expérimentations de monnaie digitale de banque centrale lancée par la Banque de France*, 20 May 2020, <https://www.banque-france.fr/communique-de-presse/avancement-de-la-demarche-dexperimentations-de-monnaie-digitale-de-banque-centrale-lancee-par-la>. [22]
- BIS Innovation Hub (2020), *Project Helvetia - Settling tokenised assets in central bank money*, <https://www.bis.org/publ/othp35.htm> (accessed on 9 December 2020). [24]
- DWF (2020), *German Ministry of Justice and Consumer Protection and the Ministry of Finance publish draft Electronic Securities Act (eWpG-E) | DWF article* 24 August 2020, <https://dwfgroup.com/pl-pl/news-and-insights/insights/2020/8/draft-electronic-securities-act>. [40]
- EBA (2019), *European Banking Authority Report with Advice for the European Commission on Crypto-assets*, <https://www.eba.europa.eu/eba-reports-on-crypto-assets>. [45]



- ESMA (2019), *Advice on Initial Coin Offerings and Crypto-Assets* | ESMA50-157-1391, [25]  
<https://www.esma.europa.eu/document/advice-initial-coin-offerings-and-crypto-assets>.
- ESMA (2018), *WARNING: ESMA, EBA and EIOPA warn consumers on the risks of Virtual Currencies*, [44]  
[https://www.esma.europa.eu/sites/default/files/library/esma50-157-828\\_ico\\_statement\\_firms.pdf](https://www.esma.europa.eu/sites/default/files/library/esma50-157-828_ico_statement_firms.pdf).
- ESMA (2017), *ESMA alerts firms involved in Initial Coin Offerings (ICOs) to the need to meet relevant regulatory requirements*, [42]  
<https://www.esma.europa.eu/document/esma-alerts-firms-involved-in-initial-coin-offerings-icos-need-meet-relevant-regulatory> (accessed on 20 September 2020).
- ESMA (2017), *ESMA alerts investors to the high risks of Initial Coin Offerings (ICOs)*, [43]  
<https://www.esma.europa.eu/document/esma-alerts-investors-high-risks-initial-coin-offerings-icos>.
- European Commission (2020), *Draft regulation of the European Parliament and of the Council on Markets in Crypto-assets (MiCA) (Text with EEA relevance)*, [46]  
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0593> (accessed on 24 September 2020).
- European Commission (2020), *Legal and regulatory framework for blockchain / Shaping Europe's digital future*, [14]  
<https://ec.europa.eu/digital-single-market/en/legal-and-regulatory-framework-blockchain> (accessed on 24 September 2020).
- European Commission (2020), *Proposal for a regulation of the European Parliament and of the Council on a pilot regime for market infrastructure based on a distributed ledger technology* EUR-Lex - 52020PC0594 - EN - EUR-Lex, [47]  
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0594> (accessed on 19 July 2021).
- European Commission (2020), *Proposal for a Regulation of the European Parliament and of the Council on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014 and (EU) No 909/2014*, [48]  
<https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=2020/2034>.
- European Commission (2017), *Public consultation on FinTech: a more competitive and innovative European financial sector*, [6]

- [https://ec.europa.eu/info/consultations/finance-2017-fintech\\_en](https://ec.europa.eu/info/consultations/finance-2017-fintech_en) (accessed on 18 September 2020).
- FCA (2019), *Guidance on Cryptoassets*, UK Financial Conduct Authority, [4]  
<https://www.fca.org.uk/publication/policy/ps19-22.pdf>.
- FINMA (2016), *Financial Technology and Digitalisation (2016)*, Swiss Financial Market Supervisory Authority, <https://www.finma.ch/en/documentation/dossier/dossier-fintech/finanztechnologie-und-digitalisierung-2016/>. [5]
- French Government (2019), *France adopts a regulatory framework for blockchains*, 25 November 2019, <https://www.gouvernement.fr/en/france-adopts-a-regulatory-framework-for-blockchains>. [17]
- French Parliament (2019), *LOI n° 2019-486 du 22 mai 2019 relative à la croissance et la transformation des entreprises (1)*, [15]  
<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000038496102/>.
- French Parliament (2017), *Ordonnance n° 2017-1674 du 8 décembre 2017 relative à l'utilisation d'un dispositif d'enregistrement électronique partagé pour la représentation et la transmission de titres financiers*, [10]  
<https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000036171908/>.
- French Parliament (2016), *Code monétaire et financier, Section 2 : Les minibons (Articles L223-6 à L223-13)*, [11]  
<https://www.legifrance.gouv.fr/codes/id/LEGIARTI000032468412/2016-10-01/>.
- Freshfields (2020), *Blockchain strategy: electronic debt securities in Germany*, [18]  
<https://www.lexology.com/library/detail.aspx?g=41705af0-9fac-4aa4-879d-36598a75191b> (accessed on 21 September 2020).
- Government of Liechtenstein (2019), *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*, <https://impuls-liechtenstein.li/wp-content/uploads/2021/02/Report-and-Application-TVTG-extract.pdf> (accessed on 21 September 2020). [13]
- Haentjens, M., T. de Graaf and I. Kokorin (2020), "The Failed Hopes of Disintermediation: Crypto-Custodian Insolvency, Legal Risks and How to Avoid Them", *SSRN Electronic Journal*, <http://dx.doi.org/10.2139/ssrn.3589381>. [26]
- Jünemann, M. and J. Wirtz (2020), *eWpG: German Ministries publish draft for a new Electronic Securities Act*, [39]  
<https://www.twobirds.com/en/news/articles/2020/germany/german-ministries->

- [\*publish-draft-for-a-new-electronic-securities-act\*](#) (accessed on 21 September 2020).
- NCSL (2020), *Blockchain 2019 Legislation*, <https://www.ncsl.org/research/financial-services-and-commerce/blockchain-2019-legislation.aspx> (accessed on 26 September 2020). [34]
- OCC (2020), *Interpretive Letter #1170 July 2020 Re: Authority of a National Bank to Provide Cryptocurrency Custody Services for Customers*, <https://www.occ.gov/topics/charters-and-licensing/interpretations-and-actions/2020/int1170.pdf>. [36]
- OCC (2020), *Interpretive Letter #1172 October 2020 OCC Chief Counsel's Interpretation on National Bank and Federal Savings Association Authority to Hold Stablecoin Reserves*, <https://www.occ.gov/topics/charters-and-licensing/interpretations-and-actions/2020/int1172.pdf>. [37]
- OECD (2021), *Regulatory Approaches to the Tokenisation of Assets, OECD Blockchain Policy Series*, <https://www.oecd.org/finance/regulatory-approaches-to-the-tokenisation-of-assets.htm>. [3]
- OECD (2020), *The Tokenisation of Assets and Potential Implications for Financial Markets*, <https://www.oecd.org/finance/The-Tokenisation-of-Assets-and-Potential-Implications-for-Financial-Markets.htm>. [2]
- OECD (2019), *Initial Coin Offerings (ICOs) for SME Financing*, <https://www.oecd.org/finance/initial-coin-offerings-for-sme-financing.htm>. [1]
- Okamoto, K. and H. Takeuchi (2020), "System Development for Crypto-Assets (Virtual Currencies)". [38]
- Parliament of Luxembourg (2019), *7363 - Projet de loi portant modification de la loi modifiée du 1er août 2001 concernant la circulation de titres*, 2019, <https://chd.lu/wps/portal/public/Accueil/TravailALaChambre/Recherche/RoleDesAffaires?action=doDocpaDetails&backto=/wps/portal/public/Accueil/Actualite/ALaUne/&id=7363> (accessed on 20 September 2020). [12]
- SDX (2019), *SIX Digital Exchange (SDX) Launches DLT-based Trading and Settlement Prototype*, <https://www.six-group.com/en/newsroom/media-releases/2019/20190923-six-sdx-update.html> (accessed on 22 September 2020). [21]
- SEC (2020), *SEC Issues Statement and Requests Comment Regarding the Custody of Digital Asset Securities by Special Purpose Broker-Dealers*, <https://www.sec.gov/news/press-release/2020-340>. [35]

- SEC (2019), *Framework for "Investment Contract" Analysis of Digital Assets*, [33]  
<https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets> (accessed on 22 September 2020).
- SEC (2019), *Joint Staff Statement on Broker-Dealer Custody of Digital Asset Securities*, [9]  
<https://www.sec.gov/news/public-statement/joint-staff-statement-broker-dealer-custody-digital-asset-securities> (accessed on 23 September 2020).
- SEC (2019), *SEC.gov | Framework for "Investment Contract" Analysis of Digital Assets*, [32]  
<https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets> (accessed on 15 August 2021).
- SEC (2019), *SEC.gov | SEC Charges Issuer With Conducting \$100 Million Unregistered ICO*, [30]  
<https://www.sec.gov/news/press-release/2019-87> (accessed on 15 August 2021).
- SEC (2019), *SEC.gov | SEC Halts Alleged \$1.7 Billion Unregistered Digital Token Offering*, [29]  
<https://www.sec.gov/news/press-release/2019-212> (accessed on 15 August 2021).
- SEC (2017), "Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO", [31]  
<https://www.sec.gov/news/press-release/2017-131>.
- SEC Staff (2020), *SEC No Action Letter - ATS Role in the Settlement of Digital Asset Security Trades*, [28]  
<https://www.sec.gov/divisions/marketreg/mr-noaction/2020/finra-ats-role-in-settlement-of-digital-asset-security-trades-09252020.pdf> (accessed on 17 November 2020).
- SEC Staff and FINRA (2019), *SEC.gov | Joint Staff Statement on Broker-Dealer Custody of Digital Asset Securities*, [27]  
<https://www.sec.gov/news/public-statement/joint-staff-statement-broker-dealer-custody-digital-asset-securities> (accessed on 1 December 2020).
- SIF (2020), *Swiss State Secretariat for International Finance (SIF): Blockchain/DLT*, [41]  
[https://www.sif.admin.ch/sif/en/home/finanzmarktpolitik/digit\\_finanzen/blockchain.html](https://www.sif.admin.ch/sif/en/home/finanzmarktpolitik/digit_finanzen/blockchain.html) (accessed on 22 September 2020).
- Société Générale (2020), *Societe Generale performs the first financial transaction settled with a central bank digital currency*, [23]  
 20 May 2020,  
<https://www.societegenerale.com/en/news/newsroom/societe-generale-performs-first-financial-transaction-settled-central-bank-digital>.

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Swiss Federal Council (2020), *BBl 2020 233 / Botschaft zum Bundesgesetz zur Anpassung des Bundesrechts an Entwicklungen der Technik verteilter elektronischer Register*, <http://BBl 2020 233>.

[19]